Engineering Requirements Management
DOORS Next

Contents

Welcome

Overview

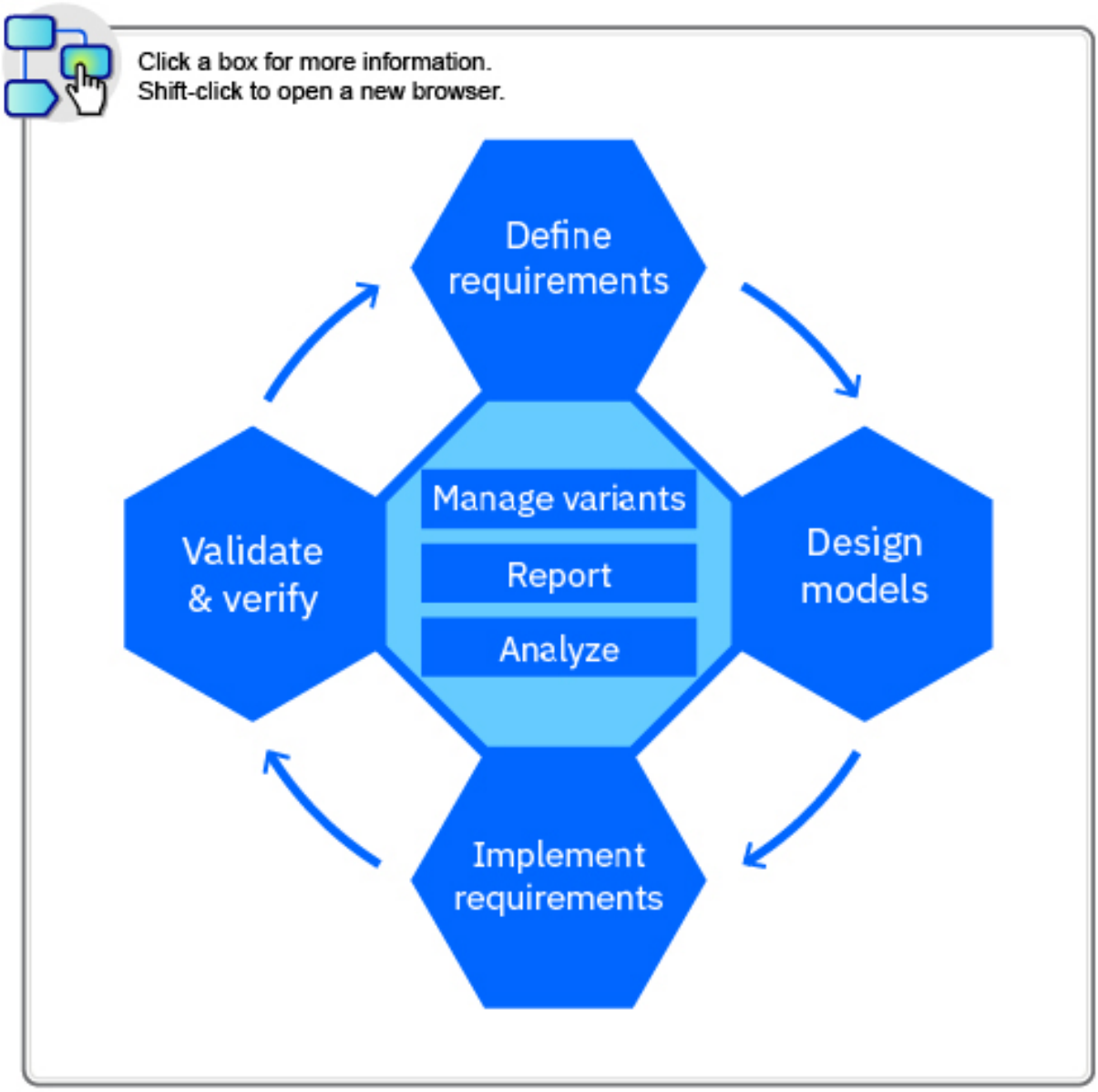
This section provides overview and getting started information.

Overview of DOORS Next

IBM Engineering Requirements Management DOORS Next (DOORS Next) is a requirements management tool that helps you store, categorize, link, and share product requirements with stakeholders such as reviewers, designers, testers, and developers.

DOORS Next is the Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM) solution, which integrates IBM products to provide a complete set of applications for software or systems development. The RM application uses a web client and the Jazz platform to define, manage, and report on requirements.

The following diagram shows the development lifecycle that the solutions support. To see overviews of the applications that are represented in the image, click the boxes. For example, click **Validate and verify** to see an overview of IBM Engineering Test Management (ETM).



1. Overview of Engineering Requirements Management DOORS Next
2. Overview of Engineering Rhapsody® Model Manager
3. Overview of Engineering Workflow Management
4. Overview of Engineering Test Management
5. Overview of Global Configuration Management
6. Overview of Reporting
7. Overview of Engineering Insights

Create a single view of requirements

Stakeholder, business, system, product, hardware, software, and other requirements represent business needs from different perspectives with different levels of detail. Requirements have several formats, such as diagrams, tables, forms, and text. Usually, several people are involved in creating, analyzing, reviewing, approving, designing, and developing requirements.

DOORS Next can store multiple types of requirements in a common repository. Bringing all requirements together in a single place, removing redundancy, and connecting related content is essential to effectively managing requirements in large projects.

For an interactive workflow diagram of the requirements definition and management process, see Getting started with requirements management.

Trace linkages between requirements

Requirements are often related in many ways. Business requirements drive product requirements, which in turn drive hardware and software requirements. Product requirements cascade to component requirements and granular requirements are linked to more comprehensive requirements. The result is a web of relationships with many dependencies.

With DOORS Next, you can create relationships between requirement artifacts. You can then use grid or tree views to see top-level or drilled-down views of those links.

For details, see Traceability.

Evaluate the impact of changes to requirement

As a product evolves, initial requirements can change or be removed during development. Because requirements are linked, a change in one requirement can affect other requirements. The Links Explorer in DOORS Next graphically displays the links between artifacts. When an artifact changes, the Links Explorer automatically flags all links from that artifact as suspect. By tracing the suspect links, you can identify all requirements that are affected by a change.

For details, see Linking to development, design, test, and requirements artifacts.

Create review workflows

DOORS Next encourages collaboration through reviews. You can set up reviews of requirements and identify reviewers. As a review owner, you can see the progress, comments, and status of all participants in the review. You can broadcast emails, leave instructions, or even change the status of the review. As a reviewer, you can leave comments and vote.

For details, see Requirement workflows.

Monitor project performance with metrics

By default, metrics are collected at regular intervals to provide the most recent view of data, as well as trends over time, which can help you evaluate the ongoing health of your project. For example, the "Requirements covered by test cases" metric monitors the extent to which requirements are covered by test cases over time.

The data warehouse can also provide detailed traceability for requirements. For example, you can see all work items that implement a set of requirements, along with properties such as status, priority, story points, and due date.

For details, see Reporting in the RM application.

Baseline projects and track change history

DOORS Next tracks and records metadata to measure project efficiency and churn, such as who modified information, and which changes occurred when.

You can capture baselines of your project requirements for a snapshot of your project at a point in time. You can compare projects against a previous baseline to determine what's changed.

DOORS Next stores the history of changes to artifacts. You can access all revisions of an artifact to see which modifications occurred when. You can also use the historical record of an artifact to undo any changes and restore the artifact to a previous state.

For details, see Baselines in RM projects.

Extend functionality with APIs

DOORS Next provides a client extension API that you can use to extend tool functionality by using technologies such as HTML and JavaScript. You can create and host a catalog of extensions on a server so that your team can share them.

For details, see Extending the RM application.

Configuration management

You can use configuration management in the RM application to create versions of requirement artifacts and to link them to other team artifacts, such as test cases and designs. Use configurations (streams and baselines) to manage reuse, traceability, and parallel development. Teams by using configuration management enabled ELM applications can contribute requirements, design, test, and source configurations to global configurations. Global configurations ensure artifact links resolve to the correct versions, and also facilitate reuse across versions or variants of your software or product line. For more information about configurations, see Getting started with configuration management.

Exchange requirements data with OSLC and ReqIF

The software architecture for the RM application is based on the Open Services for Lifecycle Collaboration (OSLC) specification, which uses a common set of resources, formats, and REST architectural services to enable data sharing between applications. You can use the OSLC integration protocol to link requirements in IBM Engineering Requirements Management DOORS with artifacts in DOORS Next.

You can exchange requirements data between the two products by using ReqIF, which is an evolution of the Requirements Interchange Format that is governed by the Object Management Group (OMG). With ReqIF, teams in different organizations can use different requirements management tools to work on shared specifications to construct a consistent view of a solution. For details, see Importing and Exporting ReqIF files.

Part of the Jazz community

The ELM products are developed transparently on the open and extensible Jazz platform. On Jazz.net, you can download the products and their milestones, track development schedules, join discussion forums, open enhancement requests, and interact with the product developers. To learn more about the products, see the developer-written articles in the Jazz.net library or the topics about complex deployment scenarios on the Deployment wiki.

Related information

Overview of the solution
Client access license management overview
Planning to deploy and install
Interactive installation guide
Getting started with requirements management
Security considerations for IBM Engineering Lifecycle Management
Tips for requirements management
Troubleshooting the RM application
PDF documentation of Doors Next

Comparison of DOORS and DOORS Next

IBM Engineering Requirements Management DOORS (DOORS) and IBM Engineering Requirements Management DOORS Next (DOORS Next) are requirements management (RM) products with many similar capabilities. However, the products offer different implementations and strategic opportunities for requirements analysts and design, development, and test teams.

DOORS, which is in version 9, is a market-leading RM solution. It provides a wide range of RM capabilities and a rich scripting language. DOORS also integrates with other products and has a large, active community of users. This product works well for the largest programs and projects and also for smaller teams.

DOORS Next is an RM collaboration platform with a web client. This product includes capabilities such as visual requirements definition, work item and test integration, and planning. It runs as an application on the Jazz® server and can be installed and integrated with other IBM Engineering Lifecycle Management (ELM) products.

Both products provide traceability to manage requirements across the development lifecycle, support requirements-driven development and testing, and link to design and modeling resources. In addition, the products can be used together. For example, you can link requirements and related artifacts across the two products. Modules and objects that are exported from DOORS can be imported into DOORS Next.

Capabilities and strengths

DOORS helps teams in complex, high-compliance, systems engineering programs. It provides mature capabilities, such as structured requirements specification modules, roundtrip data import and export, electronic signatures, baselines, and customizable requirements views with multi-level traceability. For offline work or printing, views can be exported to document formats or spreadsheets. DOORS also supports requirements change management which is driven by a process defined in a change management tool. This product can be scaled to large development projects with tens of thousands of objects or hundreds of concurrent users.

DOORS offers a user-programmable, extensible API called the DOORS eXtension Language (DXL). DXL provides a way to customize these activities:

- Automating administration
- Creating multi-level traceability views
- Calculating metrics
- Implementing business logic
- Extending the user interface
- Integrating with other tools

Along with the RM capabilities of the DOORS client and built-in database, the optional IBM Engineering Requirements Management DOORS - Web Access (DWA) component supports review and common editing tasks in a web browser. DWA is ideal for distributed teams that do not require the full capabilities of the DOORS client.

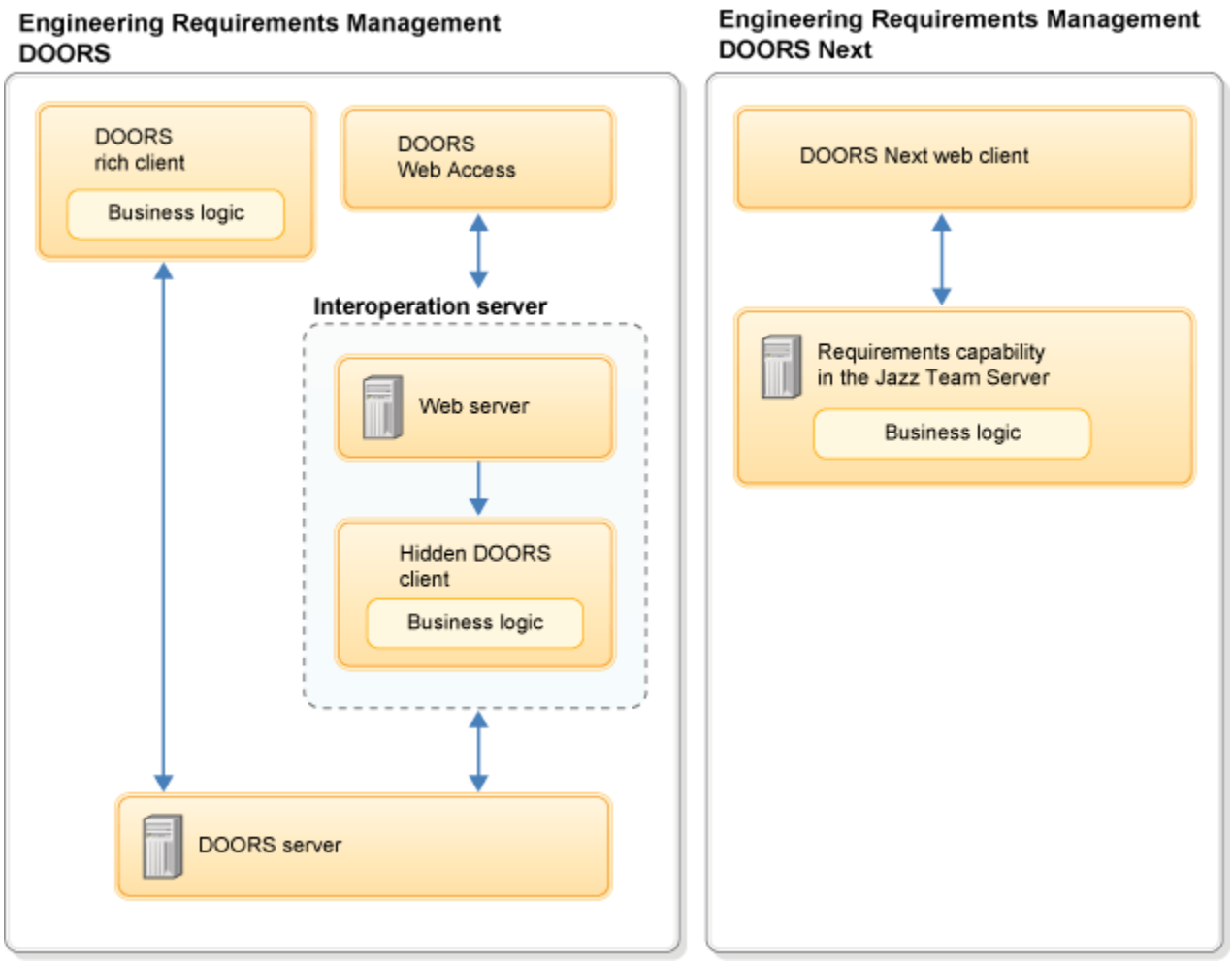
DOORS Next uses the capabilities of Jazz Team Server to support team collaboration through dashboards, reviews, and comments. Users, projects, data types, artifact types, attributes, and tags have a common administration. These common services and type systems help project teams consistently define and manage requirements.

In ELM, project areas, team members, and processes are managed across associated applications: Requirements Management (RM), Quality Management (QM), and Change and Configuration Management (CCM). Because a commercial database is used, system and project administrators can follow flexible and standardized operational procedures.

The web client for DOORS Next provides tools to define requirements in rich-text documents and visual representations in business process diagrams, use case diagrams, storyboards, user interface sketches, and screen flows. Requirement artifacts can be organized and reused in views, collections, and modules. The web client supports traceability links to related requirements artifacts and across ELM applications to development plans, work items, test plans, test cases, designs, and models.

For document generation, DOORS and DOORS Next use the capabilities of Engineering Document Generation and IBM Engineering Lifecycle Optimization - Publishing to create customizable, dashboard-based graphical reports.

For a high-level comparison of the client and server architecture in both tools, see the next diagram.



For more information about DOORS, see the DOORS documentation.

For information about using the ELM, see "Getting started with DOORS Next" on page 9.

For information about the development of DOORS Next as a Jazz.net project, see the DOORS Next page and this blog post.

Configuration management in the RM application

Use configuration management in the Requirements Management (RM) application to manage components, streams, baselines, and change sets, to compare configurations, and to complete other configuration management tasks.

This high-level overview briefly describes the configuration management capabilities in the RM application. For comprehensive and task-related information, see Getting started with configuration management.

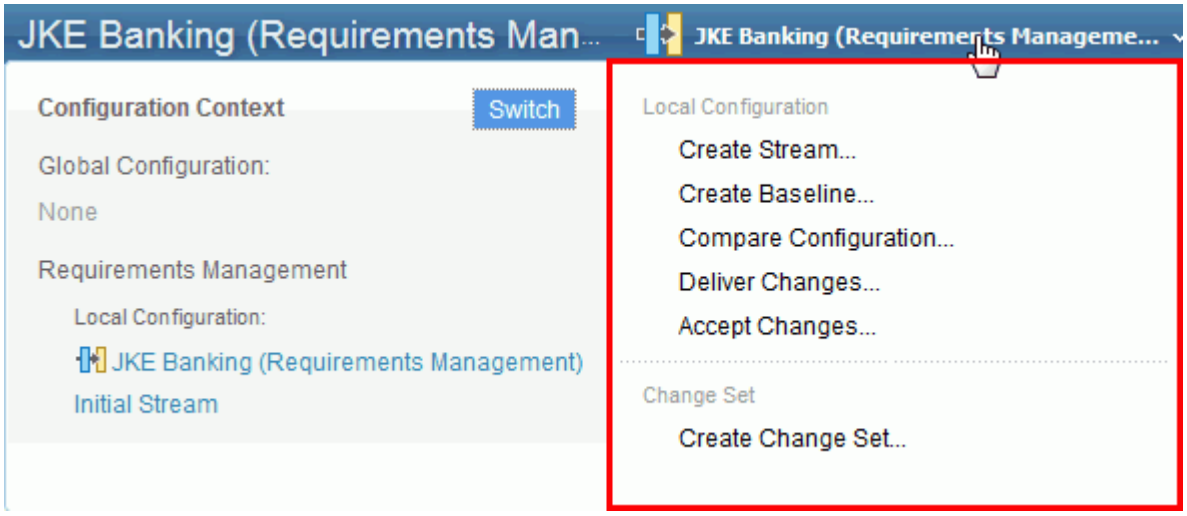
Before your team can use configuration management capabilities, an administrator must read the considerations for enabling configuration management, and then obtain an activation key:

- For pilot environments, read the considerations and generate an activation key.

  Note: Configuration management capabilities of RM and QM, and global configuration management is an added service for IBM Engineering Lifecycle Management Base SaaS and IBM Engineering Lifecycle Management Extended SaaS customer environments, and should only be enabled by the SaaS provider. Software configuration management (SCM) in CCM is included in Cloud offerings at no additional cost.
- For production environments, discuss your plans with your IBM Client representative or contact IBM Support.

Use the configuration management capabilities in the RM application to set up unique working environments for individuals or teams. For example, you can create components to represent collections of artifacts, instead of working with all the artifacts from the project in one stream. You can create streams and baselines of projects at specific points in time, review and approve changes to artifacts, and make changes visible to other teams or individuals. You can also enable link validity in a configuration management enabled project.

Streams and baselines are referred to as *configurations*. You can create and view baselines in a project even if you do not have configuration management enabled. However, after you enable a project for configuration management, the **Current Configuration** menu contains configuration-related options that you can use to create and compare baselines and streams, and optionally create change sets, as seen in this example:



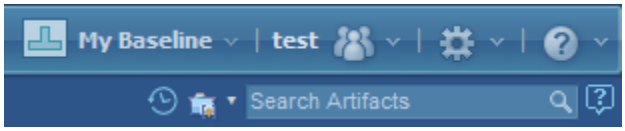
Streams, baselines, and change sets in configuration management

A *stream* is a configuration in which you create and modify artifacts at a specific development level. For example, you might create a stream when you start a new release or branch of a design, project, or product.

A *baseline* is an immutable configuration that provides a snapshot of your project at a specific point in time. Baselines are useful for capturing the state of a stream, and are typically used to record important stream configurations so that they can be re-created. When you create a new stream, a baseline of the previous stream is created automatically.

A *change set* is a grouping of changes that remains separate from the stream in which it was created until you deliver the change set to the stream. After you deliver your change set to the originating stream, you can then deliver the change set to other streams. Using change sets is an optional but convenient way to track and deliver changes in your development environment.

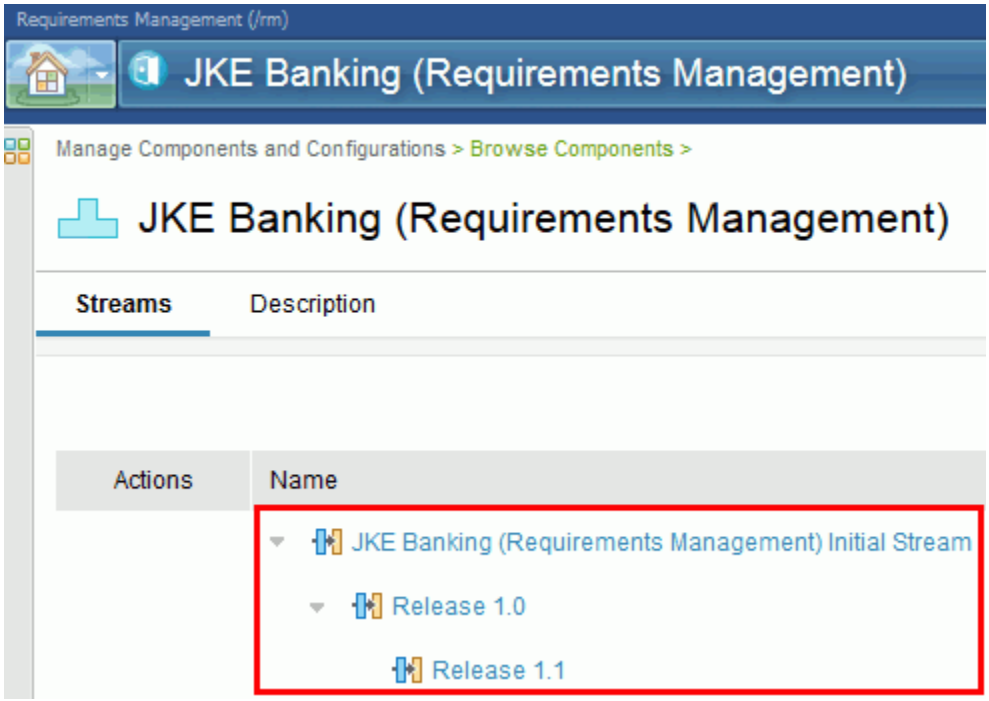
The name of the stream, baseline, or change set that you select to work in is shown at the top of the **Current Configuration** menu. For example, if you create and switch to a baseline called My Baseline, it appears on the **Current Configuration** menu, as shown in this example:



To work in a different configuration, expand the **Current Configuration** menu, click **Switch**, click **Requirements Management Configuration** and search for another configuration in which to work. You can also switch to a global configuration from this menu.

When you first create a project, an initial component and stream are automatically created that manage the artifact versioning information for the project. You can create more components to organize artifacts based on your project needs. To manage components and configurations, from the **Administration** menu, select **Manage Components and Configurations**.

The streams in a component are shown on the **Component** window, on the Streams tab, based on their relationship to each other:



Tip:

- To see the baselines that were created in a stream, click the stream and then click the **Baselines** tab. To compare the contents of two streams, select the streams and click **Compare** .
- If your team uses global configurations, you can create a baseline of an RM stream from the configuration tree view in the Global Configuration Management (GCM) application. See Creating baselines of streams contributed by other ELM applications.

If you are working in a parallel development environment, you might have individual streams whose contents are derived from a common stream. To make changes in your stream visible to other team members, you deliver your changes to the common stream, which also known as the *flow target*. From the common stream, team members can accept changes into their own streams to ensure that they have the most recent versions of artifacts.

The hierarchy of the streams in the indicates the flow target for streams. For example, if you create a Release 1.1 stream from a Release 1.0 stream, the streams are shown as follows:

In this example, the Release 1.0 stream is the flow target for the Release 1.1 stream, which was created from Release 1.0. If you double-click the Release 1.1 stream and select to compare the stream with the flow target, you can compare the contents of Release 1.0 with the contents of Release 1.1.

For more information about configuration management, see the video Configuration Management Overview for CLM v6 releases.

Related concepts

"Baselines in requirements projects" on page 66

In a requirements project, a baseline captures the entire project at a moment in time. For example, you might create a project baseline before you create an artifact review to ensure that the artifacts do not change during the review. A baseline includes all artifacts, folder trees, and public tags.

"Managing artifacts by using configurations in the RM application" on page 224
You can manage changes to artifacts and work in a parallel, multi-stream environment by using configuration management capabilities. These capabilities include creating baselines of projects at specific points in time, reviewing and approving changes to artifacts, and making changes visible to other teams or individuals.

Related information

Configuration management: concepts and capabilities

Components

Global configuration management

Managing changes to artifacts using change sets

Video tours

To learn more about IBM Engineering Requirements Management DOORS Next, see this Guided Tour for DOORS Next:

If you are evaluating or getting started with the RM application, see the Requirements Management Scenarios on Jazz.net. These scenarios guide you through installing and setting up projects, creating modules and requirement artifacts, and creating reports.

Related information

Learning resources for the IBM Engineering Lifecycle Management (ELM)

Engineering Requirements Management DOORS Next overview

Watch this tour to get an overview of IBM Engineering Requirements Management DOORS Next (DOORS Next).

You can download this video from theVideo link

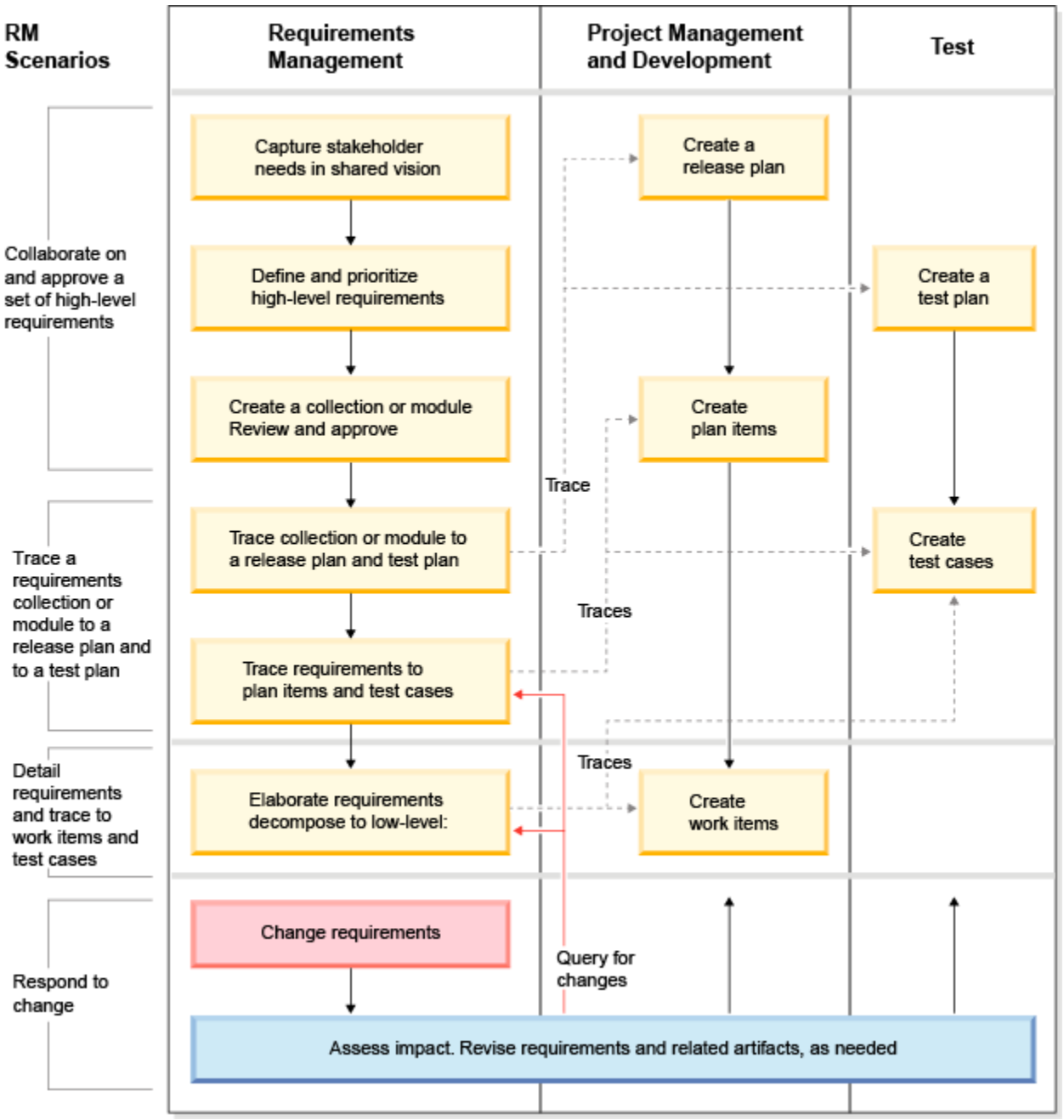
You can watch the below video to get an overview of DOORS:

Getting started with DOORS Next

This topic presents an example of a typical process for project managers, product managers, and requirements analysts who must assess a business problem and develop requirements for a proposed solution. The process is represented here in outline form. Your process might vary depending on the state of the subject system, your stakeholders, your team structure, and your tools.

For an introduction to IBM Engineering Requirements Management DOORS Next (DOORS Next), see "Overview of DOORS Next" on page 1.

The following diagram shows a simplified workflow for the requirements definition and management process, which includes traceability relationships between requirements and development and test artifacts. The process is explained in more detail in a later section. Click a box in the diagram for more information on a specific task.



1. Click this area to get information about creating vision documents
2. Click this area to get information about creating requirements
3. Click this area to get information about creating collections
4. Click this area to get information about linking to development and test artifacts
5. Click this area to get information about linking to development and test artifacts
6. Click this area to get information about creating requirements
7. Click this area to get information about modifying and managing requirements
8. Click this area to get information about modifying and managing requirements
9. Click this area to get information about working with plans
10. Click this area to get information about creating work items
11. Click this area to get information about creating a test plan
12. Click this area to get information about creating test cases

1: Setting up the project

The project manager or requirements analyst sets up a project by completing these tasks:

1. Create a requirements project. Use a project template to establish a starting point for artifact types, attributes, link types, and folder structure.
2. Customize artifact types, attributes, link types, folder structure, artifact queries (filters), and dashboards, as required.
3. Work with project managers and team leaders to plan team organizations and roles, security, communications, and iteration and milestones schedules.
4. Coordinate with project managers and team leaders to plan for associating requirements with development and test artifacts throughout the application lifecycle.

See "Creating requirements projects" on page 26, "Project dashboards" on page 88, "Managing project or component properties in requirements projects" on page 28, Managing users, Administering ELM project areas, IBM Engineering Lifecycle Management (ELM), and "Linking to development, design, test, and requirement artifacts" on page 201.

2: Assessing the problem

The requirements analyst collects input about the business problem by completing these tasks:

1. Interview stakeholders and users of the system.
2. Gather documentation on the current system.
3. Import documents into a requirements project.

The documents that you produce in the preceding steps must address the following topics:

- Current process and problems
- Goals and objectives
- Stakeholder requirements
- Issues and risks
- Thoughts and ideas

See "Importing and exporting files" on page 152.

3: Creating requirements

The requirements analyst creates requirements that are based on assessment documents and these requirements definition activities. The analyst and other team members create traceability by linking between artifacts.

1. Create a vision document to address stakeholder needs and business goals with high-level project requirements. Use business process diagrams and high-level use case diagrams to describe proposed solutions.
2. Create a collection or a module that contains high-level requirements. Review and approve the requirements collection or module, as described in the next section.
3. Link high-level requirements collections and modules with development release plans and test plans.
4. Define detailed requirements that support the high-level requirements. Create use case diagrams, storyboards, user interface sketches, and other resources to support the requirement definition.
5. Review and approve the requirements.
6. Link requirements to individual development plan items and test cases.

See "Vision document" on page 122, "Creating collections" on page 175, "Linking to development, design, test, and requirement artifacts" on page 201, and "Defining requirements" on page 90.

4: Reviewing requirements

The requirements analyst creates a collection of requirements or a module and invites other team members to review them by completing these tasks:

1. Create a project baseline and create a review from the baseline.
2. Add artifacts and participants to the review.
3. Participants add comments as they approve or disapprove artifacts.
4. Revise requirements to incorporate review comments.
5. Participants review revised requirements and approve them.
6. Finalize the review.

See "Creating reviews" on page 185 and "Baselines in requirements projects" on page 66.

5: Managing requirements

Manage requirements by using traceability links, tags, attributes, filtering, and dashboards. Use these capabilities to do these activities:

- Create relationships between requirements and other artifacts, including release plans, work items, test plans, and test cases.
- Categorize requirements.
- Assign properties to requirements.
- Create and compare project baselines.
- Monitor relationships for status, suspect traceability using the Link Validity feature, and the impact of changes among teams and throughout the application lifecycle.

See "Managing requirements" on page 188, "Linking to development, design, test, and requirement artifacts" on page 201, "Baselines in requirements projects" on page 66, and "Defining requirements" on page 90.

6: Enabling Configuration Management (optional)

Enable configuration management capabilities. Use these capabilities to do these activities:

- Create streams and change sets in addition to baselines.
- Deliver change sets to streams.
- Deliver changes between streams.
- Compare configurations.
- Work in global configurations.

See Configuration Management in the RM application, https://www.ibm.com/docs/en/elms/elm/7.0.2?topic=SSYMRC_7.0.2/com.ibm.jazz.vvc.doc/topics/c_cm_assess.html, Global configuration management

Getting started for requirements management project administrators

If you are a requirements project administrator or requirements analyst lead, these guidelines can help you get started.

Before you begin

- After the Requirements Management (RM) application is installed, run the Jazz Team Server Setup wizard. That wizard completes several important functions, such as configuring the requirements management server, and guides you through the creation of an administrative user.
- Your repository administrator must create users and assign licenses at the repository level.

- Read Getting started with project areas and lifecycle projects. You might also want to review Understanding user access control.

  Tip: If you are interested in using the optional configuration management capabilities in the RM application, refer to Administering configurations.

Procedure

1. Create a requirements project. Select a project template to populate the project with predefined artifact types and a project structure. For more information, see “Creating requirements projects” on page 26.
2. Add users to the project and assign them project roles. For more information, see Adding and modifying users as members of project areas and team areas.
3. Optional: Assign permissions at the project level or at a team level. For more information, see Permissions for requirements projects.
4. Optional: To meet specific project needs, customize the artifact types, attributes, data types, and link types. For more information, see “Managing project or component properties in requirements projects” on page 28 and “Creating link types for requirements projects” on page 36.
5. Organize the artifacts in the project by modifying the project folder.

What to do next

You can now begin to create and manage requirements.

Getting started with creating and managing requirements

If you are a product manager or requirements analyst lead, follow these guidelines to get yourself and your team started with creating and managing requirements.

Before you begin

Administrators must complete the administrative tasks that are associated with creating the Jazz repository and a requirements management project area. Product managers and requirements analysts must review the requirements management process to see an example of the workflow to get started.

Procedure

1. Use the **Artifacts** page and other project pages to create, view, and manage project artifacts.
2. Upload external documents and import comma-separated values (CSV), Microsoft Word, OpenDocument, and Rich Text Format documents to the project, as needed. The documents can include preliminary information such as problem statements, stakeholder needs, and a project management plan. You can extract requirement artifacts from documents as you import them or from documents that are already in the project.
3. Create requirements. Create high-level requirements to describe the product features. Create detailed requirements to elaborate the feature requirements. You can create requirements as individual artifacts in rich-text documents or in the structured content of a module. You can also run reports.
4. Create supporting artifacts to help elaborate and give context for the requirements.
5. Use the Project Dashboard to track recent activities and other project properties. You can also use saved views and filters to manage requirements on the **Artifacts** page and other project pages.
6. Create traceability by linking high-level requirements, detailed requirements, and supporting artifacts. You can also trace requirements to other applications across the software development lifecycle to complete these tasks:
   - Implement requirements with development plans and work items
   - Validate requirements with test plans and test cases

7. Create collections or modules to organize requirements into related groups to prepare for requirement reviews and other management activities. You can use collections and modules to link requirements to development plans and test plans.
8. Initiate requirements reviews. Create review for requirements collections or modules or individual artifacts, and add team members to serve as reviewers and approvers.

Installing

This section describes how to install the Requirements Management (RM) application.

Installing the Requirements Management application

For information about installing Jazz Team Server and the Requirements Management (RM) application, see the related help topics for the IBM Engineering Lifecycle Management (ELM).

About this task

For information about installing the RM application, see Installing Jazz Team Server and the ELM applications.

Note: The capabilities that are provided by the RM application are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

Related information

Upgrading

This section contains instructions to upgrade the Requirements Management (RM) application for the IBM Engineering Lifecycle Management (ELM).

Upgrading the Requirements Management application

For information about upgrading Jazz Team Server and the Requirements Management (RM) application, see the related help topics about upgrading the IBM Engineering Lifecycle Management (ELM). The capabilities that are provided by the RM application are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

Note: If you are using version-aware reporting, after upgrading the RM application, you must perform a TRS 2.0 full rebase. For details, see the associated section of the interactive upgrade guide.

Related information

Upgrading ELM

Integrating the Requirements Management (RM) application with other products

You can integrate the Requirements Management (RM) application with other products.

Note that for projects that have been enabled for configuration management, the integration product must support linking to versioned artifacts.

Integrating the Requirements Management application and DOORS

You can integrate IBM Engineering Requirements Management DOORS (DOORS) with the Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM). You can link requirement artifacts in the RM application to requirement objects in DOORS modules. After you create links, you can display a summary of the linked object or go to the object. You can also add a widget to your dashboard to monitor the status of linked objects.

Before you begin

- Make sure that you have the host name and IP address for the Jazz Team Server where the RM application is registered.
- You must have an installation of DOORS and IBM Engineering Requirements Management DOORS - Web Access (DWA) version 9.5 or later.
- You must know the URL for the DWA root services. That URL is in the following format: `https://`*`host-name`*`:8443/dwa/public/rootservices`.
- You must have login credentials for DOORS as a database manager or as a custom user who has the power to manage the database and open the database properties.

Note: The operating system of the DOORS server and the RM server must have the same date and time, with a difference of 5 minutes or less.

About this task

Note: The capabilities that are provided by the RM application in ELM are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

You can use this integration to add and remove traceability links between the RM application and DOORS. You can include these traceability links in traceability reports in the RM tools. RM integrations with DOORS and other external RM applications use the References link type. You can create links in either the RM application in ELM or in DOORS. When you work in one application, you are prompted to log in to the other application repository to gain access to existing links and gain permission to create new links. Links are stored in the source application where they are created. The target application queries the source application for any integration links and then displays those links. You can place your cursor over a link to display a summary of the linked object or click the link to go to the object. After you log in, if the integrated repository becomes unavailable, a message is displayed.

Permissions for creating links between the RM application and DOORS are controlled at the project level in RM. Permissions are checked for the local project not the remote project or module.

If you try to remove a link that is stored in DOORS from the RM application in ELM, an error is displayed if the module in DOORS is open. You can delete the link in DOORS or close the module and delete the link in the RM application.

Complete the integration tasks as they are listed below.

Related concepts

“Importing migration package files” on page 166
You can import requirements from an IBM Engineering Requirements Management DOORS (DOORS) migration package file into IBM Engineering Requirements Management DOORS Next (DOORS Next). The migration package file must be in your file system.

Related tasks

“Linking to development, design, test, and requirement artifacts” on page 201

Configuring the Requirements Management application as a consumer and DOORS as a provider

To enable linking between IBM Engineering Requirements Management DOORS (DOORS) and the Requirements Management (RM) application, you must configure the RM application as a consumer and DOORS as a provider.

Before you begin

You must be able to log on to the Jazz server as a user who has Jazz Administrator privileges.

Procedure

1. Log on to the Jazz server as a user who has Jazz Administrator privileges. For the RM application, go to https://*host-name*:9443/rm/admin.
2. On the **Server** tab, select the **Friends (Outbound)** page.
3. At the Friends List, click **Add**.
4. In the **Add Friend** window, type a name for the IBM Engineering Requirements Management DOORS - Web Access (DWA) server, such as `DWA`.
5. Enter the URL for the DWA root services in this format: `https://host-name:8443/dwa/public/rootservices`.
6. Enter an OAuth secret.

   The OAuth secret code phrase is associated with the new OAuth consumer key. This code phrase can contain one or more words and special characters. It cannot exceed 50 characters, and it is never shown in the user interface. This code phrase acts as a password to access the friend server.
7. Click **Create Friend** and then click **Next**.

   A provisional key is created.
8. Copy the provisional key for later use and click **Finish**.
9. To verify that the consumer key was created in DOORS:
   a) Log on to DOORS as a database manager or a custom user who has the power to manage the database, and open the database properties.
   b) In the DOORS client, do one of these steps:
      - For DOORS version 9.5.1 and later, click **File** > **OSLC** > **Local Keys**.
      - For earlier versions of DOORS 9.5, right-click the database node in the left panel and click **Properties**. Click the **Local Keys** tab.
   c) In the **Local Keys** window, click **Add** to add RM as an OAuth consumer.
   d) For the consumer name, type a recognizable name for the consumer, such as `RM`.
   e) For the consumer key, enter the provisional key that was created in the friend entry on the Jazz Team Server.
   f) Type and confirm the OAuth secret.
   g) Click **Register**.

What to do next

You can now associate an RM project with a DOORS module.

Associating an RM project with a DOORS module

To enable linking between IBM Engineering Requirements Management DOORS (DOORS) and the Requirements Management (RM) application, you must associate an RM project area with a DOORS module.

About this task

In the RM application, associations are made at the project level. In DOORS, associations are made to modules, but not to projects or module views. To create links to objects in multiple modules in DOORS, each module must be associated to the RM project. When you create a link from an RM artifact, all modules in the repository might be displayed in the selection list, even though some modules might not be associated. If you select an object in a module that is not associated with the RM project, the link is not created.

Procedure

1. Open a project in the RM application.
2. From the **Adminstration** menu, click **Manage This Project Area**.
3. In the Associations section, click **Add**.
4. In the **Add Association** window, from the **Application** list, select **DOORS Web Access**.
5. From the **Association** list, select a **Related Requirement** association, which supports the References link type.
6. In the Artifact Containers section, select a module in a DOORS project and click **OK**.
7. To verify the association:
   a) Open a requirement in the RM application.
   b) In the Links section of the sidebar, click **Create Link** icon.
   c) In the **Create Link** window, select the **References** link type.
   d) From the **Artifact Container** list, select **Services for Project Requirements Document** and click **Choose Existing**.
   e) Select a requirement that is in the DOORS project and click **Open**.

What to do next

You can now configure Requirements Management as a provider and DOORS as a consumer.

Configuring the Requirements Management application as a provider and DOORS as a consumer

To enable linking between IBM Engineering Requirements Management DOORS (DOORS) and the Requirements Management (RM) application, you must configure RM as a provider and DOORS as a consumer.

Before you begin

You must be able to log on to Jazz Team Server as a user with Administrator privileges.

Procedure

1. Log on to Jazz Team Server as an Administrator by navigating to `https://`*`host-name`*`:9443/jts/admin`.
2. Click **Manage Server**.
3. On the **Server** tab, click **Consumers (Inbound)**.
4. In the Register Consumer section, type a consumer name, such as D0ORS, and a consumer secret.
5. Click **Register**.

A new entry is created in the Authorized Keys section. Copy the consumer key that was generated for that entry.

6. To enable all users, members, and non-members to access and perform tasks in the project area that you registered, complete these steps:
   a) Log on to the RM server by navigating to `https://host-name:9443/rm/admin`.
   b) Click **Advanced Properties**.

      CAUTION: It is important to note that, if the `DisableLoginRequestForAssociatedProjects` property is enabled by setting the value to `True`, any links that exist in RM projects on another server, links to Quality Management projects, and the links that exist in the associated DOORS projects are not displayed in IBM Engineering Requirements Management DOORS Next (DOORS Next) links sidebar.

   c) On the Advanced Properties page, search for the property called `DisableLoginRequestForAssociatedProjects`, click the associated Current Value entry and change it to **True**. This property controls whether users must log in to projects that are associated with the current RM project. If you enable this property, users who do not have access to the associated projects are not prompted for credentials.
   d) Click **Save**.
7. Log on to DOORS as a database manager or a user with permissions to manage the database and open the database properties.
8. In the DOORS client, complete one of the following steps:
   - For DOORS version 9.5.1 and later, click **File** > **OSLC** > **Remote Services**.
   - For earlier versions of DOORS 9.5, right-click the database node in the left pane and click **Properties**. Click the **Remote Services** tab.
9. In the **Remote Services** window, next to the Server list, click **Add**.
10. Create an entry for the RM application:
    a) Enter a name, such as `RM`.
    b) In the **Location** field, enter the URI to the RM application root services.
    For example, enter `https://host-name:9443/rm/rootservices`.
    c) For DOORS 9.5 and 9.5.0.1, select OSLC version 2.0.

       For later versions of DOORS, the highest OSLC version is detected from the provider automatically.
    d) Enter the consumer key that you copied when you registered the new consumer in step “5” on page 17.
    e) Click **Register**.
11. In the **Remote Services** window, next to the **Collaboration Links** list, click **Add**.
12. In the **Add Service Link Type** window, from the **Server** list, select the RM application server. If you are prompted, log on to the RM server.
13. From the **Service Providers** list, select an RM project.
14. From the **Link Types** list, select an association that supports the References link type and then click **Add**.

What to do next

To verify the integration, open a module in DOORS and create a References link from the **Link** menu for an object to a requirement in an RM project.

Integrating the Requirements Management application and Rational ClearQuest

When IBM Rational ClearQuest is integrated with the Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM), you can associate requirements with defects, tasks, requests for enhancements, and other record types. The capabilities that are provided by the RM application in ELM are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

Before you begin

- Install the RM application and configure Jazz Team Server.
- Install the compatible version of the Rational ClearQuest web server component. You can install the Rational ClearQuest web server on the same computer as the RM application or on a remote computer. For more information, see "Deploying and installing Rational ClearQuest" in the Installing section of the Rational ClearQuest documentation.
- Configure the integration in Rational ClearQuest. For instructions, see Rational ClearQuest documentation. This configuration requires that you apply the OSLCLinks package to your Rational ClearQuest schema. Optionally, you can apply the RequirementsChangeRequest package to the schema.
- Obtain an Analyst Client Access License or a license with similar requirements management capabilities.
- Create or access a requirements management project to integrate with a Rational ClearQuest schema repository. You must have project administrator permissions in the requirements management project. If a requirements management project does not exist, see Creating requirements projects.
- Use public host names rather than aliases or proxies for the Rational ClearQuest web server and Jazz Team Server.
- Disable any software that blocks pop-up windows in your browser.

Procedure

1. Set up cross-server communication with Rational ClearQuest.
   a) In a web browser, go to `https://`*`fully qualified hostname`*`:9443/jts/admin`.
   b) On the **Server Administration** page, click the **Server** tab.
   c) In the Communication section, click **Friends (Outbound)**. The **Friends** page opens.
   d) Click **Add**. The **Add Friend** window opens.
   e) Type the name to use to identify the Rational ClearQuest web server.
   f) For the root services URI, type the concatenation of the public URI and the Rational ClearQuest discovery context information.
   For example, `https://`*`cq-hostname`*`/cqweb/oslc/repo/`*`schema-repository`*`/discovery`, where *cq-hostname* is the name of your Rational ClearQuest web server and *schema-repository* is the name of your Rational ClearQuest schema repository.
   g) For the OAuth secret, enter a code to associate with the new OAuth consumer key of the server.

      Note: Do not enter the key itself; enter a shorter phrase to associate with the actual key.
   h) In the **Re-type Secret** field, retype the OAuth Secret code phrase.
   i) Select **Trusted** to designate the Rational ClearQuest web server as a Trusted consumer. Trusted consumers can share authorization with other trusted consumers and do not require user approval to access data.
   j) Click **Create Friend**. If the connection to the root services URI was successful, a message confirms that the friend was added and that a provisional key was generated. Click **Next**.

k) Click the **Grant access for the provisional key** link.

l) Enter an administrator user ID. Click **Continue** and log in to the Rational ClearQuest web server.

m) Click **Yes** to approve the consumer key. Click **Finish**.

2. Complete the steps in "Configuring ClearQuest Web server for cross-server communication", which is in the Integrating section of the Rational ClearQuest documentation. If you already completed those steps, skip to the next step.
3. In the RM application, create a link between the Rational ClearQuest user database and the requirements management project area.

   a) In the RM application, from the **Administration** menu  click **Manage Project Areas**.

   b) Click the project area to configure.

   c) Scroll to the Associations section, and then click **Add**.

   The **Add Association** page opens.

   d) From the **Application** list, select your Rational ClearQuest web server and log in to the server when you are prompted.

   e) From the **Association** list, select an association type to use for the integration.
   For example, **Uses - Implementation Requests** or **Uses - Requirements Change Requests**.

   f) In the **Artifact Container** section, click the Rational ClearQuest databases.

   g) Click **OK** and then save the changes to the project area. If needed, add another association type.

What to do next

Team members in your project can now start creating links between requirement artifacts and Rational ClearQuest records.

Related information

Rational ClearQuest documentation

Integrating the Requirements Management application with IBM Rational Change

You can integrate IBM Rational Change with the Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM). You can link RM requirement artifacts with change requests in Rational Change.

Note: The capabilities of the RM application in ELM are provided by IBM Engineering Requirements Management DOORS Next (DOORS Next).

Configuring the integration

For information about configuring the integration, see these help topics in the Rational Change documentation:

- Using the OSLC-CM REST API
- Integrating with OSLC consumers
- Integrating with an OSLC provider

The Rational Change documentation uses the integration with IBM Engineering Test Management (ETM) as an example. Other OSLC integrations are configured in a similar way. If you need to supply the root services URI for the RM application, the typical format is `https://host-name:9443/rm/rootservices`.

Optionally, you can modify a Rational Change lifecycle so that the RM application can automatically create links from change requests (CRs) back to their related RM requirements. In Rational Change, add these string attributes to your lifecycle and show forms with the `OSLC_LINK` web type:

- `tracksRequirement`

- `affectsRequirement`

For more information, see a similar integration with ETM that is described in Integrating with OSLC consumers in the Rational Change documentation.

Linking requirement artifacts and change requests

After the integration is configured, your team can create links between ELM RM artifacts and CRs in Rational Change.

In Rational Change, change requests can be configured as various types, such as defect, task, or enhancement. You can add links in Rational Change CR show forms in the `relatedChangeRequests` attribute. Select the RM application from the **Friends** list and create a link to a requirement artifact. For more information, see Integrating with an OSLC provider.

In the RM application, use the **Implemented By** link type to link requirement artifacts to CRs in Rational Change. You cannot link requirement modules or collections to CRs, but you can link artifacts in a module or a collection. For information about similar lifecycle linking from the RM application, see “Linking to development, design, test, and requirement artifacts” on page 201.

Administering

This section describes how to administer servers and project areas in the Requirements Management (RM) application.

Administering IBM Engineering Lifecycle Management servers

After you install and start your IBM Engineering Lifecycle Management server and applications, you can perform administrative tasks such as managing users and configuring or troubleshooting the server.

For more information, see Administering servers.

Administering requirements projects or components

Administrators can create, configure, and manage requirements projects or components.For information about configuring a UNIX system for image generation, see the Jazz.net wiki.

Permissions for Requirements Management (RM) projects

Permissions to complete operations in the Requirements Management (RM) application are assigned to individual roles on the **Permissions** page of the project area. You can assign permissions at the project level, or for more granular control, at a team level. Then, use the project area process sharing feature to standardize and reuse across projects. After you assign permissions, you can view or change the permissions in the **Team Ownership Overview** window.

Note: To know more about setting permissions for projects in which configuration management is enabled, see Setting permissions for configurations in lifecycle management products.

You can assign create, modify, and delete permissions that are based on artifact types, artifact attributes, link types, and on locations such as a folder, artifact, or module. As shown in the following table, two classes of permissions exist: project configuration and team configuration.

Table 1. Permission classes in the Requirements Management application	
Permission class	**Description**
Project configuration	This class is for setting high-level project permissions. The permissions in this class enable these operations: • Setting project-level permissions • Modifying types • Creating templates • Creating baselines • Creating change sets
Team configuration	This class is for setting permissions on a more granular level. You can use this permission class to set location-based permissions. The permissions in this class enable these operations: **Artifact operations** Create, delete, or modify artifacts by type. Modify artifacts by attribute. **Folder operations** Create, delete, or modify folders. **Link operations** Create, delete, or modify links by type. **Team ownership operations** Modify team ownership. **Lock operations** Manually lock artifacts and override locks of other users. **View operations** Create, delete, or modify shared views.

Permissions on a project level

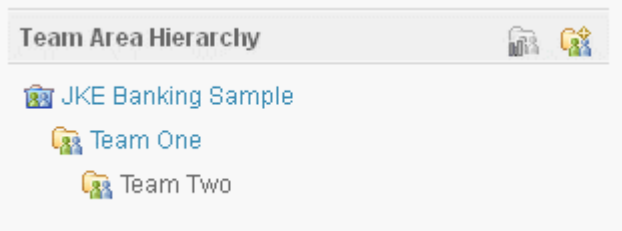
To set permissions on a project level, you define role actions at the project level. For a description of the project process roles for requirements management, see roles. For detailed instructions on how to set permissions, see modifying permissions.

Permissions on a team level for location-based granular control

To set permissions on a team level for more granular control, you must first create a team area. For a detailed example, see “Workflow for setting location-based permissions” on page 23.

When you create team areas, remember this information:

- Team areas are created as children of the project.
- Multiple team areas can be created in each project.
- Team areas are hierarchical. Users who are members of the parent project or team area are effectively members of the child team areas. If users need to have permissions set in multiple team areas, you can add them to a parent team area.



Tip: Because project-level permissions take precedence over team level permissions, in certain situations you might want to forgo adding users at the project level and add them to team areas only.

- Team areas are optional. If you do not need to set permissions on a granular level, you can set security at the project level.

Workflow for setting location-based permissions

General workflow to create location-based permissions by using a team area is as follows:

1. Create a team area.
2. Add users to the team area.
3. Assign process roles to the users in the team area.
4. Modify the process roles for the roles in that team area.
5. Assign team ownership based on location in the folder hierarchy or to specific artifacts or modules.

Permissions on a project level for process sharing

IBM Engineering Requirements Management DOORS Next (DOORS Next) supports process sharing between projects. You can share the following between projects:

- User roles
- Workflow
- Permissions

To enable process sharing:

1. Select the project for sharing the project's permissions, user roles, and workflow.
2. On the **Administration** menu, click **Manage This Project Area**.
3. On the **Overview** page, in **Process Sharing**, select **Allow other project areas to use the process configuration from this project area**.

See the tutorial on Creating a provider project area. You can use the process configuration of the modified project in new and updated projects. If you update existing projects, go to the **Workflow** page and the **Roles** page and clear the overrides.

For permissions specific to individual types, you can import types from projects by using the process configuration. To import project properties, on the **Administration** menu, click **Import Project Properties**.

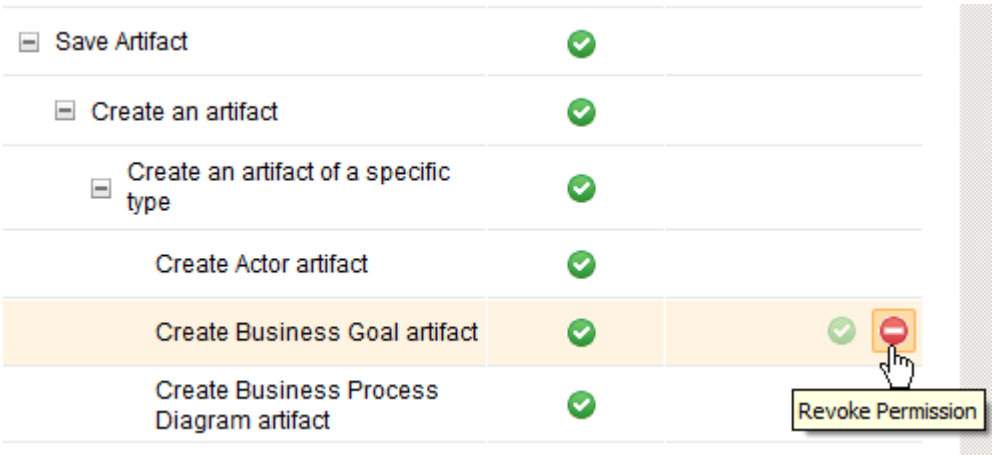
Example - Giving a group of users exclusive permission to create a specific artifact type

Suppose that you have a **Business Goals** folder in your requirements project, and you want to give a group of users exclusive permission to create Business Goal artifacts in that folder. To do so, complete the following steps:

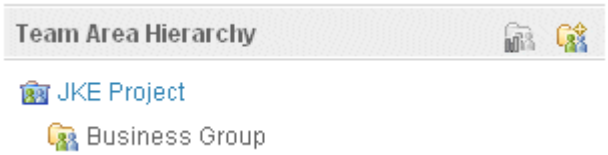
1. Remove the permission to create business goals for everyone in the Administrator role.
2. Enable that permission for a team area.
3. Assign team ownership of the team area to the folder.

The following procedure provides more details about this example. It also describes how to see an overview of the team ownership of folders and artifacts in a project in the **Team Ownership Overview** window.

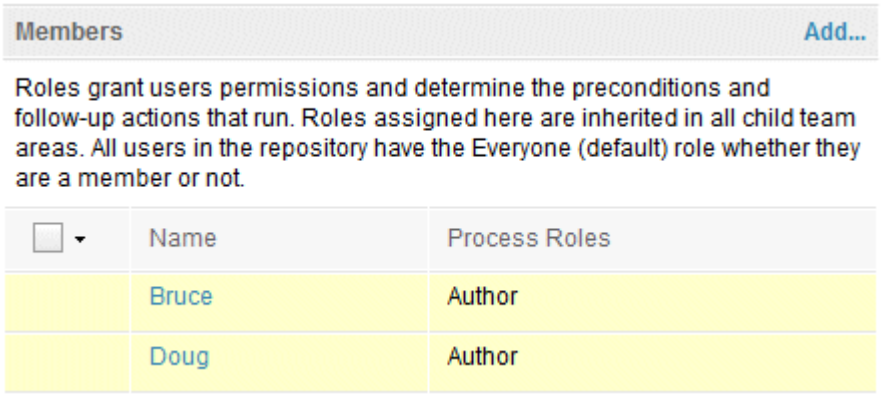
1. Log in to the **Administration** page of Jazz Team Server.
2. In the Manage Application Artifacts section, click **Manage Project Areas**.
3. Click an active project area.
4. Click **Permissions** and then click **Administrator** role.
5. Under Permissions For Administrator, expand **Save Artifact**. To Create Business Goal artifact, click the **Revoke Permissions** icon.



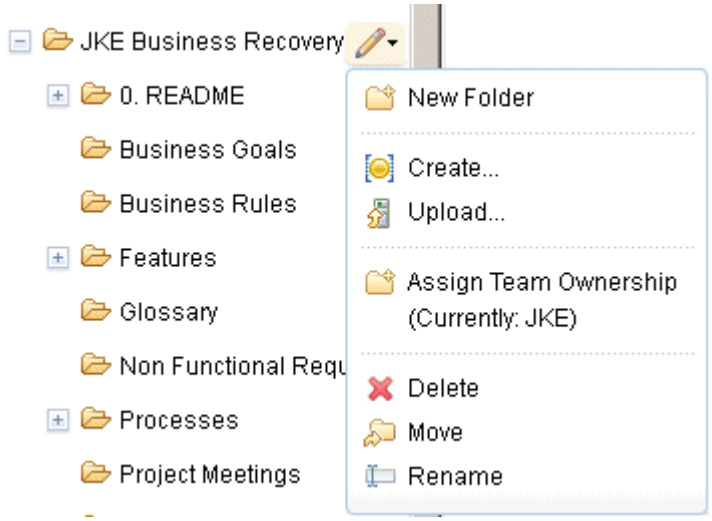
6. Click **Save**. The permission to create a business goal is removed from all Administrators. However, that permission is enabled by default for the Author role.
7. Click **Overview**.
8. In the Team Area Hierarchy section, click the **Create Team** icon and create a team area named Business Group.



9. Add members to the Business Group team area, and assign the Author process role to each member, and click **Save**.

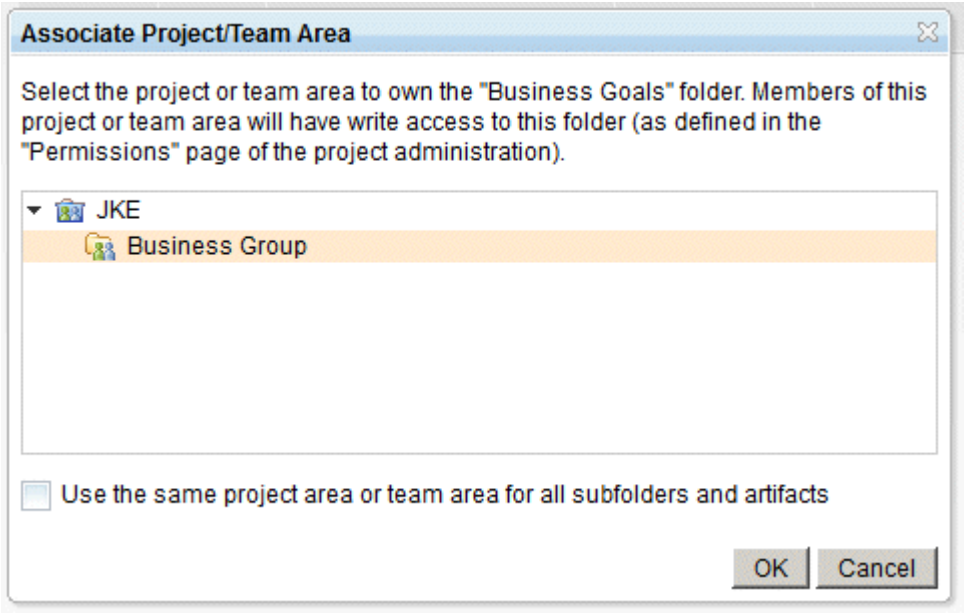


10. Assign team ownership of the Business Group team area to the **Business Goals** folder:
    a. Open the RM application, and click the menu of the Business Goals folder.
    b. Click **Assign Team Ownership**.



The **Associate Project/Team Area** window opens.

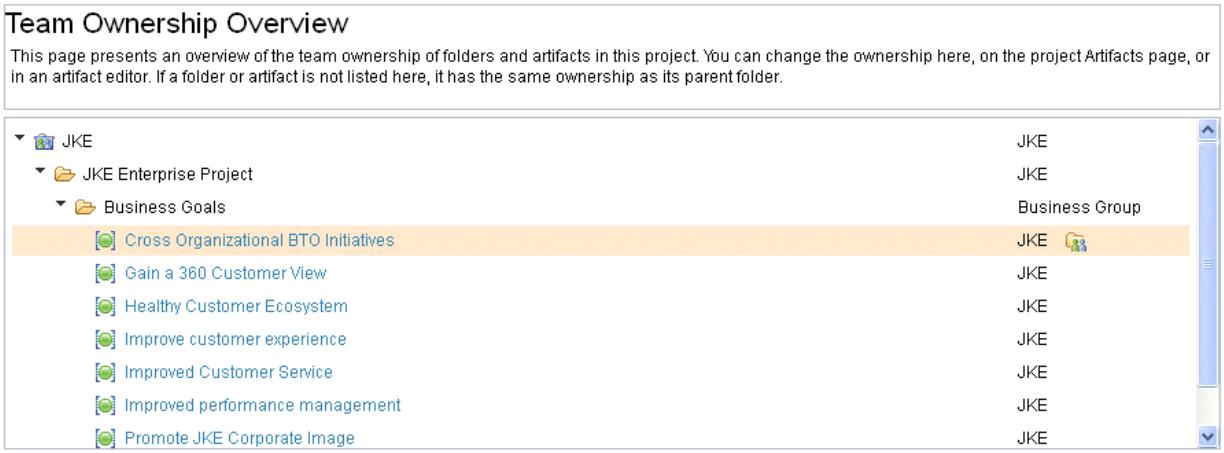
c. Select the Business Group team area, and then click **OK**.



Now only the members of the Business Group team area have permission to create Business Goal artifacts in the Business Goal folder. You can assign team ownership to modules and to artifacts in a similar manner.

Complete the following steps to see an overview of the team ownership of folders and artifacts in a project:

1. From the **Administration** menu  , click **Manage Project Properties**.
2. Click the **Team Ownership Overview** tab. The **Team Ownership Overview** window opens.



You can change the ownership in this window by clicking the **Set Ownership** icon .

If you enabled configuration management for your project, see Creating global configuration process templates.

Related tasks

Creating templates for requirements projects or components
You can create a project or component template, and select the elements to include in it. When configuration management is not enabled, you create templates for a project. When configuration management is enabled, you create templates for a component. You can include or exclude artifacts, artifact templates, artifact types and attributes, links between artifacts, link types, folder structure, tags, and shared saved filters. After you create templates, you cannot modify them.

Related information

Permissions

Administering global configuration project areas

Creating requirements projects

Jazz project administrators can create projects and modify project structure and team membership.

Before you begin

To create a project, you must log in to the repository as a user with JazzAdmins or JazzProjectAdmins repository permissions. You must also be assigned the IBM Engineering Requirements Management DOORS Next (DOORS Next) Analyst role and the associated client access license. If you want to enable configuration management, an RM administrator must enter a valid license key. See Activating configuration management.

Procedure

1. If you have not already done so, log in to a requirements project repository.
2. On the Administration menu , click **Manage Project Areas**.
3. On the **Active Project Areas** page, click **Create Project Area**.
4. In the **New Project** window, enter a project name and optional description.
5. Optional: To apply the process configuration from another project area to the new one, enable the **Use the process configuration from another project area for this project area** option, click **Change**, and choose a project area in the list.
6. Click **Save**.

   A new project is created and the **Application Administration** page opens.

7. Optional: To enable configuration management for the new project area, on the Application Administration page, in the navigation pane, click **Configuration Management** and click **Enable Configuration Management**.
8. Optional: To add content to a project area, you can use one of the following options depending upon whether configuration management is enabled for the project area:
   - Apply a project or component template
     a. Click **Explore Project**.
     b. Click either the Project name or Component name, **Explore Dashboard**, or **Show Modules**.
     c. In the **Project Setup** or **Component Setup** window, click **Apply a project template** or **Apply a component template**. The **Apply Template** dialog box appears.
     d. Select a template and click **Finish**. For a list of available templates, see "Requirements project templates" on page 48.
     e. To access this option later, click the **Administration** menu, and select **Apply Template**. However, the option disappears after types or requirements are created.

     Note: You must have a template that is already defined in the application. For more information, see "Creating templates for requirements projects or components" on page 46 and "Managing templates for requirements projects or components" on page 47.
   - Import project or component properties from an existing component
     a. Click **Explore Project**.
     b. Click either the Project name or Component name, **Explore Dashboard**, or **Show Modules**.
     c. In the Project or Component Setup window, click **Import Project properties** or **Import Component properties** from an existing project or component. Choose your source project or component.
     d. To access this option later, click the **Administration** menu and select **Manage Project Properties** or **Manage Component Properties** and then select **Import Project Properties** or **Import Component Properties**.

     Note:

     – You can access this option after requirements or types are created since it is able to merge the type systems from the source and target project area or component.
     – Use this option to copy the type system from an existing project area or component to your current project area or component. For more information, see "Importing properties from another Requirements Management (RM) project or component" on page 61.
   - Manually define artifact types
     a. To manually define artifact types, click **Explore Project**.
     b. Click either the Project name or Component Name, **Explore Dashboard**, or **Show Modules**. In the **Project Setup** or **Component Setup** window, select **Manually define artifact types**.
     c. To access this option later, click the **Administration** menu, select **Manage Project Properties** or **Manage Component Properties**. You can access this option anytime. For more information, see Managing project or component properties in requirements projects.
9. Click **Finish**.

Important: You cannot create project areas from the **Administration** menu on the **All Projects** page, or from an existing project area. To create project areas, use **Application Administration**. You can apply project templates using the **Administration** menu in existing project areas.

Note: You can also create content in a project area by using an import operation. To import content, click **Explore Project**. Click the Project Name or Component Name, **Explore Dashboard**, or **Show Modules**. If there are no types that are created, the system displays the Project Setup or Component Setup wizard. You must create the new project area. The Project Setup or Component Setup wizard is not available after creating the requirements or types.

Results

A new project is created. If configuration management is enabled, the new project contains a component and there is an initial stream for the component.

What to do next

You can add team members to the project and begin adding artifacts. You can also add folders and define artifact types and attributes. You can also use an import operation to create artifact types or attributes. For more information, see Importing and exporting files. You can use only the ReqIF import if there are no artifact types already created by using any one of the options that are listed in step 8. To return to the Artifacts page, click the project name on your Project Dashboard page or on the Home drop-down menu.

If configuration management is enabled, you can now use the component to represent a collection of versioned artifacts within the project area. For example, instead of working with all the artifacts from the project in one stream (for example, that represents a physical piece that is called a Handheld Meter Reader), you can use a component to represent a smaller collection of artifacts (for example, to represent a smaller physical piece such as a Sensor in the handheld meter reader).

To start working in the initial stream of the component, click the project name. Your configuration context is set to the initial stream of the component. To create and see links to artifacts in other applications (QM, RM, DM, and CCM applications), a Global Configuration Management configuration lead must add a configuration of the component and configurations from the other applications to the same global configuration.

Related concepts

"Permissions for Requirements Management (RM) projects" on page 21

Related tasks

"Creating templates for requirements projects or components" on page 46
You can create a project or component template, and select the elements to include in it. When configuration management is not enabled, you create templates for a project. When configuration management is enabled, you create templates for a component. You can include or exclude artifacts, artifact templates, artifact types and attributes, links between artifacts, link types, folder structure, tags, and shared saved filters. After you create templates, you cannot modify them.

"Creating artifacts" on page 91
In a requirements project, you can create rich-text and graphical artifacts.

Related reference

"Requirements project templates" on page 48

Related information

Components

Managing project or component properties in requirements projects

Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

Before you begin

You must be assigned to the administrator process role to do these tasks.

About this task

When customizing artifact types and their related elements, you might want to begin with the most basic elements of the artifact, which are artifact data types. You can use those customized data types to create custom artifact attributes. You can then add those customized attributes to custom artifact types.

To watch a video that shows how to create custom artifact types, click the Show Me link at the beginning of the topic.

Related concepts

"Requirement artifacts" on page 92

"Link constraints in the RM application" on page 42
Link constraints are rules that an administrator can set up to specify which kinds of links are allowed in a project or across projects. If no rules are created, all links are allowed. However, if you create rules, only the links in the rules are allowed.

"Requirement workflows" on page 195
A Requirements workflow is a state transition model in which you define the state that artifacts of a specified type can be in and the actions that users can select to move these artifacts from one state to another. You can find topics that are in a specific state by creating a filter.

Related tasks

"Creating link types for requirements projects" on page 36

"Importing properties from another Requirements Management (RM) project or component" on page 61
You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

Creating requirement artifact types

Artifact types classify requirements and related artifacts and provide a consistent set of attributes for each type. You can use the artifact types that come with the sample project templates, or you can create custom artifact types and assign predefined and custom attributes to them.

Before you begin

You must have administrator permission to create and modify artifact types.

Procedure

1. From the **Administration** menu  , click **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. Click the **Artifact Types** tab, and then click **New Type**.
3. Enter a name and description.
4. Optional: To change the default icon for the artifact type, click **Change**.

   If you select a different icon, all artifacts of this type are shown with that icon.
5. Select a default artifact format.
6. If you selected **Module** as the format, in the **Preferred Module Content** field, select multiple artifact types to use and specify how they are ordered.

   When other team members add artifacts to modules, the preferred artifact types are shown by default. You can change the order of the preferred artifact types or remove them. The order of preferred artifact types is used in several menus:

   - **Create** button
   - Artifact row menu
   - **Type** menu on the inline editor toolbar for modules

   Tip: If you plan to use headings in the module, include a type that is identified as a heading type.

7. Optional: Select **Preferred Link Types**. If you select preferred link types, you limit the link types that are available when you create a link.
8. Optional: To place a frequently used artifact type at the top of the list when you create an artifact by using the **Create** button, select **Make this artifact type a preferred artifact type** check box. Infrequently used artifact types are available under the **Other** option.
9. Optional: To enable the Lookup Term feature for text-based artifact types, select **Use artifacts of this type as glossary terms** check box . You can use the Lookup Term feature to search for term artifacts from within text-based artifacts.
10. Optional: If you want artifacts of this type to be shown as headings when you add them to a module, select **In modules, display artifacts of this type as headings by default** check box.
11. Optional: If this artifact type is a supporting document that you frequently upload, select the **Make this artifact type a preferred upload option** check box. When you upload an artifact, the supporting document is the default artifact type.
12. Optional: To select a workflow for an artifact type, click **Workflow** and select a workflow from the list. You can select the default workflow or also create a custom workflow.

    Note: If you create an artifact and the artifact type is associated with a workflow, the newly created artifact is populated with the initial workflow state.
13. Optional: In the **URI** field, specify a unique URI to identify the artifact type across RM projects.

    You must use a unique URI for each artifact type within a project. If another project has an equivalent artifact type, you can use the URI of the equivalent artifact type to ensure consistency across projects. In a project that is enabled for configuration management, you can use the same URI for equivalent artifact types that are in different components.

    For example, Project_A has an artifact type named "Functional Requirement". When you create Project_B, you define an attribute that is named "Requirement - Functional". Your organization considers these attributes equivalent even though their names and enumeration values differ. Assign the same URI to both artifact types to ensure consistent meaning across projects.

    Note: URIs and Type names are also important for cross-team reporting on artifact types. If the Type name or URI changes in reporting, the results depend on which content is accessed from Lifecycle Query Engine (LQE). For more information, see Scenarios for maintaining Rational DOORS Next Generation type systems for baselines and editable configurations.
14. To add an attribute to the artifact type, click **Add Attribute**.
15. Click **Save**.

Related concepts

“Requirement artifacts” on page 92

“Requirement workflows” on page 195

A Requirements workflow is a state transition model in which you define the state that artifacts of a specified type can be in and the actions that users can select to move these artifacts from one state to another. You can find topics that are in a specific state by creating a filter.

Related tasks

“Managing project or component properties in requirements projects” on page 28

Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

“Importing properties from another Requirements Management (RM) project or component” on page 61

You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

“Creating a glossary and terms” on page 178

A glossary is a group of terms that you have defined to build consistent, common terminology for your project.

Related information

Repository and role-based permissions

Creating attributes for requirement artifacts

When you create requirements in a project, you can create custom artifact attributes to use in custom artifact types. Custom attributes are based on predefined and custom artifact data types, which define the properties of the attribute, such as textual entries, integers, date, time, or team member names.

Before you begin

You must have administrator permissions to create and modify artifact attributes, and you must be in a Requirements Management (RM) application project.

Procedure

1. From the **Administration** menu  , click **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. Click the **Artifact Attributes** tab, and then click **New Attribute**.
3. Enter a name and description.
4. Select a data type.

   You can also create a new data type. For more information, see “Creating requirement attribute data types” on page 32.
5. If you want users to be able to select multiple values from the list of attribute values, select **Multiple values allowed**.
6. Optional: Enter an initial value that is shown when you create a requirement artifact that contains an attribute of this type.
7. Optional: In the **URI** field, specify a unique URI to identify the artifact attribute across RM projects, with the syntax `http://hostname/domain/myLabel`.

   Restriction: When you specify a URI, ensure that it follows these conventions:

   - Complies with the RFC 3986 specification (with support for Unicode characters in the path, query, and fragment only, as specified by RFC 3987).
   - Specifies an absolute URI.

   Note: If you use Lifecycle Query Engine as your data source, specify a URI to ensure consistency for reporting across projects.

   In a project, use a unique URI for each artifact attribute. If another project has an equivalent attribute, use the equivalent attribute's URI to enable a shared vocabulary for reporting. Also, define URIs for each of the enumerated values, and use the same URIs to denote equivalent values. In a project that is enabled for configuration management, you can use the same URI for equivalent attributes that are in different components.

   If the Requirements Management (RM) projects define a "Priority" property, use the same URI for it in each project, such as `http://my.org/ns/rm/Priority`. If another project defines an "Importance" property that is the same as "Priority", use the same URI for both properties.
8. Click **Save**.

Creating requirement attribute data types

You can create custom attribute data types that can be used in custom attributes. Attribute data types define the properties of the attribute values. They provide structure and consistency to custom attributes by offering the administrator a limited set of data types that have a predefined behavior and constraints.

Before you begin

You must have administrator permissions to create and modify attribute data types.

About this task

Custom attribute data types are available for use in all custom and non-custom attributes in the project. New custom attribute data types must be based on one of three kinds:

- Simple
- Enumerated list of values
- Bounded range of values

Simple data types use one of the following base data types:

integer
An integer.

float
A number that can contain decimal digits.

boolean
A check box (marked or cleared).

date
A calendar entry.

time
A 24-hour time selection or an entry in this format: hours:minutes:seconds.

dateTime
Calendar and time entries.

string
Alphanumeric text.

duration
A time duration entry (integers) in hours, days, or weeks.

user
Search the repository team members and select one.

An enumerated list of values is a numbered list of values with textual labels. You can add and remove numbered entries and arrange entries in any order.

Tip: If a data type uses an enumerated list of values, note the order of the values in the table. That order is the same order that the values will be in when you assign the attribute value to any artifact; for example, in the artifact sidebar. The number that is assigned in the value field is the number that is used when artifacts are sorted by that attribute. When you order artifacts by an attribute (ascending), the enumerations with the lowest value will be first.

For a bounded range of values, you must specify a minimum and maximum for a range of any of the following base data types:

integer
An integer.

float
A number that can contain decimal digits.

date
A calendar entry.

dateTime
Calendar and time entries.

Procedure

To create a custom attribute data type:

1. Click the **Administration** menu  , and then click **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

   An administrative page opens that has tabs for artifact types, attributes, data types, link types, and templates.
2. Click the **Attribute Data Types** tab.
3. Click **New Data Type**.
4. Enter a name and description for the data type.
5. Select a kind of value and a base data type, where applicable.
6. If you plan to work with an enumerated list or a bounded range of values, create entries as needed.
7. Optional: In the **URI** field, specify a unique URI to identify the attribute data type across RM projects.

   Within a project, you must use a unique URI for each attribute data type. If another project has an equivalent data type, you should use the equivalent type's URI to ensure consistency across projects and enable a shared vocabulary for reporting. In a project that is enabled for configuration management, you can use the same URI for equivalent attribute data types that are in different components.

   For example, Project_A has an attribute named "Glossary_visibility", which has an enumerated list of values: Enterprise, Organization, or Project, each corresponding to an integer. When you create Project_B, you define an attribute named "Definition_scope". Possible values are Corporation, Division, and Team. Your organization considers these data types equivalent even though their names and enumeration values differ. Assign the same URI to both data types to ensure consistent meaning across projects and so that you can report on equivalent data types across projects.
8. Click **Save**.

Module options

A module is a structured document that is composed of multiple artifacts. These artifacts or content of the modules are stored by default in a folder which is created in the same directory as the module. In the Modules Options tab, an administrator can change this default to specify another folder to store the multiple artifacts of a module. You can use drag-and-drop to move one or more folders and re-organize them. If your project area has not been enabled for configuration management, an administrator can schedule a refresh of the module view to ensure that the latest module content is loaded from the data warehouse.

Before you begin

If you have configuration management enabled for your project, you must have JazzAdmin or JazzProjectAdmin permission to create and modify modules.

If you have configuration management enabled for your project, you must have JazzAdmin or JazzProjectAdmin or have the **`Create Component`** permission to create and modify module content folder behavior.

Procedure

1. From the **Administration** menu  , click **Manage Project Properties**.

Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

2. Click the **Modules Options** tab.
3. In the **Module Content folder** set the default location to where the artifacts of a module are stored. Select any one of the options:
   - **Same folder as the module**, to save the artifacts in the same folder as the module.
   - **Specified folder**, to save the artifacts in a different folder. When a folder is selected as the common content folder, it is displayed with a different icon  in the folder hierarchy.

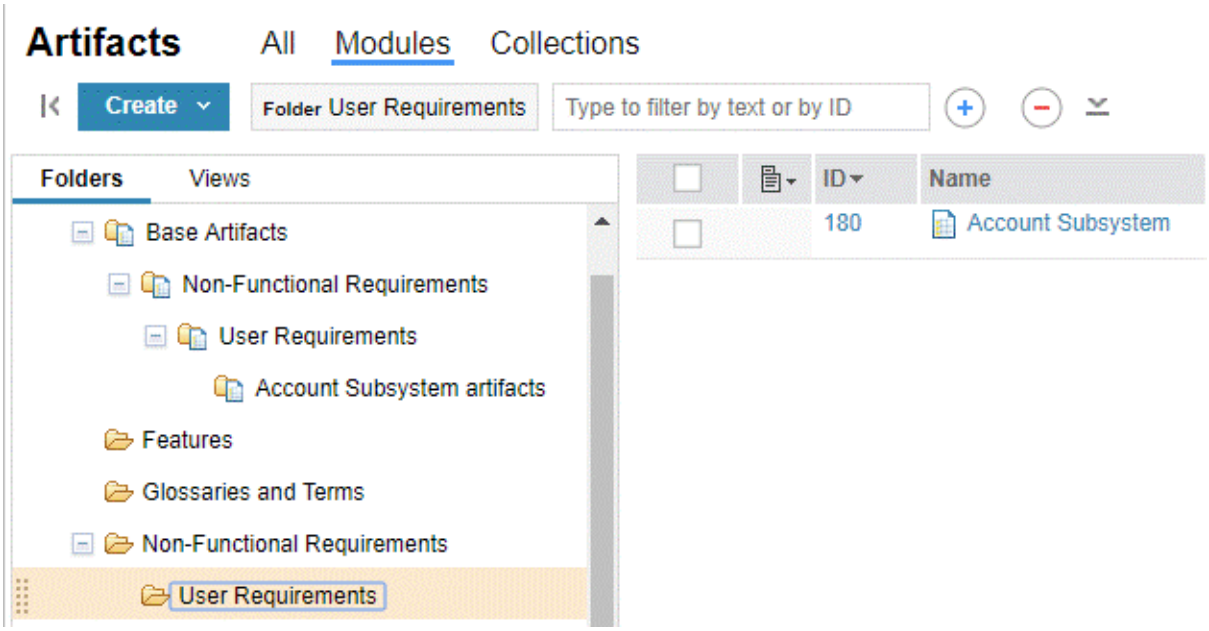
     Note: If the Folder Structure option is selected for templates (see Creating templates for requirements projects or components) and the **Specified folder** option is used, the module template is saved in the **Specified folder** .
4. Click **Save**.

   Note:

   - The **Module Content folder** setting will only affect new modules. The location of the content folders for existing modules will not be changed when the setting is changed.
   - To include the **Module Content folder** setting when creating templates (see Creating templates for requirements projects or components), make sure to include the project or component Folder Structure in the template.
   - When you **Import Project or Component Properties**, the **Module Content folder** setting does not get imported.

   Considerations when selecting **Specified folder** for module content:

   - When a **Specified folder** is selected for module content, the content for all modules will be saved under the common folder. In order to provide organization to the common folder, when a module is created, its folder hierarchy will be duplicated under the common folder.



   In this example, a common module content folder named *Base Artifacts* is used for module content artifacts. A module *Account Subsystem* is created under *User Requirements* within the *Non-Functional Requirements* folder. Within the common module content folder, the module's folder hierarchy is duplicated and the module's content folder *Account Subsystem artifacts* is created.

   Note:

  - The *Base Artifacts* folder is not available on the **Modules** or **Collections** tab. You can access the folder on the **All** tab.
  - The folder hierarchy will only be duplicated when the module is created. If a module is moved to another folder or if a folder containing modules is moved, the common folder hierarchy will not be updated.
  - When folders are duplicated under the common module folder, the folders are assigned the same team area as the original folders.
- When a **Specified folder** is selected for module content, the folder cannot be deleted. If you want to delete the folder, either select another folder as the common content folder or select the **Same folder as the module** option.
- When a **Specified folder** is selected for module content, any user that has permission to create modules will automatically have permission to create folders under the common content folder when a module is created.

Refresh Module Views

Before you begin

To schedule module view refreshing, you must have the **Manage View Schedule** permission.

About this task

If your project area has not been enabled for configuration management, you can schedule to **Refresh Module Views**. Module views are loaded as collections into the data warehouse during the ETL process. A view can become outdated if someone updates its contents without editing the view itself. In **Refresh Module Views** schedule when the system checks for updates each day.

Procedure

1. From the **Administration** menu  , click **Manage Project Properties**.
2. Click the **Modules Options** tab.
3. Use **Add Module View** to list the module views that need to be checked and ensure that they contain the latest content. When you add a view to the list, it is shown only if it is unique to the module and is shared.

   See Filters and views in modules.

Related tasks

Creating modules

You can create modules and module content directly in a project or by importing a Microsoft Word document, ReqIF file, or rich-text document.

Mapping Contexts

You can use the mapping contexts feature for exchanging requirements between IBM Engineering Requirements Management DOORS Next (DOORS Next) and IBM Engineering Requirements Management DOORS (DOORS).

About this task

You can use the mapping contexts feature to automatically map identical type elements from DOORS into a single instance of each identical type. This feature helps in removing or reducing type duplication when you import requirements in DOORS Next. You can create mapping contexts and use the contexts while importing or exporting ReqIF files.

Procedure

1. From the **Administration** menu  , click **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. Click the **Mapping Contexts** tab.
3. Click **New Context**.
4. Specify a name for the mapping contexts.
5. Optional: Provide additional information as description.
6. Click **Save**.

   You can view the mapping contexts in the **Mapping Contexts** list. You can apply the mapping context to an imported package. For more information, see "Importing artifacts from ReqIF files to a requirements project or component" on page 168.

   You can also use the mapping context to a subsequent export of the same package. For more information, see "Exporting artifacts from a requirements project or component into ReqIF files" on page 173.

Related tasks

"Importing and exporting ReqIF files" on page 167
Requirements Interchange Format (ReqIF) files are XML files that you can use to exchange requirements and associated metadata between requirements tools or requirements repositories. For example, you can exchange data between IBM Engineering Requirements Management DOORS (DOORS) and IBM Engineering Requirements Management DOORS Next (DOORS Next). When the exchange is finished, a report is generated that shows the data that was imported or exported. Using ReqIF to migrate multiple components or a single component with multiple streams from one environment to another is not supported. The supported method to migrate a repository to a new environment is Server Rename. If you want to migrate a partial Requirements Management repository to another environment, you need to consider engaging IBM Expert Labs, or an IBM Business Partner to explore options that comprise of custom utilities in addition to ReqIF.

Creating link types for requirements projects

You can create link types to customize the linking relationships between artifacts. Links can show relationship properties such as artifact origin, derivation, dependency, hierarchy, and associations between requirements, development, and test artifacts.

Link relationships are directional, and labels typically differ at either end of the link; for example, requirement A *links to* requirement B; and requirement B is *linked from* requirement A. The direction of each link is also indicated by an icon. For more information, see "Link direction" on page 41.

You can use custom link types and system-defined link types to link artifacts in the same project, across different projects, or across different servers.

Before you begin

You must have administrator permissions to create and modify link types.

About this task

Depending on the project template that was used to create your project, the project might have an extensive list of predefined link types, such as the following types:

- Link - Link To/Link From
- Decomposition - Parent Of/Child Of
- ELM development - Implemented By/Implements
- ELM test - Validated By/Validates

Predefined link types in templates can include both system-defined and custom link types. You can use the predefined link types as examples for creating custom link types.

Procedure

1. On the Administration menu  , click **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. Click **Link Types**.

   All link types in the project are listed. System-defined link types are designated in the **Description** field.
3. Click **Add**.
4. In the **New Link Type** window, enter a name, and optionally description. Create a name that describes the relationship in a general way and includes the logic from both directions.
5. Enter a unique URI value, for example, `https://hostname.com/domain/myLabel`. This value is needed for cross-project linking. For cross-project links, both the projects or components must define the same link types, with the same external RDF URIs. If you are using link constraints, you must define equivalent URI for the requirement types.

   Restriction: When you specify a URI, ensure that it follows these conventions:

   - Complies with the RFC 3986 specification (with support for Unicode characters in the path, query, and fragment only, as specified by RFC 3987).
   - Specifies an absolute URI.
6. To add directional labels, select the **Provide directional labels for the relationship** check box.
7. Enter labels in the **Outgoing** and **Incoming** fields.
8. Click **Save**.

Related concepts

Linking artifacts in different projects or components
A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

Related tasks

"Importing properties from another Requirements Management (RM) project or component" on page 61
You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

"Linking between artifacts in modules" on page 136
You can link artifacts that are in the same module or artifacts that are in different modules.

Link types in requirements projects

Requirements projects include several predefined link types for traceability.
Administrators can view the link types for a project and create link types on the **Link Types** page, which they can access by clicking the **Administration** menu and then clicking **Manage Project Properties** > **Link Types**. If you have configuration management that is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

Note: For traceability to work in cross-project links, link types in both the projects or components must specify the same external RDF URIs. See Creating link types to learn how to assign an URI to a link type.

The following table provides descriptions of most of the traceability link types in the Requirements Management (RM) application.

Table 2. Requirements management link types

Incoming link type	**Outgoing link type**	**Description**
Constrained By	Constrains	Captures the relationship between requirement artifacts when one artifact limits or holds back the other artifact. For example, an artifact can be constrained by a requirement that it must conform to.
Embedded In	Embeds	Tracks a containment relationship between RM artifacts. These types of relationships occur when you complete operations such as inserting an artifact and inserting an image for a text artifact.
Extracted From	Extracted	Extraction captures when the content of a requirement artifact was created from the contents of another requirement artifact. This type of link is created during extraction-based operations; for example, when you create an artifact by saving an existing artifact as a new artifact.
Illustrated By	Illustrates	Illustrates the relationships between graphical and text artifacts.
Link From	Link To	Tracks a general relationship between requirement artifacts.
Mitigates	Mitigates	Captures the relationship between requirements and risks. A requirement mitigates one or more risks, and a risk is mitigated by one or more requirements.
Parent Of	Child Of	Decomposition captures part-whole relationships between requirement artifacts. Typically, these types of links represent artifact hierarchies.
Satisfied By	Satisfies	Captures how the different levels of requirements are elaborated. For example: an approved vision statement in a vision document can be satisfied by one or more stakeholder requirements.
Synonym	Synonym	Relates requirement term artifacts that are synonymous. This link type is bidirectional. The link is shown as *Synonym* from either endpoint.
Term Referenced From	References Term	Artifact Term Reference captures glossary-based relationships between requirement artifacts. This type of link is created during term-based operations for text artifacts, such as when you create a term.

Link types in RM also include links to other IBM Engineering Lifecycle Management (ELM) applications. This link type is available only through an OSLC integration. For more information about OSLC link type definitions, see The OSLC Requirements Management (RM) Vocabulary and RM Resource Definitions. Incoming links are when the link is created in the RM application and Outgoing links are when the link is created outside of the RM application.

Important: To make sure that all the link types that are described in the following table are available in a project:

- Establish project association definitions. See Adding associations.
- Integrate RM with the other application.

In addition, Outgoing link types are shown only if the link is created by the other application. Such as an *Affects* link is visible only if the link is created in the change management application.

Table 3. Requirements management link types across ELM applications

Incoming link type	Outgoing link type	Description
Change and Configuration Management (CCM) application		
Affected By	Affects	Captures the relationship between a requirement artifact and a change management work item that affects the implementation of the requirement artifact. For example, a defect in the Change and Configuration Management (CCM) application can affect the implementation of a requirement artifact. **Note:** The *Affected By* link type is not available for modules and collections.
Implemented By	Implements	Captures the relationship between a requirement artifact and a change management work item that describes the implementation of the requirement artifact. For example, a story in the CCM application can describe the implementation of a requirement artifact. In the CCM application, links of this type are shown as *Implements* links. **Note:** For modules and collections the *Implemented By* link type is only available to plan items in the CCM application.
Tracked By	Tracks	Captures the relationship between a requirement artifact and a change management item that tracks the implementation of the requirement artifact. For example, a plan item in the CCM application can track the implementation of a requirement artifact. In the CCM application, links of this type are shown as Tracks links. **Note:** The *Tracked By* link type is not available for modules and collections.
Architecture Management (AM) application Note: As of version 7.0.0, DM is no longer part of the ELM solution.		
Derives Architecture From Element	Derives Architecture Element	Captures the relationship between a requirement artifact and a model element. For example, a UML use case in an architecture management application can represent a requirement artifact. The requirement artifact derives from the UML use case.

Table 3. Requirements management link types across ELM applications (continued)		
Incoming link type	**Outgoing link type**	**Description**
Refined By Architecture Element	Refines Architecture Element	Captures the relationship between a requirement artifact and a design element. Design resources can be linked to requirements management artifacts by using the Refined By Architecture Element link type. These link types are visible in RM as the Refines Architecture Element link type.
Satisfied By Architecture Element	Satisfies Architecture Element	Captures the relationship between a requirement artifact and an architecture management item that represents a model of the requirement artifact.
Traced By Architecture Element	Trace Architecture Element	Traces the relationship between a requirement artifact and an architecture management item that traces the model element to the requirement artifact.
Links in another RM instance or another RM project area		
Referenced By	References	Tracks a relationship between requirement artifacts. These types of relationships occur when requirement artifacts reference requirement artifacts in another RM instance or another project area.
Quality Management (QM) application		
Validated By	Validates	Captures the relationship between a requirement artifact and a test artifact that validates the implementation of the requirement artifact. For example, a test plan in the Quality Management (QM) application can validate the implementation of a requirement artifact. In the QM application, links of this type are displayed as *Validates* links. *Validated By* links point from the RM application to IBM Engineering Test Management (ETM).

Related concepts

“Links between artifacts” on page 203

A link represents a relationship between artifacts. Links are mechanisms for referring to related information. You create some links manually. Other links are created automatically when you complete certain tasks. There are different properties for trace links, content links, links to base artifacts, and links in modules.

Link constraints

Link constraints are rules that an administrator can set up to specify which kinds of links are allowed in a project or across projects. If no rules are created, all links are allowed. However, if you create rules, only the links in the rules are allowed.

Related tasks

“Creating link types for requirements projects” on page 36

Related reference

“Links across OSLC domains ” on page 85

The Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM) integrates with other application domains by using standard link types as implementations of the OSLC specifications.

Related information

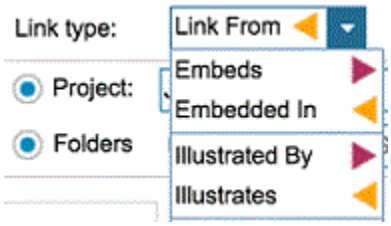
Open Services for Lifecycle Collaboration
Linking between artifacts in the Eclipse client
Linking between artifacts in the web client
Linking to requirements and development artifacts in QM

Link direction

Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role.

You can set labels that explain the directional relationship of the link, for example *Illustrates* and *Illustrated By*. To set labels for the Incoming and Outgoing roles for link types, see Creating link types for requirements project.

When link types are displayed in the user interface, icons indicate the direction of the link type role.



Note: For OSLC link types, direction icons are only shown for IBM Engineering Workflow Management (EWM), IBM Engineering Test Management (ETM), and References links.

You can also filter or group artifacts according to the direction of the link type role in the **Links Sidebar**. From the filtering drop-down menu select **Link Type** and select **Show all**, **Show Outgoing**, or **Show Incoming** to filter artifacts by the direction of its associated links. From the grouping drop-down menu, select **Group by Link Type** to group artifacts that have Incoming and Outgoing links.

For more details on cross-project or cross-component links for artifacts, see Linking artifacts in different projects or components.

Utilities to change links and repair incorrectly stored links

- Link swapper tool: Changes the direction of an existing custom link type into a new link type that you specify.
- Link storage tool: Ensures that cross-component links are stored in the component with the outgoing endpoint of the link.

You can download these utilities from DOORS Next wiki.

Related concepts

"Links between artifacts" on page 203
A link represents a relationship between artifacts. Links are mechanisms for referring to related information. You create some links manually. Other links are created automatically when you complete certain tasks. There are different properties for trace links, content links, links to base artifacts, and links in modules.

"Linking artifacts in different projects or components" on page 206
A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

“Configuration management in the RM application” on page 6

Related tasks

“Linking between artifacts in modules” on page 136
You can link artifacts that are in the same module or artifacts that are in different modules.

“Reusing artifacts in modules” on page 146
Artifacts can be reused in multiple contexts in a project, including collections and modules. You can edit artifact content in a module or by opening the artifact outside the module. Content changes are reflected in all contexts. Links, tags, and comments are specific to the context in which they are created. If you want links, tags, and comments to reflect in all contexts, edit the artifact outside the module as a base artifact.

Link constraints in the RM application

Link constraints are rules that an administrator can set up to specify which kinds of links are allowed in a project or across projects. If no rules are created, all links are allowed. However, if you create rules, only the links in the rules are allowed.

Administrators can create link rules on the **Link Constraints** tab in the project properties. These rules govern the creation of links in Requirements Management (RM) projects and across RM projects on the same server.

Note:

- Link constraints cannot span applications.
- Link constraints are supported only for RM Link types such as Link To and RM user-defined link types. Link types that are OSLC-based such as Referenced By or Validated By or that are used for linking to other applications are not supported.

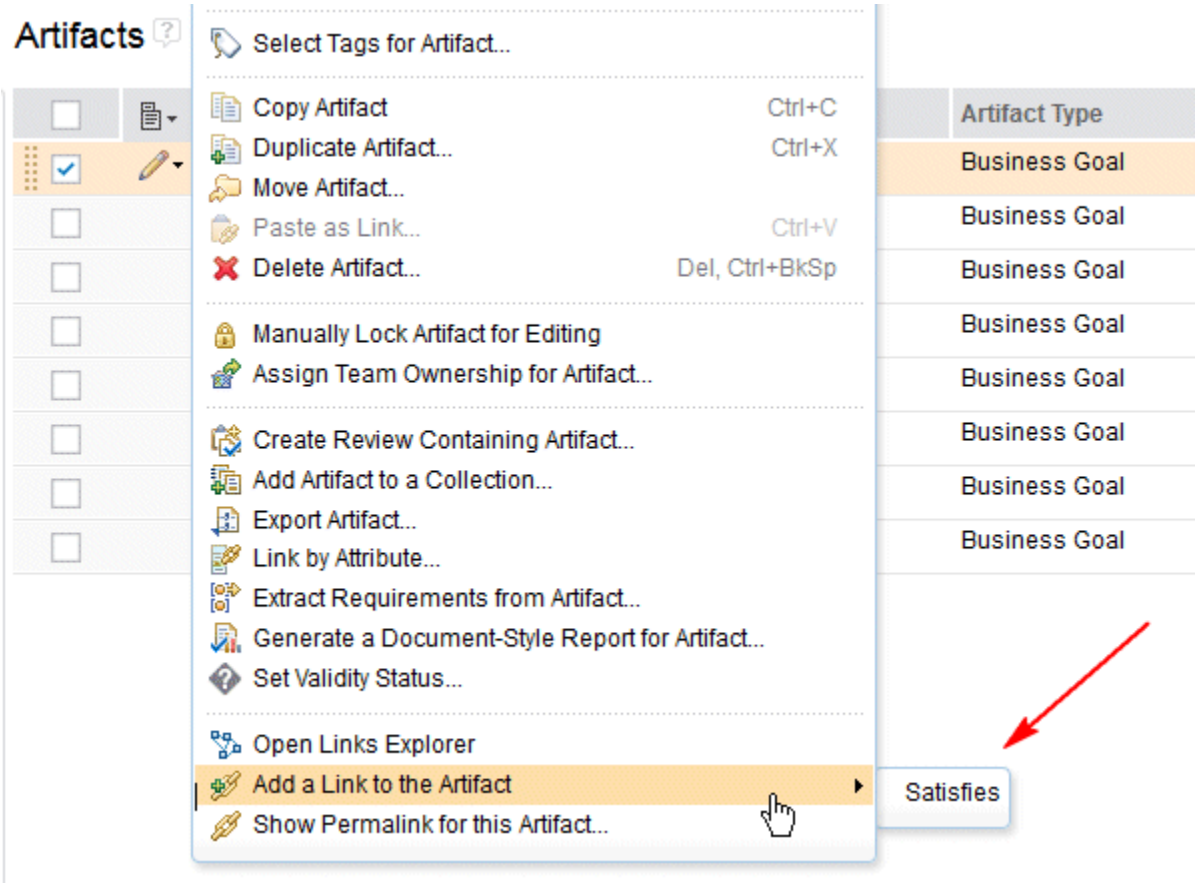
Link creation with link constraints

After you create link rules, the options for creating links from context menus and in the **Create Link** window are affected by those rules.

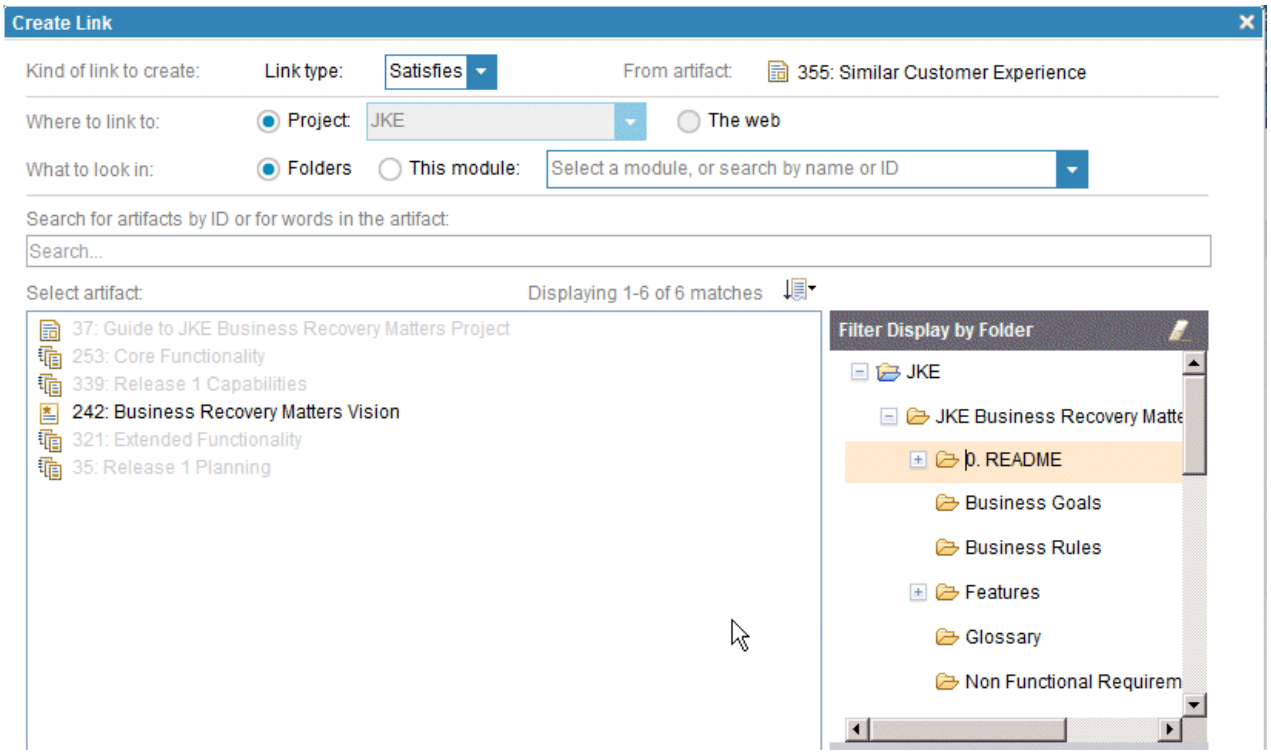
In the following example, a single rule specifies that a Business Goal artifact has a Satisfies link to a Vision artifact:

Because this is the only rule in the project, no other links are allowed. If you are creating a link from a Vision artifact or Business Goal artifact, only the Satisfies and Satisfied By link types are available. No other link types are available from any other artifacts.

For example, if you create a link from a Business Goal artifact, only the **Satisfies** link type appears as a menu option:



In addition, in the **Create Link** window, you can select only those artifact types that are allowed based on the initial artifact type and the selected link type, as shown in the following image:



In the **Create Link** window, you can also select certain components and artifact types based on defined link constraints, including the artifact types that contain a cross-component artifact type.

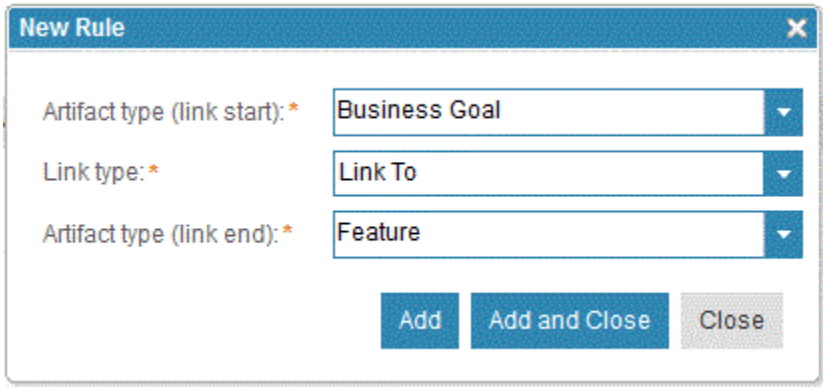
Tip: Link rules constrain only new links that are created. Links that existed before you created or changed the rules are not affected by the new rules. However, you can search for and manually modify links that don't adhere to any new or changed constraints; for example, if the link type is no longer allowed, but the artifact types do satisfy the constraints, then you can change the link type. However, if the artifact type is not allowed, then you can only delete the link type.

Cross-project linking

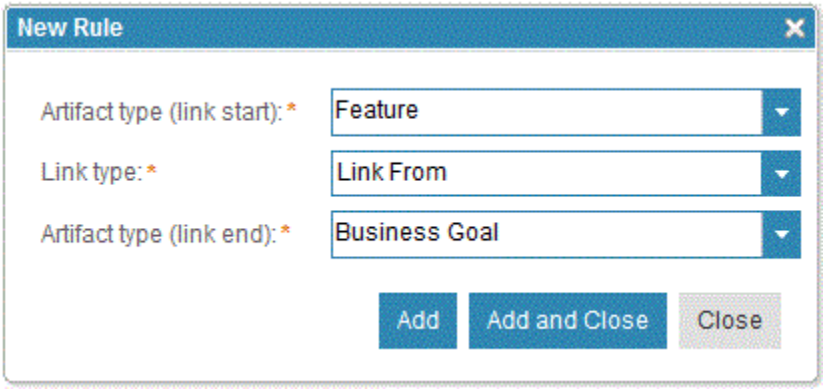
To enable linking between artifacts in different projects, you must define a rule that allows linking for the particular link type in both projects, and the rules must match. When you create cross-project links, rather than using ANY as the link end, you can select a specific artifact type in target project.

For example, for the "Link (Link To/Link From)" link type, if you want Business Goal artifacts in Project 1 to link to Feature artifacts in Project 2 (which also implies that Feature artifacts in Project 2 can link from Business Goals in Project 1), you must define the rules as follows:

Project 1:



Project 2:



These rules match because both directions of the link type are allowed in each project.

Note: If a project does not have any constraints, it is compatible with all rules. For example, suppose Project 1 has a rule that a Feature artifact can link to any artifact type. If Project 2 does not have any constraints that are defined, the Feature artifact in Project 1 can link to any artifact in Project 2. However, if Project 2 has constraints that are defined, an explicit matching rule must exist in Project 2.

When you create link constraints, you can also select a cross-project or cross-component type as a link end. The cross-project or cross-component name is displayed after the artifact type name. For example, you can create a constraint such as Business Goal (Project A) Link To Vision (Project B), where Business Goal is the source artifact type, (Project A) is the source cross project type, Link To is the link type, Vision is the target artifact type, and (Project B) is the target cross project type.

Note: If you add a link constraint for a remote project, and that project is enabled for configuration management, you must be working in a global configuration.

Cross-component linking

To enable linking between components, you must define a rule that allows linking for the particular link type in both components. When you create cross-component links, you can select a cross-component type as a link end. The cross-component name is displayed after the type name in cross-component types.

Note: If you want to enforce link constraints for remote components, you must be working in a global configuration that supports cross-component linking.

Cross-project or cross-component linking is automatically enabled for system-defined link types. However, if link constraints are set the cross-project and cross-component linking is governed by the link constraint rules.

Cross-project linking and Cross-component linking for a custom link type

For cross-project or cross-component linking for a custom link type, you define a URI for the link type. For example, `https://hostname.com/domain/myLabel`. If you use link constraints, you must define equivalent URIs for the requirement types. If the URI of an artifact included in a link constraint is edited, the link constraint is not updated with the new URI. Since the link constraint is not updated the custom link type will no longer have the link constraint that is applied to. It is invalid since no type matches previous RDF URI and therefore it will not be displayed under link constraints section.

Flexibility for link rules

You can make link rules more flexible by using **ANY** as the target artifact type. For example, if you create a "Link" link type for a Business Process Diagram artifact, and you specify **ANY** as the target artifact type, you can create links from a Business Process Diagram artifact to any artifact type in the current project.

Link Rules

Source Artifact Type ▲	Link Type	Target Artifact Type
Business Process Diagram	Link (Link To, Link From)	ANY

In addition, you can specify **ANY** in a link rule to enable links to web resources or to artifacts in another RM project.

Automatic generation of link constraints

As a project administrator, you can automatically generate link constraint rules based on the existing link relationships by clicking **Generate Rules**. The link constraint rules that are required to satisfy existing link relationships are identified and appended to the list. If your project includes cross-project links, the cross-project rules are also automatically created for the specify project. To create the corresponding rule, you must click **Generate Rules** in the linked project.

You cannot automatically generate link constraints for custom types. If you create two projects that each have their own custom type, and create a link between them, when you click **Generate Rules**, the rules are created by using the ANY keyword. For example, the first project would contain a Project1CustomType Link to ANY rule, and the second project would contain an ANY Link To Project2CustomType rule.

Preferred link types

Preferred link types that you specify for an artifact type are subject to the link rules that are in effect. For example, if you have a preferred link type of Satisfies for an artifact type, but your link rules do not allow this link type, the Satisfies link type is ignored.

Versioning constraints

Constraints are versioned and handled by the configuration management capabilities; they can vary across configurations, be delivered in change sets, and can be compared and merged.

Related concepts

Linking artifacts in different projects or components

A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on

the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

"Links between artifacts" on page 203
A link represents a relationship between artifacts. Links are mechanisms for referring to related information. You create some links manually. Other links are created automatically when you complete certain tasks. There are different properties for trace links, content links, links to base artifacts, and links in modules.

Related tasks

"Creating link types for requirements projects" on page 36

"Managing project or component properties in requirements projects" on page 28
Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

Related reference

"Link types in requirements projects" on page 37

Creating templates for requirements projects or components

You can create a project or component template, and select the elements to include in it. When configuration management is not enabled, you create templates for a project. When configuration management is enabled, you create templates for a component. You can include or exclude artifacts, artifact templates, artifact types and attributes, links between artifacts, link types, folder structure, tags, and shared saved filters. After you create templates, you cannot modify them.

Before you begin

To create requirements templates, you must have an Analyst client access license. You must also have at least one of the following prerequisites:

- JazzAdmins repository permissions
- The Administrator role in the project

Important: Applying project templates from a version *n* of DOORS Next to a *n-1* is not supported. For example, you cannot apply a project template from 7.x version to 6.x version for creating project areas.

To view your repository permissions and client access license, open a project. From the **User Profile** menu  , click **View My Profile and Licenses**. To view your project role, from the **Administration** menu  , click **Manage This Project Area**.

About this task

To create templates, you open an existing project or component and create the template.

Procedure

To create a template, open an existing project or component and complete these steps:

1. Click the **Administration** menu  and click **Manage Project Properties**.
   If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. On the project administration page, click the **Templates** tab.
3. From the list on the left, select **Project Templates**.
   If configuration management is enabled for your project, on the **Administration** menu, click **Component Templates**.

4. Click **New Template**.
5. In the **Create Template** window, specify the name, description, and the items to include in the template, and then click **OK**.

   Some items in the list have dependencies on other items; therefore, some items are selected by default when you select others.

What to do next

The next time that you create a requirements project or component, you can select the new template from the New Project wizard. To know more about how to edit, delete, download, or upload a template, see Managing requirements project templates.

Note: After you create a template, you cannot modify it. You also cannot modify any predefined templates that are provided with the application. To create a revised version of a template, create a project or component from the template, modify and save the project or component, and then create a template from it.

The default size limit for templates is approximately 10,000 artifacts, although this value varies by product version. If you have several thousand artifacts, you can override the default size limit.

Related concepts

"Error occurs during project template creation for a large project" on page 267
If an error occurs when you try to create a project template, you can resolve the error by using one of the following solutions:

Related tasks

"Managing artifact templates" on page 59
You can delete or edit artifact templates from the project administration Templates page. You can also update the template with any changes in the artifact that the template is based on.

Related information

Creating components

Managing templates for requirements projects or components

You can delete, download, modify, and upload templates for requirements projects or components. When configuration management is not enabled, you manage templates for projects. When configuration management is enabled, you manage templates for components. You use the download and upload capabilities to copy a template to another Jazz repository.

Before you begin

To delete, modify, or upload a template, you must have the following prerequisites:

- An Analyst client access license
- JazzAdmins repository permissions

To view your repository permissions and client access license, open a project. In the upper-right corner, from the **User Profile** menu  , click **View My Profile and Licenses**. To view your project role, from the **Administration** menu  , click **Manage This Project Area**. To complete this task, you must be in a project or component, or dashboard.

Important: You cannot use a template as a backup because the artifact history, comments, reviews, and access controls are not preserved. Templates do not preserve the links that are outside of the artifacts.

About this task

The following procedure is for managing project templates. The process for managing component templates is similar, but the names and labels are specific to components. In projects enabled for configurations, you manage component templates.

Procedure

- To edit, delete, or download a project template by using the web client:

  a) Open a project, click the **Administration** menu  , and select **Manage Project Properties**.

  Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

  b) On the project administration page, click the **Templates** tab.

  c) In the **Templates** list, click **Project Templates**.

  d) Select a template in the list, click the **Edit** menu  to the right of the entry, and select one of the following options:

  – Click **Edit** to open the Manage Template window where you can change the template name and description.

  – Click **Delete** to remove the template from the repository.

  – Click **Download** to save the template to your computer as a template archive file. Templates that you download do not include comments, reviews, history, or access controls.

- To upload a template:

  7.0.2 iFix008

  Important: Project templates from a different DOORS Next version are not supported.

  a) Click **Upload Template**.

  b) In the **Upload Project Template** window, browse to and select the template archive file to upload.

  c) Click **Upload**. After the upload is complete, click **Close**.

  The uploaded template is displayed in the template list.

Related tasks

"Creating templates for requirements projects or components" on page 46

You can create a project or component template, and select the elements to include in it. When configuration management is not enabled, you create templates for a project. When configuration management is enabled, you create templates for a component. You can include or exclude artifacts, artifact templates, artifact types and attributes, links between artifacts, link types, folder structure, tags, and shared saved filters. After you create templates, you cannot modify them.

Related information

Modifying a Lifecycle Project Application template to access a requirements project template

Requirements project templates

You can use several different templates to create new requirements projects.

Important: Applying project templates from a version *n* of DOORS Next to a *n-1* is not supported. For example, you cannot apply a project template from 7.x version to 6.x version for creating project areas.

The following table provides a brief description of some of the sample project templates. However, for a more comprehensive list of the artifact types, artifact attributes, attribute data types, link types, and templates that comprise each sample, create a project by using a project template and then click **Manage Project Properties** from the **Administration** menu.

Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

Note: SAFe 6.0 templates for IBM Engineering Lifecycle Management (ELM) are available on Jazz.net. You can download the templates from SAFe 6.0 templates for IBM Engineering Lifecycle Management. The available predefined process templates are **Full SAFe 6.0** and **Essential SAFe 6.0**. You can use them to configure tooling environment for SAFe Portfolio, Large Solution, Portfolio, or Essential SAFe 6.0 configuration in ELM. For more information, see Say Hello to SAFe 6.0!.

Table 4. Project templates	
Project Template	**Description**
Agile Requirements Sample	Provides a sample agile component that contains the user stories and requirements for a fictitious company. The following artifact types are included in this sample: • Feature • Non-Functional • Part • Personal Collection • Release Collection • Simple Flow Diagram • Wireframe • Supporting Resource • Term • User Story Elaboration
Agile Requirements Template	Provides artifact types, attributes, data types, and a project folder structure to support the agile process. It includes an artifact type and a document template for user story elaboration. The following artifact types are included in this template: • Feature • Non-Functional • Part • Personal Collection • Release Collection • Simple Flow Diagram • Sketch • Supporting Resource • Term • User Story Elaboration

Table 4. Project templates (continued)

Project Template	Description
JKE Banking Sample	Provides a sample application that includes a full project structure with folders and sample artifacts to support a fictitious banking program. If you are a first-time user, use this option to look at sample artifacts and to see how artifacts can be linked. The following artifact types are included in this template: • Actor • Business Goal • Business Process Diagram • Business Rule • Collection • Feature • Goal • Graphical Artifact • Heading • Non Functional • Process Guidance • Requirement • Supporting Resource • Term • Use Case Diagram • Use Case Requirement • Use Case Specification • User Story Elaboration • Vision

Table 4. Project templates (continued)

Project Template	Description
Medical Devices Template	Provides a structure to support medical device developers in meeting FDA Design Control requirements. The following artifact types are included in this template: • Document - Module • FMEA - Object • Glossary Term • Heading • Information • Reference - Module • Risk • Risk - Module • Stakeholder Definition • Stakeholder Requirement • Stakeholder Requirements - Module • System Function • System Requirement • System Requirements - Module • Trade Study Document • Trade Study Assessment Criterion • Vision Document - Module • Vision Statement
Requirement Template for Testers	Provides a structure to support testers. Includes a folder called `Testers`. The following artifact types are included in this template: • Requirement • Test Plan Collection
SAFe 4.0 Portfolio Component Template	Provides a structure to support a project with Scaled Agile Framework environment (SAFe) artifact types, link types, templates, folder structure, and views. The following artifact types are included in this template: • [SAFe] Lightweight Business Case • [SAFe] Strategic Theme • [SAFe] Value Stream • Free-Form Diagram • Heading • Information • Program Increment Collection • Role • Supporting Doc • Term

Table 4. Project templates (continued)	
Project Template	**Description**
SAFe 4.5 Essential Component Template	Provides a structure to support a project with Scaled Agile Framework environment (SAFe) artifact types, link types, templates, folder structure, and views. The following artifact types are included in this template: • Program • Vision
SAFe 4.5 Portfolio Component Template	Provides a structure to support a project with Scaled Agile Framework environment (SAFe) artifact types, link types, templates, folder structure, and views. The following artifact types are included in this template: • Strategic Theme • Value Stream, Program • Vision, Solution Intent • Solution Context • Lean Business Case • Lifecycle Scenario • Scenario Act • Scenario Scene
SAFe 4.5 Large Solution Component Template	Provides a structure to support a project with Scaled Agile Framework environment (SAFe) artifact types, link types, templates, folder structure, and views. The following artifact types are included in this template: • Value Stream • Program • Vision • Solution Intent • Solution Context • Lean Business Case • Lifecycle Scenario • Scenario Act • Scenario Scene

Table 4. Project templates (continued)

Project Template	Description
SAFe 4.5 Full Component Template	Provides a structure to support a project with Scaled Agile Framework environment (SAFe) artifact types, link types, templates, folder structure, and views. The following artifact types are included in this template: • Strategic Theme • Value Stream, Program • Vision, Solution Intent • Solution Context • Lean Business Case • Lifecycle Scenario • Scenario Act • Scenario Scene
System Requirements Sample	Provides a sample application that includes a full project structure with folders, modules, and sample artifacts to support a fictitious program called Automated Meter Reader. The following artifact types are included in this sample: • Actor • Diagrams and sketches • Hardware Requirement • Hardware Specification • Hazard and Risk • Hazard and Risk Register • Heading • Information • Personal Collection • Release Collection • Requirements Specification • Software Requirement • Software Specification • Stakeholder Requirement • Stakeholder Specification • System Requirement • System Specification • Term • Use Case Module • Vision Statement • Vision Document

Table 4. Project templates (continued)

Project Template	Description
System Requirements Template	Provides a structure to support a systems engineering component. The following artifact types are included in this template: • Actor • Diagrams and sketches • Hardware Requirement • Hardware Specification • Hazard and Risk • Hazard and Risk Register • Heading • Information • Personal Collection • Release Collection • Requirements Specification • Software Requirement • Software Specification • Stakeholder Requirement • Stakeholder Specification • System Requirement • System Specification • Term • Use Case Module • Vision Statement • Vision Document

Table 4. Project templates (continued)

Project Template	Description
Traditional Requirements Sample	Provides a sample enterprise component that contains the enterprise requirements, terms, and other artifacts for a fictitious company. The following artifact types are included in this sample: • Actor • Business Goal • Business Process Diagram • Business Rule • Collection • Feature • Heading • Non Functional • Persona • Process Guidance • Storyboard • Supporting Resource • Term • Use Case Diagram • Use Case Requirement • Use Case Specification • User Story Elaboration • Vision
Traditional Requirements Template	Provides a structure to support traditional requirements projects. Artifact types include features, software requirements, stakeholder requests, sketches, parts, use case diagrams, and terms. The following artifact types are included in this template: • Feature • Heading • Information • Personal Collection • Release Collection • Requirement Specification • Software Requirement • Stakeholder Request • Term

Table 4. Project templates (continued)	
Project Template	**Description**
Use Case Requirements Sample	Provides a sample use case component that contains the use cases, diagrams, and requirements for a fictitious company. The following artifact types are included in this sample: • Actor • Feature • Heading • Information • Personal Collection • Process Diagram • Release Collection • Requirement Specification • Sketch • Stakeholder Request • Supplementary • Term • Use Case • Use Case Diagram
Use Case Requirements Template	Provides a structure to support use-case-driven requirements projects. Artifact types include features, use cases, business process diagrams, supplementary requirements, stakeholder requests, sketches, parts, use case diagrams, and terms. The following artifact types are included in this template: • Actor • Feature • Heading • Information • Personal Collection • Process Diagram • Release Collection • Requirement Specification • Sketch • Stakeholder Request • Supplementary • Term • Use Case • Use Case Diagram

Scaled Agile Framework (SAFe) project templates

The Scaled Agile Framework (SAFe) methodology is an industry standard framework for helping organizations scale agile and lean practices to an enterprise level. The framework defines roles, activities, artifacts, and workflows that provide best practices and guidance for enterprises to use lean and agile principles across the organization, which spans both business and engineering roles. This helps to deliver value across agile portfolios that includes solutions, programs, and teams.

Requirements management is a key aspect of the SAFe methodology that takes a systems view of the features that are being delivered, capturing expected behavior, models, wireframes, and related requirements to drive an iterative approach to feature delivery.

Note: SAFe 6.0 templates for IBM Engineering Lifecycle Management (ELM) are available on Jazz.net. You can download the templates from SAFe 6.0 templates for IBM Engineering Lifecycle Management. The available predefined process templates are **Full SAFe 6.0** and **Essential SAFe 6.0**. You can use them to configure tooling environment for SAFe Portfolio, Large Solution, Portfolio, or Essential SAFe 6.0 configuration in ELM. For more information, see Say Hello to SAFe 6.0!.

Related information

Scaled Agile Framework (SAFe) 5.0 Essential process template

Scaled Agile Framework (SAFe) 5.0 Full process template

Scaled Agile Framework (SAFe) 5.0 Quality Management process templates

Scaled Agile Framework (SAFe) 5.0 Requirement Management process templates

Requirements management is a key aspect of the SAFe® methodology that takes a systems view of the features that are being delivered, capturing expected behavior, models, wireframes, and related requirements to drive an iterative approach to feature delivery.

This release provides two predefined process templates that support Scaled Agile Framework (SAFe) to help you capture expected behavior and related requirements across all the configurations:

- Full: Portfolio level and Large Solution level
- Essential: Program level and Team level

You can use each template to create a Requirement Management project area that includes the necessary roles, artifact templates and categories, and dashboard for that configuration.

Requirement Management for Full SAFe 5.0

Use this SAFe template to establish a requirements management environment that contains the artifacts that are required to support design, development and delivery of a Portfolio including multiple Large Solutions, or Value Streams, orchestrating delivery of Features across Programs.

The SAFe artifacts that are included with this template are Portfolio Canvas, Value Stream Canvas, SWOT Analysis, TOWS Options Matrix, Strategic Theme with Objectives and Key Results (OKR), Value Stream, Program, Vision, Solution Intent, Solution Context, Lean Business Case, Lifecycle Scenario, Scenario Act, and Scenario Scene. This environment might be associated with one or more Essential SAFe tooling environments.

Requirement Management for Essential SAFe 5.0

Use this SAFe template to establish a requirements management environment that contains the artifacts that are required to support design, development, and delivery of Program Features and Stories. The SAFe artifacts that are included with this template are Program, Vision, and Solution Context. This environment might be associated with a Portfolio, Large Solution, or Full SAFe tooling environment.

For more information, see IBM support for SAFe.

Scaled Agile Framework (SAFe) 4.6 Requirements Management process templates

Requirements management is a key aspect of the SAFe® methodology that takes a systems view of the features that are being delivered, capturing expected behavior, models, wireframes, and related requirements to drive an iterative approach to feature delivery.

This release provides two predefined process templates that support Scaled Agile Framework (SAFe) to help you capture expected behavior and related requirements across all the configurations:

- Full: Portfolio level and Large Solution level
- Essential: Program level and Team level

You can use each template to create a Requirement Management project area that includes the necessary roles, artifact templates and categories, and dashboard for that configuration.

Requirement Management for Full SAFe 4.6

Use this SAFe template to establish a requirements management environment that contains the artifacts that are required to support design, development and delivery of a Portfolio including multiple Large Solutions, or Value Streams, orchestrating delivery of Features across Programs. The SAFe artifacts that are included in this template are Portfolio Canvas, Value Stream Canvas, Strategic Theme, Value Stream, Program, Vision, Solution Intent, Solution Context, Lean Business Case, Lifecycle Scenario, Scenario Act, and Scenario Scene. This environment might be associated with one or more Essential SAFe tooling environments.

Requirement Management for Essential SAFe 4.6

Use this SAFe template to establish a requirements management environment that contains the artifacts that are required to support design, development, and delivery of Program Features and Stories. The SAFe artifacts that are included in this template are Program and Vision. This environment might be associated with a Portfolio, Large Solution, or Full SAFe tooling environment.

For more information, see IBM support for SAFe.

Creating artifact templates

You can create an artifact template from an existing artifact. Artifact templates offer an easy way to reuse artifact content and related properties as a basis for new artifacts.

Before you begin

You must have project administrator permission to create an artifact template.

About this task

Artifact templates:

- Are tied to the artifact type and format of the artifact on which they are based.
- Include the artifact content, attributes, attribute values, and links.
- Do not include tags and comments.
- Can be used only to create new artifacts of the same type and format.

For information on creating templates from modules, see Creating module templates.

Procedure

For a quick way to create a template from an open artifact, click the **Create Artifact Template**  icon in the toolbar, or perform the following steps.

To create an artifact template from the **Administration** page:

1. Open a project by using the web client and click the drop-down menu at the **Administration** icon  and select **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

   An administrative page opens.
2. Click the **Templates** tab.
3. In the **Templates** list, click **Artifact Templates**.
4. Click **New Template**.
5. In the **Create Template** window, specify the name and optional description for the template.

6. In the **Create template based on** field, click **Browse** to locate an artifact for the basis of the template.
7. In the **Search for artifacts** field, enter a partial name for an artifact.

   All artifacts that match the partial entry are displayed in the **Select artifact** list.
8. Select an artifact as the basis for the new template and click **OK**.
9. On the Create Template window, click **Create**. After the operation is complete, click **Close**.

What to do next

When you create a new artifact, you can base it on this artifact template. Lists of templates are organized by artifact type and artifact format. When creating an artifact, you must select the artifact type to view all templates associated with that type.

Note: You can view templates in the `Template` field of the `Create an artifact with attributes` dialog.

After you create an artifact from the template, the content of that artifact is independent of the template and the original artifact that the template was based on. Any changes to the original artifact and its template are not reflected in the new artifact.

Managing artifact templates

You can delete or edit artifact templates from the project administration Templates page. You can also update the template with any changes in the artifact that the template is based on.

About this task

You must have project administrator permissions to delete or edit an artifact template.

Procedure

To delete or edit an artifact template using the web client:

1. Open a project, click the drop-down menu at the **Administration** icon  and select **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

   A project administration page opens.
2. Click the **Templates** tab.
3. In the **Templates** list, click **Artifact Templates**.
4. Select a template in the list and click the drop-down menu at the Edit icon  at the right end of the entry and select **Delete** or **Edit**.
5. If you select **Edit**, the Manage Template window opens and you can do any of the following actions:
   - Change the template name.
   - Change the template description.
   - Update the contents of the artifact template with any changes that have been made in the artifact since it was used to create the template.
6. Click **OK** to complete the operation.

Creating module templates

You can create a module template from an existing module. Module templates offer an easy way to reuse structure and content as a basis for new modules. When you create a module template, you have options

to create copies of the headings and other artifacts from the source module, or reuse and share the source content in the new module.

Before you begin

You must have project administrator permissions to create templates.

About this task

In a module template, you can reuse the headings and other artifacts that are in the source module, or you can copy (duplicate) them to create headings and other artifacts in the template.

When you create a module template, the content of the module is not saved in the template. If the module that the template is based on is changed, the next artifact that is created based on that template contains the changes.

When you create an artifact template, the content of the artifact is saved in the template. If the artifact that the template is based on is changed, the next artifact that is created based on that template will not contain the changes.

Procedure

1. Open a project in the web client, click the **Admin** menu (), and click **Manage Project Properties**.
2. Click the **Templates** tab.
3. In the **Templates** list, click **Artifact Templates**.
4. Click **New Template**.

   The **Create Template** window opens.
5. Specify the name and optional description for the template.
6. Next to the **Create template based on** field, click **Browse** to locate a module for the basis of the template.
7. In the **Search for artifacts** field, enter a partial name or ID for a module.

   All artifacts that match the partial entry or ID are displayed in the **Select artifact** list.
8. Select a module as the basis for the new template and click **OK**.
9. In the **Create Template** window, in the **Duplication policy** field, select one of the following options to copy or reuse content in the new module:
   - **Duplicate all artifacts**: Creates headings and other artifacts. These are copies of the headings and artifacts that are in the source module.
   - **Duplicate no artifacts**: Reuses all existing headings and other artifacts. The only new artifact is the module that a user creates from the template.
   - **Duplicate all heading artifacts**: Creates headings that are copies of the existing ones, and reuses other existing artifacts.
   - **Re-use all heading artifacts**: Reuses existing headings. Creates copies of all other artifacts.
   - **Duplicate all artifacts specified by a view, re-use all other artifacts**: Creates headings and other artifacts that are copies of existing ones if they match the criteria of filters in a saved view. All other headings and artifacts are reused. If you use this option, a menu is displayed from which you can select the view to use.
10. Click **Create**.

What to do next

For options to manage the template, from the **Project Properties** page, click **Template**. You can select commands from the menu  to the right of any module template in **Artifact Templates** list.

- To edit the template, click **Edit**. In the **Manage Template** window, you can change the template name, description, or duplication policy.
- To modify the content of the module that is the source for the template, click **Edit Content**. The source module opens. Any changes that you make to reused content affects all instances of that content in the project. Any changes to duplicated content is reflected in any modules that are created subsequently from the template.
- To remove the template from the project, click **Delete**.

Related tasks

"Reusing artifacts in modules" on page 146
Artifacts can be reused in multiple contexts in a project, including collections and modules. You can edit artifact content in a module or by opening the artifact outside the module. Content changes are reflected in all contexts. Links, tags, and comments are specific to the context in which they are created. If you want links, tags, and comments to reflect in all contexts, edit the artifact outside the module as a base artifact.

Importing properties from another Requirements Management (RM) project or component

You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

Before you begin

To import properties, you must have both the administrator role and permissions:

- In the project area settings, you must be listed in the Administrators section.
- In the project area settings, you must be listed in the Members section and have the Administrator role assigned.

About this task

To import properties, you open a project or component and then import the properties from another project or component into the current one.

Note: Only the default properties such as artifact types, artifact attributes, attribute data types, link types, and link constraints that are defined in the project or component are imported.

Note: If an artifact type is associated with the workflow, the association is not preserved in the current component after the import.

Procedure

1. In RM, open the project into which you want to import project properties.
2. From the **Administration** menu  , click **Manage Project Properties** or **Manage Component Properties**.
3. In the upper right of the screen, click **Import**.
4. In the **Import Project Properties** window, click **Browse** and select the project from which you want to import the type system.

   Important: If you import a type system into two different streams in a component, the type system is duplicated when changes are delivered between these streams. The application does not recognize that the type system is same and creates a duplicate type system. To avoid this problem, use a special stream in each component for the type systems in that component. Then, merge any type system

changes from that special stream to all of the development streams in that component. For best practices and additional information about the type systems, see the following articles:

- Maintaining the Rational DOORS Next Generation type system in a configuration-management-enabled environment. Part 1: Manual procedures
- Maintaining the Rational DOORS Next Generation type system in a configuration-management-enabled environment. Part 2: Automation
- Maintaining the Rational DOORS Next Generation type system in a configuration-management-enabled environment. Part 3: Automation tool deep dive

5. Click **OK** and then click **Next**.
6. Review the property changes and click **Finish**.

   Note: If both projects have properties with the same name, the properties are merged in the current project.

Results

When the import process is complete, refresh the project to see the new properties.

Related tasks

"Copying artifacts between projects" on page 62
You can copy artifacts between projects in the Requirements Management (RM) application.

"Managing project or component properties in requirements projects" on page 28
Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

"Creating link types for requirements projects" on page 36

Copying artifacts between projects

You can copy artifacts between projects in the Requirements Management (RM) application.

Before you begin

Before you copy artifacts between projects, verify the following items:

- You are logged in as a user with JazzAdmins or JazzProjectAdmins repository permissions. You are assigned the Administrator role.
- Both projects have the same setting for configuration management: either both are enabled or both are disabled.
- If you use global configurations, ensure that you are using a global configuration that has contributions from both projects.
- The target project contains the same artifact types, artifact attributes, and attribute data types as the artifacts in the source project.

  Important: To copy artifacts, the target project must contain the same artifact types as the source artifacts that are being copied, including URIs or artifact names. Otherwise, no artifacts are copied. If the target project does not contain the same artifact attributes or attribute data types, the source artifacts are copied, but the attribute values are not.

  Note: When copying and pasting modules or collections across components or projects, the shared and private views of the module or collection are copied. If the target component or project contains views that are shared across all modules or collections of the same type or shared across all modules or collections. And have the same name as the reused views in the copied module or collection, the copied views are not resolved. Instead, multiple views with the same name exist after the paste operation is run and must be resolved manually.

In projects that are enabled for configuration management, confirm whether you want to copy artifacts between components or clone them. To help you decide, see Cloning artifacts between components.

About this task

You can copy most artifacts between projects, including collections, modules, embedded artifacts, and diagrams. However, the copy function does not support copying the following items:

- Graphical artifacts that require a browser plug-in, such as sketches, storyboards, screen flows, and business and use case diagrams
- Tags
- Comments

Note: Copying and pasting of artifacts between streams in the same component is not allowed. A more appropriate way to move data from one stream to another is to deliver the change set(s) that contain that data. This ensures you get the same concept in both places and that the version history is correct. At that point, if you want to copy the artifact somewhere else within the stream you may do so. Alternatively, you can also copy or paste within your current stream and then deliver the change set.

Procedure

1. Verify that the target project contains the same artifact types, artifact attributes, and attribute data types as the artifacts that you plan to copy. To view the project properties, complete these steps:
   a) Open the target project, click the drop-down menu for the **Administration** icon  and select **Manage Project Properties**.

      Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

   b) Click the **Artifact Types** tab, the **Artifact Attributes** tab, and the **Attribute Data Types** tab.

      Tip: If your target project does not contain the necessary project properties, you can import the artifact type system from the source project. For information about importing the type system from another project, see Importing project properties.

      Important: To copy artifacts between projects, the value in the **URI** field for artifact types or the artifact names in both the source and target projects must match. The URI value or name must also match between source and target artifact attributes and between artifact data types.

      The value in the **URI** fields must be in this format:

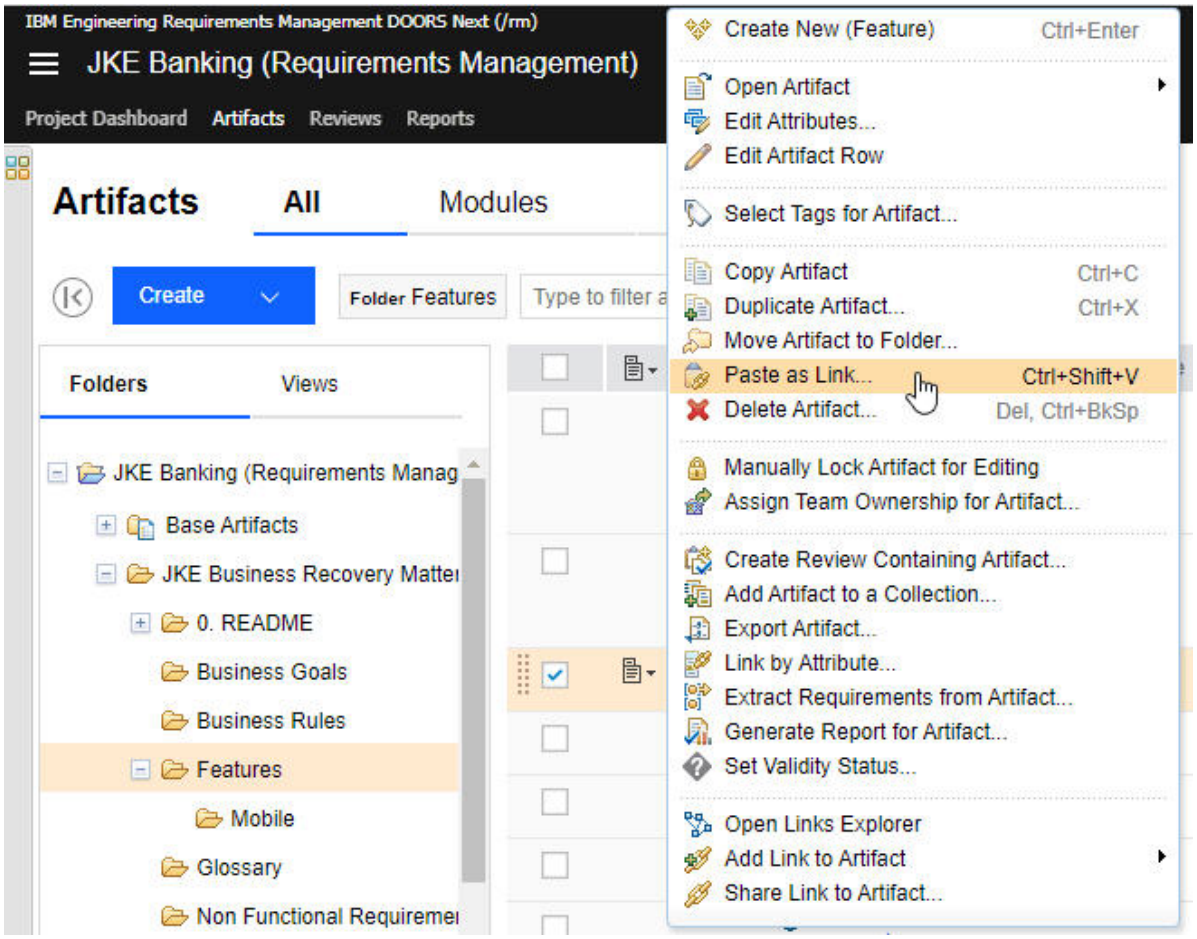
      ```
      https://hostname/word1/word2
      ```

      For example, if you work for a company that is called Big-Bank, and you want to copy artifacts of type `Actor` from a source project, you might put the following value in the Actor artifact type **URI** field:

      ```
      https://www.big-bank.com/types/actor
      ```

      If you copy the type system from the source project to the target project, you ensure that the value in the source **URI** field gets propagated to the target **URI** field in the target project.
2. In the target project, right-click the folder into which to copy the artifacts and click **Copy from a project**.
3. In the wizard that opens, follow the prompts to select the project, and the artifacts or modules to copy. When you select modules, all the views from those modules will be copied from the source to the target.

   Tip: You can also view the collections that need to be copied or cloned to the target project by clicking the **Add Collection** button.
4. If the servers are hosted by the same domain server or different domain servers, you can also use the **Paste as Link** option between components on different servers.
   a) Copy the source artifact.
   b) Select the target artifact and click **Paste as Link**.



c) In the **Create Link** window, select the link type.

d) Click **OK** and a **Link has been created** message will be displayed.

Related concepts

"Linking artifacts in different projects or components" on page 206

A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

Related tasks

"Importing properties from another Requirements Management (RM) project or component" on page 61

You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

"Creating link types for requirements projects" on page 36

"Creating attributes for requirement artifacts" on page 31

When you create requirements in a project, you can create custom artifact attributes to use in custom artifact types. Custom attributes are based on predefined and custom artifact data types, which define the properties of the attribute, such as textual entries, integers, date, time, or team member names.

Related reference

"Link types in requirements projects" on page 37

Related information

Cloning artifacts between components

Deleting artifacts from the repository

You can permanently delete artifacts from a Requirements Management (RM) application repository by using the Delete from Repository feature. Use this procedure to delete sensitive data or to resolve a data spill.

Before you begin

Warning: This feature is intended only as a mechanism to carefully and permanently delete sensitive data from a repository and should not be used for reducing database size or deleting general resources.

To enable this feature, you must meet the following conditions:

- Use version 6.0.2 or later (for 6.x versions).
- 7.0.2 iFix008 Use version 7.0.2 or later (for 7.x versions).
- Have the JazzAdmins permission.
- Set the `data.purge.enabled` advanced property to `true`.
- Set the `dump.dir` advanced property to an absolute file system path.
- Have access to the RM application server file system.

Important: 7.0.2 iFix008

- In previous 6.x versions, data was stored by using the Jazz Foundation Service (JFS) APIs only and was referred to as JFS data. The JFS data was deleted by using the delete feature. However, starting with the 7.0 version, most of the data is created and managed by using the 0.6 API storage mechanism and is referred to as 0.6 data. The deletion process and behavior for 0.6 data is different as compared to JFS data. When you use the delete feature, the 0.6 data is redacted or edited in-place while the JFS data is deleted. For more information, see Difference between JFS data and 0.6 data.
- The **Delete Resource Data** wizard is no longer available in the application under the **Delete from Repository** tab. You must use a repotools command to delete the data due to restrictions on the API that manages and updates 0.6 data. DOORS Next server must not be online when you run this command. For more information, see Running the purge repotools command.

About this task

Typically, when you delete an artifact from an RM project, the artifact is removed from the project and is archived in the repository. However, if you have sensitive data that you want to permanently delete from the repository, you can use the Delete from Repository feature to accomplish this task.

The Delete from Repository process for JFS data and 0.6 data includes three main steps.

1. Identify the artifacts for deletion. You can use the **Export Data Dump** option to export resources to the file system where you can analyze them for sensitive data. 7.0.2 iFix008 For 0.6 data, all the data for the selected component or project is exported. For JFS data, you might choose to limit it to only a subset of the storage areas most likely to contain sensitive data or export the content of all storage areas. You can search through these exported files to identify which resources contain sensitive information. The search result creates a list of URLs for the versions that require deletion.

   Note: A project area is selected for export, by default.
2. 7.0.2 iFix008 Create a list of version URLs for the system to delete JFS data. For 0.6 data, append a set of serialized-item-handles to redact the 0.6 data. This list must be stored in a plain text file and have only one URL per line. For more information, see Running the purge repotools command.
3. After the system deletes or redacts the specified URLs and their history, you verify that all the sensitive data was purged from the repository. To do this, you export the data to the file system again, repeat the search for sensitive data, and then delete all the files that were exported.

For more information and instructions for deleting sensitive data, see Delete from Repository feature on Jazz.net.

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Administering link validity in ELM applications

As a configuration lead or application administrator, you decide whether to show or hide link validity and validity summary information for your project area. These tasks are common to the IBM Engineering Lifecycle Management (ELM) applications that use link validity.

About this task

See Enabling link validity in AM, QM, and RM project areas to read about showing and hiding link validity information in your project area.

Quality Management application: If your project area does not have configuration management capabilities enabled, you cannot use this feature. Project areas not enabled for configurations use suspect link traceability. For details, see Suspect traceability.

To learn more about link validity, see the related links.

To learn more about configuration management:

- https://www.ibm.com/docs/en/elms/elm/7.0.2?topic=SSYMRC_7.0.2/com.ibm.jazz.vvc.doc/topics/c_cm_assess.htmlGetting started with configuration management: Learn about configuration management and local configurations.
- Global Configuration Management: Learn how global configurations provide a view of all the artifacts that are contained in a set of related local configurations. Global configurations are managed by the Global Configuration Management (GCM) application.
- Introduction to configuration management with IBM Engineering Lifecycle Management (ELM): YouTube playlist on the Software Education channel.

Related tasks

Granting access to link validity data for building Report Builder reports

Related information

YouTube video: Achieving consistency across linked data by using link validity (Software Education channel)

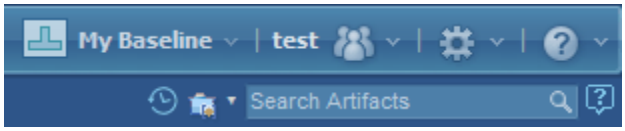
Baselines in requirements projects

In a requirements project, a baseline captures the entire project at a moment in time. For example, you might create a project baseline before you create an artifact review to ensure that the artifacts do not change during the review. A baseline includes all artifacts, folder trees, and public tags.

To create baselines, you must have the appropriate permissions. By default, the Configuration Administrator role has permission to create baselines, but the Administrator and Author roles do not.

Important: To work with streams and change sets in addition to baselines, you must enable configuration management capabilities for the project. For more information, see Configuration Management.

You can create a baseline from the **Current Configuration** menu. When you are working in a baseline, the name of the baseline appears at the top of the menu, as shown in this example.



Note: When you create a new baseline, it does not appear in the list of baselines until you refresh the application.

After you create a project baseline,baseline you can perform the following tasks:

- View the content of the project as it existed when the baseline was created
- Search for and display other baselines
- Compare the contents of two baselines

Restriction: You cannot modify a project baseline or the version of an artifact that is part of a baseline. However, you can modify the most recent version of that artifact.

To compare two baselines, you must first switch to an initial baseline. After the name of the first baseline appears at the top of the **Current Configuration** menu, click **Compare Configurations**, click **Baseline** in the **Configuration Context** window, and search for and select the second baseline. A wizard opens in which you can compare the two baselines.

Related concepts

"Modules in the Requirements Management application" on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

Related tasks

"Comparing collections" on page 177
You can use the Requirements Management application to compare two different collections.

Related information

Permissions

Enabling Electronic signatures for a baseline

For compliance purposes, your organization might require you to validate and sign a baseline. You can configure a project to require electronic signatures on baselines. This helps for audit purposes.

About this task

An administrator can set project-level settings for electronic signatures. The administrator has permission to:

- Display text that explains the significance of signing.
- Determine if users must provide a comment when signing.
- Determine if users must select a reason for signing.
- Use the Add option, to enter a list of reasons for signing. An user can select an option from the displayed list.

Procedure

1. On the **Administration** menu, click **Manage Project Areas** page.
2. On the **Active Project Areas** page, click your project.
3. Under **Requirements**, click **Electronic Signature**.
4. In the text box, provide an explanation for why the signature is required for the project.
5. If team members must add a comment when they electronically sign the baseline, select the **Require a comment** check box.
6. If team members must provide a reason for signing the baseline, select the **Require the user to select a reason for signing** check box.
7. Click **Add Reason**, and enter a new reason to add to the Value list. You can add as many reasons as the project requires and then use the **Move Up** and **Move Down** controls to change the list order.

Related tasks

Signing a baseline electronically

If your project or organization requires validation of baselines you can add an electronic signature to validate and sign it.

Administering components in the RM application

In projects that are enabled for configuration management, as a configuration lead, you complete the tasks that are related to managing components for your project.

Before you begin

- An RM project administrator must enable configuration management for the project.
- You must be assigned the Configuration Lead role or have permission to manage components. On the **Permissions** page in the application administration section, see the Configuration Management group for the permissions related to managing components. Assign permissions based on the tasks that you must complete.

About this task

In addition to the tasks listed below, you can define team areas to control artifact creation and modification for specific components: see the **Save Artifact** and **Save Link** permission groups on the **Permissions** page in the application administration. You might do this to maintain strict control over changes to an artifact type's definition and the definitions of the artifact's attributes. For example, you might give Authors specific permissions for Components A, B, and C in a project:

- Authors can create user requirements in Component A
- Authors cannot create system requirements in Component B, but they can modify the public tags and the content of system requirements
- Authors can modify actors in Component C

For all other permissions, the settings apply to all the components in a project; you can't apply them to specific components.

Related concepts

Team areas

Related tasks

Administering components and configurations in applications

Creating a team area

Related information

Cloning RM artifacts between components

Components

Components represent a collection of versioned artifacts within a project area. For example, instead of working with all the artifacts from the project in one stream (for example, that represents a physical piece called a **Handheld Meter Reader**), you can use a component to represent a smaller collection of artifacts (for example, to represent a smaller physical piece such as a **Sensor** in the handheld meter reader).

You can split a project into multiple pieces called components. Each component is like a building block that represents a physical or logical part of your project. Components make it easier to reuse and work with parts of a project. After you plan and create components, organize project artifacts into them based on your project needs, instead of working with all the artifacts in one collection (configuration).

Before version 6.0.3, the project area was the top-level container for artifacts. You couldn’t split a project into smaller pieces. Each configuration (stream or baseline) in the project contained one version of each artifact in the project. If you wanted smaller collections of project artifacts, you had to create projects to correspond with each grouping, which had much administrative overhead.

Starting in version 6.0.3, the ability to split a project into finer-grained components gives you these benefits:

- It’s easier to create versions and variants of a product or system by reusing its parts.

  You can quickly respond to market demands or changing regulations in different geographies.
- Teams can work independently on different components on different schedules.

For each IBM Engineering Lifecycle Management (ELM) application, carefully plan which components to create, to ensure flexibility in assembling products and their variants. If you don’t plan, you will encounter problems when you assemble the components into global configuration hierarchies that represent products and their variants.

See the related topics for details, benefits of using components, and examples.

Related concepts

GCM application: Creating the global configuration hierarchy

Related tasks

QM application: Administering components

RM application: Administering components

RM application: Cloning artifacts between components

Related information

GCM application: Creating a context to establish a work context

Defining your component strategy (Jazz.net article)

Organizing the components for your RM project

You can divide the artifacts in a project among multiple pieces called components. Each component is like a building block that represents a physical or logical part of your project. Components are smaller collections of artifacts that can be reused easily or delivered on independent schedules or to other teams.

Before you begin

- Ensure that you are familiar with *components*, *project areas*, *configurations*, *baselines*, and *streams*.
- Ensure that you are familiar with *global configurations* and *personal streams* (if your organization uses them).

About this task

Although IBM Engineering Lifecycle Management (ELM) applications have ways of grouping artifacts into smaller collections, such as Requirements Management (RM) modules and folders and Quality Management (QM) test suites and test plans, you can’t easily mix and match them, reuse them, or deliver them independently.

For example, managing configurations requires more attention if Team1 wants to work with Stakeholder Requirements Baseline 1 and Functional Requirements Baseline 1, but Team2 wants to work with Stakeholder Requirements Baseline 2 and Functional Requirements Baseline 1.

Now you can divide the different requirement types into separate components so that you can mix and match them, and deliver them independently.

Consider using separate components for sets of artifacts when you’re in these situations:

- The collection of artifacts is intended for reuse in more than one larger assembly: more than one product or product variant, or in more than one place in a complex product or system.

  Examples: an engine control unit that is used in both the 2019 and 2020 models of a car; a screen used for a car’s navigation system and its infotainment system.
- The collection of artifacts is delivered to another party as a separate delivery.

  Examples: delivering an updated radio component to the team working on the luxury model of a car; delivering a radio component to a third-party vendor so they can add proprietary satellite technology.
- The collection of artifacts is delivered by a separate team, or on a different cadence.

- The collection of artifacts has a separate delivery cycle (such as different test stages or approval cycles) .

For each ELM application, carefully plan which components to create to ensure flexibility in assembling products and their variants. If you don't plan, you will encounter problems when you assemble the components into hierarchies that represent products and their variants.

This topic follows the example of a car, which includes both physical pieces and software including an engine, sunroof, infotainment system, brakes, and so on.

Components are smaller collections of artifacts

Before version 6.0.3, the project area was the container for artifacts. You couldn't divide a project into smaller pieces. Each configuration (stream or baseline) in the project contained one version of each artifact in the project. Continuing with the car example:

- Each configuration in an RM Car project contained a version of all the stakeholder, safety, performance, and environmental compliance requirements
- Each configuration in a QM Car project contained a version of all the safety, performance, and environmental compliance tests

And so on.

If you wanted smaller collections of project artifacts, you had to create projects to correspond with each collection, which had much administrative overhead.

Starting in version 6.0.3, a component becomes the container for artifacts. The ability to divide a project into components gives you these benefits:

- It's easier to create versions and variants of a product or system by reusing its parts. You can quickly respond to market demands or changing regulations in different geographies.

  Example: While developing a luxury car with seat heaters and all-wheel drive that can withstand a harsh climate, you can quickly respond to a market shift that demands a simpler, less expensive car with fewer automated systems and sensors, and a different combination of existing parts.
- Teams can work independently on different components on different schedules. They can develop and deliver new features or fixes without affecting other teams working on other components.

  Example: Replace a non-IoT fuel sensor with one that sends IoT data on fuel consumption back to engineers. High consumption rates might indicate a problem that must be fixed; engineers can then develop and deliver the fix to reduce overall fuel consumption. The teams working on other parts of the car (infotainment, sunroof, and so on) are not interrupted and forced to update the stream (version of the car) they are working in.

Team members with administrative roles define and create components

In ELM applications (RM, QM, Change and Configuration Management (CCM)), administrators create components. In the GCM application, a configuration lead typically creates components. On the Permissions page in the application administration section, see the Configuration Management group for the permissions related to managing components and configurations, and assign those permissions based on your project needs.

Use components to organize the artifacts in your project

After you create a project in the GCM and ELM applications, follow these high-level steps to use components to organize the logical and physical pieces of your project.

Procedure

1. Design and create components.

a) Plan the components your project needs by thinking about the building blocks that make up your product or system. You must plan them so that components do not share artifacts, or, *overlap*. You'll see an example later in this topic.

b) Organize any existing artifacts into the new components. In the RM and QM applications, this action is called *cloning*, and is described later in this topic. If you clone shared artifacts into separate components to avoid overlap, remember that in the RM application, you can link between artifacts in different components.

c) For each component, create the configurations (streams and baselines) that teams need to do their work. Each configuration of the component contains one version of each artifact in that component.

2. Assemble the relevant configurations of components to build the product or variant that you need. Typically, a GCM configuration lead does this step.

a) Create the global configurations for the project.

b) Add the appropriate local configurations of components to the global configurations, to build the hierarchy of configurations components for the project in the GCM application

Related concepts

Components

Components represent a collection of versioned artifacts within a project area. For example, instead of working with all the artifacts from the project in one stream (for example, that represents a physical piece called a **Handheld Meter Reader**), you can use a component to represent a smaller collection of artifacts (for example, to represent a smaller physical piece such as a **Sensor** in the handheld meter reader).

Related tasks

Administering requirement components

In projects that are enabled for configuration management, as a configuration lead, you complete the tasks that are related to managing components for your project.

"Cloning requirement artifacts" on page 250

Reorganize how artifacts are grouped in your project area by cloning them from one component into another. When you clone an artifact, a new version is added to the stream of the component that you work in.

Related information

Defining your component strategy (Jazz.net article)

Creating the global configuration hierarchy

1. Design and create components

About this task

Consider the building blocks that your project needs. For example, in an RM project for a Car, you might have several types of requirements: stakeholder, safety, performance, environmental compliance. Each of these types might be in their own module. You might decide to create a component that corresponds with each module.

You can always create more components later if you need more building blocks, and reorganize the artifacts again by cloning them into the new components.

When you clone artifacts from one component to another, to prevent team members from using the incorrect versions of artifacts, consider archiving the component you clone from.

1a. Plan components so they don't contain the same artifacts

About this task

Each project artifact can be in only one component. When two components contain any version of the same artifact, they *overlap*. You cannot add configurations of those components to the same global configuration, and this might prevent you from building the version or variant that you need.

Consider a requirements project in which you've created finer-grained components and organized the requirements from the initial project so that the new components contain the following artifact versions:

- Component A: requirement1-v1, requirement2–v1, requirement3–v1
- Component B: requirement1-v2, requirement4–v1, requirement5–v1
- Component C: requirement5-v2, requirement6–v1
- Component D: requirement1-v3, requirement7–v1
- Component D overlaps with A (both have versions of requirement1)

The following components overlap:

- Component A overlaps with B and D (all have versions of requirement1)
- Component B overlaps with A and C (B and A contain versions of requirement1; B and C contain versions of requirement 5)
- Component C overlaps with B (both have versions for requirement5)

Note: Just because component A overlaps with B, and B overlaps with C, does not imply that A overlaps with C.

Using the car example, you might have different categories of requirement: safety, performance, stakeholder, and environmental compliance, but some requirements belong to multiple categories: "Airbags must finish deploying within 0.025 seconds" might be considered both a safety and performance requirement. To avoid overlap you must add it (by cloning it) to only one component.

You can't add configurations of overlapping components to the same global configuration, so it is difficult to build versions and variants of a product. Reconsider either the components you've defined or how you've assigned artifacts to each component.

Preventing the overlap. You might organize the artifacts this way instead:

- Add requirement1 to component D only
- Add requirement5 to component C only

The components now contain these artifacts:

- Component A: requirement2–v1, requirement3–v1
- Component B: requirement4–v1
- Component C: requirement5-v2, requirement6–v1
- Component D: requirement1-v3, requirement7–v1

If you later decide that requirement1 should be in component A, you can clone it into that component, but you'll have to fix the new overlap between A and D. Here's how:

1. Create another component named E.
2. Clone requirement7 from component D to component E.
3. Archive component D so that its artifacts are no longer visible to team members.

Your components now have these artifacts:

Remember: When you clone an artifact, it creates a new version of it in the stream you clone into.

- Component A: requirement1-v4 (cloned requirement1-v3 from Component D), requirement2–v1, requirement3–v1
- Component B: requirement4–v1
- Component C: requirement5-v2, requirement6–v1
- *New:* Component E: requirement7–v2 (cloned requirement7-v1 from component D)
- *Archived:* Component D: requirement1-v4, requirement7–v1 (archived to remove the overlap with Component A)

Even though these are general guidelines, RM and QM have a few differences to consider when you organize your artifacts into components as described in the next step.

1b. Organize existing artifacts and link to shared artifacts across components

About this task

You can create links between artifacts in different requirement components. For example, if two modules share a requirement, you can clone the shared requirement into its own component to prevent overlap, but still link that artifact to its related artifacts that are in other components.

Continuing with the car example, assume an initial project-level component in an RM project named Car, which has the following artifacts:

- Module A: includes requirements R1, R2, and R-shared
- Module B: includes requirements R3, R4, and R-shared

You decide to create components to correspond with each module. If the global configuration that represents a future version or variant of the car might need configurations of both modules, consider cloning R-shared into its own component; otherwise, you won't be able to add a configuration of Module A and Module B to the same global configuration. The following steps elaborate on this example.

Procedure

1. In the RM Car project, a configuration lead defines finer-grained components for this project: Safety, Performance, and Environmental. Each component contains an empty initial stream.
2. In the GCM application, a configuration lead creates a Car project. He then creates finer-grained components such as Car2020, Engine, Infotainment System, Sunroof, and so on. Each component contains an empty initial stream.

   The team is currently building a product named "Car 2020". The GCM configuration lead completes these steps:

   a) Open the Car 2020 initial stream.

   b) Build the configuration hierarchy for the Car 2020 variant: He adds the initial stream of each of the Safety, Performance, and Environmental components from RM.
3. An RM configuration lead reorganizes the artifacts in the RM Car project. He starts by cloning Module A from the Car project-level component to the new Safety component.

   a) He clones R1 and R2 into the initial stream of the Safety component.

   b) He clones R-shared into the Environmental component, to prevent overlap between the Safety and Performance requirements.

      At this point, the following components overlap:

      - Project-level component and the Safety component
      - Project-level component and the Environmental component

      The GCM configuration lead cannot add configurations of the overlapped components to the Car 2020 global configuration.
4. The RM configuration lead continues to reorganize artifacts by cloning Module B from the Car component to the Performance component.

   a) He clones R3 and R4 into the initial stream of the Performance component.
5. He creates the links from the R-shared artifact in the Environment component to its related artifacts in the other components.

Results

At this point, the project-level component overlaps with the new Safety, Performance, and Environmental components. The GCM configuration lead cannot construct the Car2020 stream to contain configurations from the project-level component *and* any of the Safety, Performance, or Environmental components.

To remove this restriction, the RM configuration lead should clone all the artifacts from the project-level component into finer-grained components, and then optionally archive the project-level component to prevent team members from accessing the wrong versions.

1c. Create the configurations (streams and baselines)

About this task

After any existing artifacts are organized into components, the RM configuration lead can create the local streams and baselines that teams need to work on the correct versions of the artifacts. For teams to get a holistic view of all the artifacts in a project, and to see and create links between artifacts in other ELM applications, they must work in a global configuration context.

2. Building the global configuration hierarchy

About this task

After components and configurations are created, and the artifacts are organized into the correct components, teams can work on the artifacts and configurations for the version or variant.

The GCM configuration lead works with the RM (and other ELM) configuration leads to build and maintain the hierarchies that teams need for the versions and variants of the product. For details, see the related topics.

Creating components in the RM application

In projects that are enabled for configuration management, you can create components to represent sets of versioned artifacts within a project area. For example, instead of working with all the artifacts from the project in one stream, you can use a component to represent a smaller set of artifacts. You can use a template to add properties to the component, or import them from another component.

Before you begin

- Configuration management must be enabled for the project.
- You must be a configuration lead or have permission to create components.
- *Reusing types and attributes from other components:* If you plan to populate the new component either by choosing a template or by importing a type system from another component, make sure that the URIs in the template or type system are defined for these items:
  - Artifact types
  - Artifact attributes
  - Attribute data types, including all enumeration type values
  - Link types

  For details, see the related tasks about templates or importing properties.

  Reusing types and attributes makes these tasks easier:
  - **Cross-component linking** by using the link type.
  - **Reporting in Report Builder**: Make sure that the URIs *and* names of the preceding items are set *and* have the same value across components. Report Builder then considers these items equivalent for reporting.

For example, if Component1 and Component2 both use the Business Priority artifact attribute, make sure the components use the name and URI values:

1. Click **Administration**  > **Manage Component Properties**;
2. Click a tab that contains attribute types (Artifact Types, Artifact Attributes, Attribute Data Types, Link Types, and so on).
3. Set the name in the **Name** field and the URI in the **URI** field. Typically, a URI looks like this: `https://hostname/domain/myLabel`
4. Click **Save**.

For details, see the related task about managing project properties: although the procedures are for project properties, the procedures for managing component properties are similar.

Procedure

1. Create components in one of these ways:
   - From the All Projects view
     a. Open a project from the **All Projects** view: `https://example.com:9443/rm/web`
     b. Under a project name, click **Show Components**.
     c. In the Components section, click **Create Component**.
   - From the **Home** menu 
     a. Click a project name.
     b. In the Components section, click **Create Component**.
   - While working in a project
     a. On the toolbar, click **Administration**  > **Create Component**.
   - From the component editor
     a. On the toolbar, click **Administration**  > **Manage Components and Configurations**.
     b. Click **Browse Components**, and click **Create Component**.
2. Optional: Select a template to add properties such as artifact types, attribute data types, link types, and so on from another component. By using a template, you don't have to recreate the properties manually.
   - Remember, make sure the URIs are defined in the template, as described in the "Before you begin" section.
   - You can use a sample template provided in the product, or create or upload your own. See the related template tasks for details.

     Tip:

     – To add URIs, edit the template properties.
     – By default, most process templates do not contain URI values. You can edit process template properties after you create a project area.
   - If you don't select a template, no properties or artifacts are defined in the new component.

Results

- The system creates the component with the name that you specify, and an initial stream named ***component_name*** **Initial Development**. If you selected a template, the component contains the properties that the template defines.

- The component opens, and you can begin work in its initial stream.

  Tip: If you created the component in the component editor, click **Explore Component** to begin work in its initial stream.

What to do next

- You can now create artifacts in the component, or clone or copy them from other components. To help you decide whether to clone or copy artifacts, see the table in the related task about cloning.
- Tag artifacts in components to further categorize them.
- View or manage the details of the new initial stream: in the component editor, click the stream name, or choose an option from the **Actions** menu beside the stream name.
- To import more properties later, click **Administration**  > **Manage Component Properties** > **Import Component Properties**; but remember, changes that you made to the type system of this component will be overwritten.

Related tasks

RM sample templates

Importing properties from another RM project or component

Managing project properties in a requirements project

Adding tags to artifacts and viewing tagged artifacts

Related reference

“Requirements project templates” on page 48

Related information

Components

Defining your component strategy (Jazz.net article)

Cloning RM artifacts between components

Fixing overlapping components

After you clone artifacts, two components overlap if they have any artifacts in common, regardless of those artifact versions. The system prevents you from adding configurations of those components to the same global configuration. Fix the component overlap and then add the configurations to the global configuration.

Before you begin

You must be an RM project administrator.

About this task

Consider a project that has a component called Sensor_US, and another component called Sensor_UK. Several of the requirements are the same, so you clone them from a baseline of Sensor_US into a change set that you will deliver to a stream of Sensor_UK. These components now overlap because they contain the same artifacts, even if you haven't delivered the change set yet. You cannot add configurations of these components to the same global configuration.

If you deliver the change set, you cannot fix the overlap. You must create two or more empty components, and clone the artifacts again so that each one exists in only one component.

Procedure

Complete one of the following sets of steps:

- If you cloned the artifacts into a change set but have not yet delivered it:

  a. Discard the change set.

b. On the toolbar, click **Administration** > **Manage Component Properties**.

c. On the **Configuration Management** tab, under **Refresh Component Overlap Data**, click **Refresh**.

d. Optional: Create another change set, and clone into it a set of artifacts that does not overlap with the configuration you clone from; then, deliver the change set.

- If you delivered the change set that contains the cloned artifacts:

a. Create two or more components.

b. Clone the artifacts again: into each component, clone a set of artifacts, making sure that each artifact exists in only one component.

c. Optional: Archive the configurations that cause the overlap, so that other team members cannot do additional work in them.

What to do next

You can now add configurations of the different components to the same global configuration.

Related tasks

"Creating components in the RM application" on page 74

In projects that are enabled for configuration management, you can create components to represent sets of versioned artifacts within a project area. For example, instead of working with all the artifacts from the project in one stream, you can use a component to represent a smaller set of artifacts. You can use a template to add properties to the component, or import them from another component.

Related information

Components

Cloning RM artifacts between components

Archiving and restoring components in the RM application

Archive components that you no longer use or that are obsolete to simplify the list of components that you see and prevent team members from adding configurations of those components to global configurations. Archiving a component does not delete it. You can restore it when you need it again.

Before you begin

- Configuration management must be enabled for the project.
- You must be a configuration lead or have permission to archive and restore components.

About this task

You might archive components that are no longer in use, that were created for temporary use only or by mistake, or whose artifacts were cloned to newer components.

When you archive a component, the system first archives all of the configurations (streams and baselines) of that component. Archived components and configurations are hidden from view in the application, though you see archived configurations when they are referenced by an active configuration. Archived configurations have a gray icon beside their name, as in this example of an archived stream:  .

You can show or hide archived components only from the **Manage Components and Configurations** > **Browse Components** page.

You cannot edit archived components or configurations, and you cannot add archived configurations to global configurations. Archived items are not displayed in search and query results and Report Builder reports.

Procedure

1. Open a project from the **Home** menu  or the **All Projects** view: `https://example.com:9443/rm/web`
2. On the toolbar, click **Administration**  > **Manage Components and Configurations**.
   Details of the component you are working in are shown.
3. Optional: To work with a different component in the project, click the **Browse Components** breadcrumb link and click the component name.
4. Complete the steps for the action you want to take.
   - To archive components:
     a. Beside the component name, click **Archive this component so it is hidden from use**  .
     The component and its configurations are archived.
   - To restore components:
     a. Click the **Browse Components** breadcrumb link.
     b. Click **Show archived components**  above the table.
     c. Click the component name.
     d. Beside the component name, click **Restore this component**  .
     The component and its configurations are now visible in the application.

What to do next

To return to the list of components, click the **Browse Components** breadcrumb link. To show or hide archived components, click **Show archived components**  or **Hide archived components**  above the table.

To resume work in the current project, click **Artifacts** on the toolbar. Check that the **Current Project Component** and **Current Configuration** menus on the toolbar are set to the component and configuration that you want to work in.

To resume work in another project, select it from the **Home** menu  or the **All Projects** view.

Related tasks

“Showing and hiding archived components in the RM application” on page 78
Show and hide archived components from the Browse Components page. Archived components are hidden from view in the application and you cannot use them until you restore them.

Related information

Components
Cloning RM artifacts between components

Showing and hiding archived components in the RM application

Show and hide archived components from the Browse Components page. Archived components are hidden from view in the application and you cannot use them until you restore them.

Before you begin

Configuration management must be enabled for the project.

About this task

Components are archived for several reasons: they are no longer in use, created for temporary use only or by mistake, or their artifacts were cloned to newer components.

Procedure

1. Open a project from the **Home** menu  or the **All Projects** view: `https://example.com:9443/rm/web`
2. On the toolbar, click **Administration**  > **Manage Components and Configurations**.
3. Click **Browse Components**.
4. To show or hide archived components, click **Show archived components**  or **Hide archived components**  above the table.

What to do next

To resume work in the current project, click **Artifacts** on the toolbar. Check that the **Current Project Component** and **Current Configuration** menus on the toolbar are set to the component and configuration that you want to work in.

To resume work in another project, select it from the **Home** menu  or the **All Projects** view.

Related information

Components
Cloning RM artifacts between components
Archiving and restoring components

Managing query workload

If your organization runs sophisticated or complex custom view queries, you might encounter issues with server performance. These kinds of queries consume a significant amount of memory and CPU time, which slows down the server. This heavy query load results in the queries taking longer to complete than the default duration. If you run several of these complex queries, or refresh queries that are already running, the system can get overloaded and stop responding. A system administrator can prevent these kinds of situations from happening by controlling and managing the query workload.

Before you begin

You must have administrator permission to view and modify server properties, and you must be in the Requirements Management (RM) application.

About this task

Although you cannot cancel a running query, as an administrator, you can proactively manage the query load on the server. You can monitor the current query work volume, queue length, average execution time, and time spent waiting for the query to complete, and adjust the values for the query size and the thread pool size.

When view queries are submitted, they are added to the queue. When the queue reaches the defined maximum count, any additional queries are rejected, and a message is displayed that states that the server is busy and to try again later.

The system also prevents duplicate queries from being added to the queue. For example, if you resubmit a query because the first one is taking too long to complete, the request is ignored.

The following types of operations are queued and controlled by the server:

- Running saved views
- Sorting and filtering on the Artifacts page
- Sorting and filtering on the Modules page
- Running dashboard widget queries
- Submitting requests to the OSLC query API
- Accessing internal system paths that leverage "view service"; for example, exporting to CSV

You can perform the following operations when the queue is full:

- Basic navigation on the Artifacts, Modules, and Collections pages
- Basic (default) queries on the Modules and Collections pages
- Creating, reading, and editing artifacts, including modules and collections
- Participating in reviews
- Creating, reading, and editing links, comments, folders, and tags

Procedure

- To view statistics about the thread pool, complete the following steps:
  a) On the **Administration** menu  , click **Manage Server Administration**.
  b) On the RM **Application Administration** page, click **Debug**.
  c) On the **Statistics** page, scroll down to the ThreadPools section and view the details for the ViewQueryThreadPool component.
- To modify the size of the query queue and thread pool, complete the following steps:
  a) On the **Administration** menu  , click **Manage Server Administration**.
  b) On the RM **Application Administration** page, click **Application** and, under Configuration, click **Advanced Properties**.
  c) On the Advanced Properties page, scroll to the DOORS Next Grid Views Component section.
  d) Click **Edit** and modify the current values for the query queue and the query thread pool.
  The default query queue is 10 times the size of the thread pool value. The default query thread pool size is 75% of the number of processors on the server, or a minimum of 4.
  e) To save the updated values, click **Preview**.

Backing up and restoring the RM index files

The Requirements Management (RM) application uses Jazz Foundation Service (JFS) files for various query and search operations; these files must be backed up. As the server administrator, you can use the repository tools (repotools) commands to back up and restore the JFS indexes.

For information about the preferred steps for backing up and restoring the index files, see Backup and restoration of Jazz Foundation Service index files for IBM Engineering Requirements Management DOORS Next (DOORS Next) on the Deployment wiki.

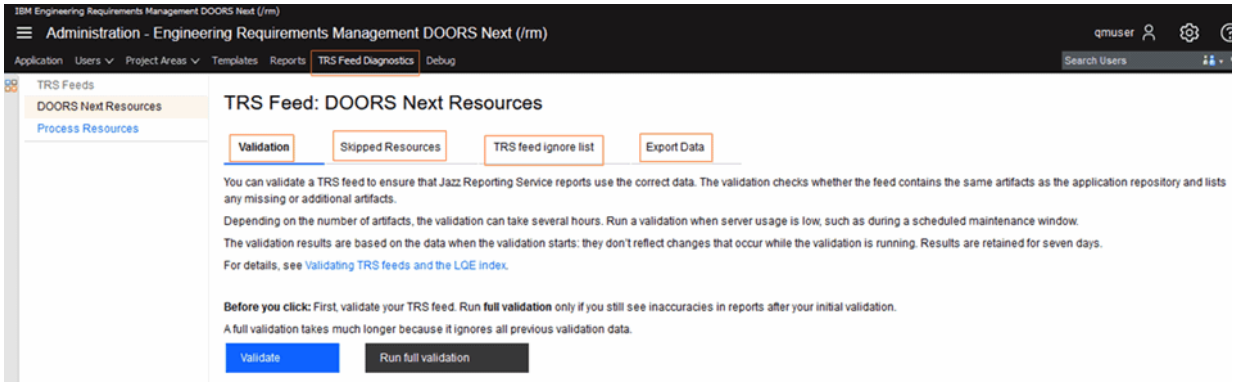
Note: This process creates and restores backups of the JFS indexes only; it does not create a backup of the DOORS Next database. For information about performing a full backup, see Backing up the IBM Engineering Lifecycle Management (ELM) on the Deployment wiki.

Analyzing and validating TRS feeds

You can view the list of resources that were skipped from the Requirements Management (RM) data source in the Lifecycle Query Engine (LQE). On the **TRS Feed Diagnostics** page, you find out why the resources were skipped, and decide which resources to ignore in the feed.

Procedure

1. Log in to the server administration page of your web client, for example: `https://<host-name>:<port number>/rm/admin`.
2. On the **Administration** menu  , click **Manage Server Administration**.
3. In the top navigation pane, click **TRS Feed Diagnostics**.



4. To validate the TRS feed against the data in the repository, on the Validation page, click **Validate** > **Validate now**. For more information, see Validating TRS feeds and the LQE index.
5. To see the list of skipped resources grouped by VDI codes, on the Skipped Resources page. The VDI codes help you to determine why the resources are skipped by LQE. The VDI code definitions are available on this Wiki page.
6. To ignore specific resources in the TRS feed, on the TRS feed ignore list page, click **Select an action** > **Ignore the selected resources**, and then click **Submit**.

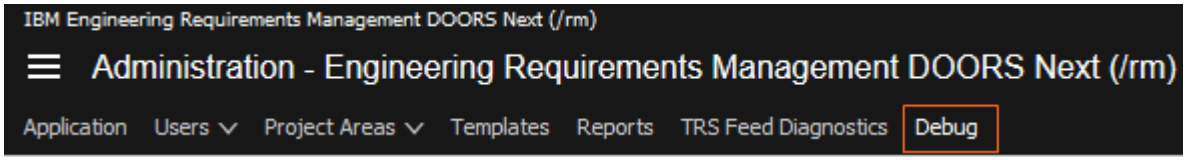
   You can add resources back to the TRS feed by removing them from the ignore list. Select the resources, and click **Select an action** > **Remove the selected resources from the ignore list**.
7. To share the list of skipped resources with IBM Support, on the Export Data page, click **Export and download**.

Initialize the publish services

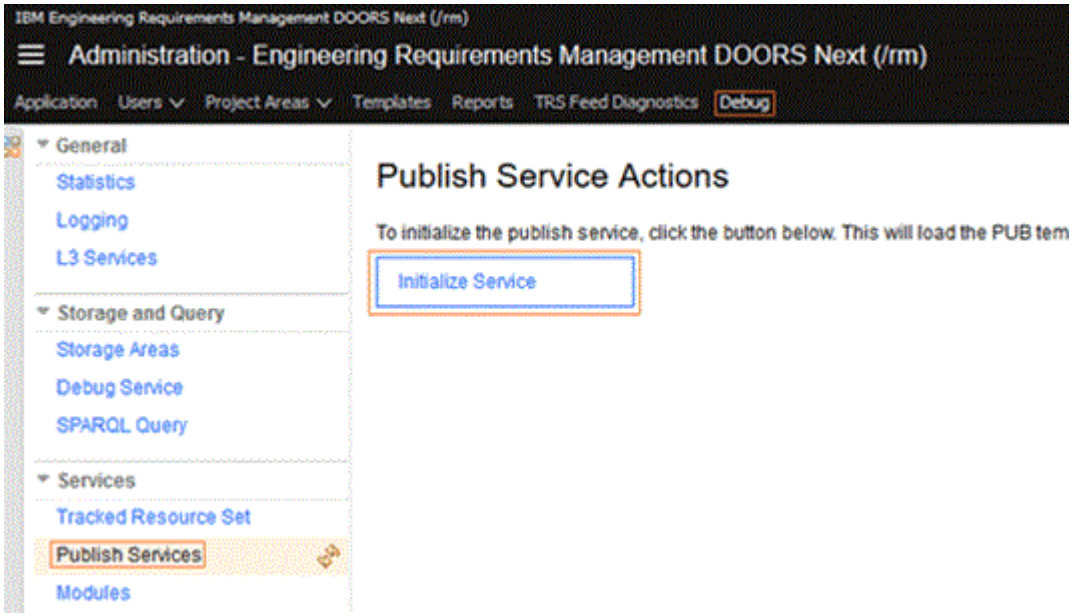
IBM Engineering Requirements Management DOORS Next (DOORS Next) have multiple reports. Each of the reports has an Engineering Document Generation (.dta) report design file. The design files need to be initialized to store them into the database. Each time when you upgrade to a newer version, you need to run the publish initialize services.

Procedure

1. Log in to the server administration page of your web client, for example: `https://<host-name>:<port number>/rm/admin`.
2. On the **Administration** menu  , click **Manage Server Administration**.
3. In the top navigation pane, click **Debug**.



4. In the left pane, under **Services**, click **Publish Services**.
5. On the **Publish Service Actions** page, click **Initialize Service**.



For more information, see Rational Reporting for Document Generation report from the API documentation.

Extending product function

This section describes how to extend the functionality of the Requirements Management (RM) application.

Related information

IBM Engineering Requirements Management DOORS Next Server API Documentation

Extending the Requirements Management (RM) application

You can enhance the Requirements Management (RM) application by authoring extensions for it. The extensions can enhance productivity and are useful for analysis.

You can add the extensions to your mini dashboard and remove them as needed. Extensions are authored by using a combination of JavaScript, HTML, and CSS files. The extensions access data within the RM application by using an RM API.

For full details about the client extension capability, see Extending the Requirements Management application on Jazz.net.

Migrating graphical artifacts created in the graphical editor browser add-on

As of version 6.0.3, the graphical editor browser add-on is no longer available. If you created graphical artifacts by using the browser add-on and want to make changes to those artifacts, you can install and use the graphical artifact migration utility to convert them.

The migration utility converts the artifacts that you created with the graphical editor browser add-on to a format that can be used with the HTML-based diagram editor, which was introduced in version 6.0. The utility is an OpenSocial gadget that server administrators can host, and then users can add to their mini-dashboards in IBM Engineering Requirements Management DOORS Next (DOORS Next). It utilizes

the extensions API to read the model of an existing graphical artifact and convert it in-place to the newer diagram format, which you can then edit.

For full details about the graphical artifact migration utility, see Extending the Requirements Management application on Jazz.net.

Extending DOORS Next by using OSLC services

Open Services for Lifecycle Collaboration (OSLC) is a community that is standardizing the way that lifecycle tools work together. IBM Engineering Requirements Management DOORS Next (DOORS Next) supports the OSLC data sharing specification as a provider for the Requirements Management (RM) domain and as a consumer of other domains in the IBM Engineering Lifecycle Management (ELM). Data sharing is also supported by other RM tools that support OSLC integration, such as IBM Engineering Requirements Management DOORS (DOORS).

The sharing of OSLC data between domains is based on a common set of resources, formats, and REST architectural services.

The data sharing supports these transactions:

- Linking that is based on HTTP protocol
- Identification of resources by URIs
- Information retrieval that uses industry standard media types

DOORS Next supports OSLC data sharing with the domains and specifications that are listed in the following table.

Table 5. OSLC domains and specifications that DOORS Next supports

OSLC domain	RM consumes	RM provides
Change Management (CM)	V1, V2	None
Quality Management (QM)	V1, V2	None
Requirements Management (RM)	V1, V2	V1, V2
Configuration Management	None	See Oasis Working Draft

Related information

OSLC overview

RM as an OSLC service consumer

The Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM) consumes common services that other OSLC domains provide for data sharing.

The RM application consumes services that these OSLC domains and specifications provide:

- Change Management V1, V2
- Quality Management V1, V2
- Requirements Management* V1, V2
- Architecture Management V2

*Do not configure the RM application to consume its own OSLC interface. The support is for cross-repository and cross-tool communication only.

RM consumes these OSLC core services that the supported domains provide:

- These services display delegated user-interface dialog boxes:
  - Resource creation: Displays a dialog box that enables a user of a web application to create a resource in an OSLC service provider.

  - Resource selection: Displays a dialog box that enables a user of a web application to select a resource that an OSLC service provider manages.
- User-interface previews (compact rendering, rich hover): Display summary information about linked resources when a user hovers over a link.

Related information

OSLC Core Specification Version 3.0

OSLC Requirements Management 2.1

OASIS OSLC Change and Configuration Management specification

RM as an OSLC service provider

The Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM) provides user interface (UI) elements and operations to applications that consume services from the RM domain for data sharing.

UI elements that RM provides

The RM application provides the following UI elements for other products to consume in compliance with the RM domain specifications V1 and V2:

- Delegated UI dialog box for the selection of requirement resources
- Delegated UI dialog box for the selection of requirement collection resources (views)
- Delegated UI dialog box for the creation of requirement resources
- UI previews (compact rendering, rich hover) at displayed links to requirement resources
- UI previews (compact rendering, rich hover) at displayed links to requirement collection resources
- Factory resource for the programmatic creation of requirement resources

OSLC operations that RM provides

The following table lists the operations that RM provides in compliance with the indicated RM domain specifications.

Table 6. OSLC operations that the RM application provides as an RM provider

Operation	RM V1	RM V2	Oasis Working Draft
Service Discovery	Yes	Yes	
POST for requirement creation	Yes	Yes	
GET on a Requirement	Yes	Yes	
GET on a Requirement Collection	Yes	Yes	
Resource Shape	No	Yes	
QUERY on Requirement and Requirement Collection	No	Yes	
QUERY on OSLC links	No	Yes	
POST for baseline creation			Yes
GET for baselines and streams			Yes

Note: For information about configuration management operations, refer to the Oasis Working Draft.

- The POST operation creates a requirement as the first artifact in a requirements collection. POST is not available at the database level of the service discovery tree.
- RM internal links are not included in the results of the V1 GET operation.
- RM external links are not included in the results of the V1 GET operation.
- RM internal outgoing links are included in the results of the V2 GET operation.
- RM external links are included in results for the V2 GET operation.

Modules that are located within a collection are not available to OSLC consumers through a GET operation. An attempt to add a module to a collection through a PUT operation will fail.

For basic instructions for using OSLC in RM, see the article Using OSLC capabilities for requirements management on Jazz.net.

Note: Content on Jazz.net is a development site that is governed by the Jazz.net Terms of Use and is provided as-is without warranties of any kind.

For more information about the OSLC RM implementation in ELM and other products that are based on Jazz technology, see the Open Services for Lifecycle Collaboration Workshop in the Library on the Jazz Community Site. The workshop includes instructions and examples for the following RM topics:

- Introduction to the OSLC RM API
- Accessing OSLC RM APIs programmatically

For information about developing OSLC-compliant Eclipse applications, see the Eclipse Lyo web site.

For information about enabling links between RM and other ELM applications and other RM tools, see “Linking to development, design, test, and requirement artifacts” on page 201.

For information about configuring the integration with IBM Engineering Requirements Management DOORS, see “Integrating the Requirements Management application and DOORS” on page 15.

Related information

OSLC Requirements Management Specification Version 1.0

OSLC Requirements Management Specification Version 2.1

Links across OSLC domains

The Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM) integrates with other application domains by using standard link types as implementations of the OSLC specifications.

OSLC link relationships

Table 7. Linking across domains from and to the RM application

Domain	Link relationships in RM	Link relationships in external applications
Change Management (CM)	RM artifacts can be linked to CM artifacts by using one of these link types: Implemented By Affected By* Tracked By*	CM artifacts can be linked to RM artifacts by using one of these link types: Implements Affects* Tracks*

Table 7. Linking across domains from and to the RM application (continued)		
Domain	**Link relationships in RM**	**Link relationships in external applications**
Quality Management (QM)	RM artifacts can be linked to QM artifacts by using this link type: Validated By	QM artifacts can be linked to RM artifacts by using one of these link types: Validates (a requirement) Validates* (a requirement collection)
Requirements Management (RM)	RM artifacts can be linked to external RM artifacts by using one of these link types. * This link type is used for the integration between the RM application and IBM Engineering Requirements Management DOORS (DOORS) objects. References	External RM artifacts can be linked to RM artifacts by using one of these link types. * This link type is used for the integration between the RM application and DOORS objects. Referenced By
Architecture Management (AM)	RM artifacts can be linked to AM artifacts by using these link types: Refined By Architecture Element Traced By Architecture Element Satisfied By Architecture Element Derives Architecture Element	AM artifacts can be linked to RM artifacts by using these link types: Refines Trace Satisfies Derives From

*Support for this link relationship was added in V2 of the domain specifications.

For more information about Architecture Management, see Overview of Rhapsody Model Manager.

Note: In projects that are enabled for configurations, links are directional and are owned by an application. For more information about link ownership, see Overview of cross-application artifact linking.

Related tasks

Linking to development, design, test, and requirement artifacts

Additional OSLC integration services and requirements

Root services provides the entry point for the OSLC service discovery documents. OAuth security is required for OSLC authentication.

Root services

Although the root services document is not part of the OSLC specification, it provides the entry point for the OSLC service discovery documents and the configuration URLs that are needed to consume OSLC services.

The root services document is located by a URL, based on the server location of the RM server: `https://host-name:9443/rm/rootservices`. For example, if the RM server is installed at `http://rm.example.com/`, then the root services document is at `https://rm.example.com:9443/rm/rootservices`

Secure authentication

Security is required for OSLC and is provided by OAuth 1.0a. OAuth is an open protocol that provides secure API authorization in a simple, standard method from desktop and web applications. To access most OSLC URIs, including URIs for service discovery, requirements, requirement collections, you must be an authenticated user. OAuth authentication is not required for the root services URI. For more information, see the OAuth 1.0a Specification.

OASIS OSLC Change and Configuration Management Specification

For information on how to represent and recognize versioned artifacts and configurations, see the OASIS OSLC CCM TC specification.

Managing

This section describes how to work with dashboards in the Requirements Management (RM) application.

Dashboards in the Requirements Management application

You can work with both project dashboards and personal dashboards in the Requirements Management (RM) application. Project dashboards are composed of widgets that provide high-level overviews of artifacts and requirements that are scoped to a specific RM project. Personal dashboards are useful for tracking action items and workloads across projects, and to display other widgets, such as calendars, time zone clocks, news feeds, and search engines.

If your project is enabled for configuration management, you can report on versioned artifacts using configuration-related information in dashboard widgets.

Related concepts

Configuration Management

Related reference

Project Dashboard

A project dashboard in the Requirements Management (RM) application is composed of widgets that provide high-level overviews of artifacts and requirements that are scoped to a specific RM project. Only the members of a project can view its dashboard.

Related information

Personal dashboards

Managing dashboards

Composing and managing requirements

You can use the Requirements Management (RM) application to define the requirements for your system or application, and then manage those requirements by using mechanisms such as traceability links, tags, attributes, and dashboards.

Related tasks

“Administering requirements projects or components” on page 21

Joining a requirements project

To join a requirements project, a project administrator must use the web client to add you to the project as a team member. You can then use web client to open a project from your User Dashboard.

Before you begin

Before you start to work in the client, you must have a Requirements Management repository server installed locally on your computer or have access to one on a network server. For information

on installing and configuring the server and client, see https://www.ibm.com/docs/en/elms/elm/7.0.2?topic=SSYMRC_7.0.2/com.ibm.jazz.install.doc/topics/c_planning_install.html. If the team that you are joining has a repository server on a network, contact the server administrator to get access information.

Related tasks

Creating requirement projects using the web client
Jazz project administrators can create projects and modify project structure and team membership.

Logging in to a requirements project repository

Log in to a requirements project repository in the web client by using the web address and user credentials that your administrator provides.

Before you begin

Obtain a URL and your user name and password from your project administrator.

Procedure

1. To log in, type the following URL into your browser address field:

   ```
   https://hostname:port number/rm/web/
   ```

   In this example, *hostname* is the fully-qualified hostname of the server that your administrator provided, and *port number* is the port number on that server. For example, enter a URL such as this:

   ```
   https://myhost.com:9443/rm/web/
   ```

2. Log in using the user name and ID that your administrator provided. Authentication can be configured to use an external LDAP registry, a custom/federated WebSphere Application Server user directory. For more information, contact your administrator.

Results

The All Projects window opens, which lists all the projects of which you are a member. The All Projects page has a page navigator when over 100 projects are displayed. You can use the page navigator at the top of the page to see your projects in increments of 100.

Click **Explore Dashboard** to display the project dashboard or click **Show Artifacts** to open the project Artifacts page.

Related information

Setting up User Management for the IBM Engineering Lifecycle Management (ELM) server

Project dashboards

A project dashboard in the Requirements Management (RM) application is composed of widgets that provide high-level overviews of artifacts and requirements that are scoped to a specific RM project. Only the members of a project can view its dashboard.

You can open a project dashboard on the **All Projects** page or from the **Home** menu. The dashboard can be modified only by a user who has administrative access to the project.

To modify the number of columns that are shown on the dashboard, click the arrow on a tab and click **Layout**. To add a page to a dashboard, click the **Add New Tab** icon.

To learn how to customize the project dashboard, see Adding and organizing content on a dashboard.

To add an extension to the mini dashboard using a URL, watch the following video.

Dashboard widgets

To modify the properties of a widget, click **Settings** on the widget heading menu. To modify the widget title and color, click **Appearance**.

You can add widgets to your dashboard to customize your view of the projects that you are a member of. If you are integrated with the IBM Engineering Lifecycle Management (ELM) applications, you can add widgets to display RM artifacts that are linked to development and test artifacts. You can also add widgets from the RM, Quality Management (QM), and Change and Configuration Management (CCM) applications to your personal dashboards.

To add a widget, click **Add Widget**. Select a catalog and then click the **Add Widget** icon for the widget to add. You can add multiple instances of a widget and customize its title and properties. Widgets are organized in categories.

These widgets provide information about requirements projects:

- **Projects Members**: Lists all members of the project.
- **Recent Changes**: Lists recently modified artifacts in the project.
- **Comments**: Lists recent comments that are related to the project. You can filter the comments by those that are addressed to you or those that you made.
- **Reviews**: Lists recently modified reviews in the project. You can limit the display to only your active reviews or all active reviews. You can filter or group the results by status, role, or review name.
- **Requirements View**: Shows the result of a single view. The view is chosen from a list relative to a particular requirements project.
- **Requirements Tracing**: List RM artifacts that link to CCM or QM applications. Linked development or test artifacts are displayed as indented entries below each RM artifact.

To know more about Adding widgets to the widgets catalog, watch the following video.

Related concepts

“Reviews” on page 181

“Traceability” on page 199

Traceability is used to trace a project element to related project elements, especially those related to requirements. Traceability helps determine that a requirement is satisfied from inception through implementation and testing. Create traceability relationships by linking requirements to other requirements and to development and test artifacts.

Related tasks

Creating personal dashboards

You can create an unlimited number of personal dashboards to suit different needs.

“Commenting on artifacts” on page 179

A *comment* is a textual discussion item that you can add to an artifact or an element within an artifact. You can use comments to provide team feedback during the development of an artifact. In the web client, comments are displayed in the **Comments** section of an artifact sidebar, in the **Recent Comments** section of the Artifacts page sidebar, and in **Recent Comments for Me** on the user dashboard.

“Creating requirements projects” on page 26

Jazz project administrators can create projects and modify project structure and team membership.

Creating personal dashboards

You can create an unlimited number of personal dashboards to suit different needs.

About this task

You can customize personal dashboards to serve various purposes:

- Track action items, such as open high-severity work items, pending approvals, and new work items that need to be triaged.
- Track workload in a project.
- Track workload across multiple projects, including those projects from other applications.

- Display useful widgets to help you work, such as calendars, time zone clocks, news feeds, and search engines.

New dashboards are pre-populated with a set of widgets that are designed to help a user get started with the dashboard. Personal dashboards are stored on the Jazz Team Server.

Important:

- To perform this task, you must have read/write access to the Jazz Team Server project area, which is available to members of the JazzUsers repository group and most other groups. It is not available to members of the JazzGuests group.
- If you change your user ID, your personal dashboard will not function properly.

Procedure

1. To create a personal dashboard, click the **Home** icon ().

   Note: If you previously created a personal dashboard, this action takes you to your default personal dashboard. To create another personal dashboard, click **Personal Dashboards** > **Create Dashboard**.
2. In the **Create Dashboard** page, select the dashboard template, and click **Next**.
3. In the **Select Project Area** page, select the project area, and click **Finish**.
4. A dashboard is created with the default title ***Your-contributor-name's*** **Dashboard**. If you have multiple personal dashboards, you can create unique and descriptive titles for each one to prevent confusion. To change this title, click the dashboard title, and then edit the text.
5. The dashboard is populated with a set of widgets. You can add, remove, organize, or edit widgets to customize your personal dashboard. For more information about using widgets, see Adding and configuring widgets.
6. Optional: To set any personal dashboard as the default, click the **Set as default dashboard** icon () in the dashboard toolbar, and then click **OK**.
7. Optional: To access all of your personal dashboards, click the arrow next to the **Home** icon () to display the menu. All of the personal dashboards that you created are listed under **Current Personal Dashboards**.
8. Optional: To share a personal dashboard and make it visible to a project or team, click the **Sharing Options** icon () in the toolbar, and then click **OK** to confirm sharing.

   Important: Shared personal dashboards display in the All Personal Dashboards list (**Dashboards** > **All Personal Dashboards**), and they can be displayed in search results in the web client. When a personal dashboard is shared, the **Shared dashboard** icon () is displayed next to the dashboard in the **Personal Dashboards** menu.
9. Optional: To delete a personal dashboard, click the **Delete** icon () in the dashboard toolbar.

   Note: It is possible to delete all of your personal dashboards. If you do, you can create one by clicking the **Home** icon ().

Defining requirements

You can use rich-text artifacts to define requirements and requirements documents. You can also create and link to supporting artifacts, such as business process diagrams, use case diagrams, and wireframes, to elaborate requirements and put them in the broader context of the system and business processes.

Related tasks

"Administering requirements projects or components" on page 21

Creating artifacts

In a requirements project, you can create rich-text and graphical artifacts.

Before you begin

Before you can create an artifact, the artifact type must exist in the project. If you are an administrator, you can view or create the artifact types for a project by clicking the **Administration** menu  and then clicking **Manage Project Properties**.

Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

About this task

When you create an artifact, the artifact can be new or based on another artifact. You can also create an artifact by extracting text from a text-based artifact. After you create an artifact, you can capture its URL to make it easy for other team members to access it. Watch a video about creating requirement artifacts.

When you create an artifact by extracting text from a text-based artifact, the text that you extract becomes a link to the new artifact. You select the text and then either use the toolbar or right-click the text to create an artifact.

If you right-click the text and use the menu to create the artifact, you can quickly save the selected text as a new artifact. However, this method uses a truncated form of the selected text as the artifact name and uses the same artifact type and location as the initial artifact.

Procedure

- To create an artifact:
  a) On the **Artifacts** page, click **Create**, and select an artifact type.
  b) In the **Create Artifact** window, enter information about the new artifact and click **OK**.

  You can also create artifacts from the **Folder** menu. You can click the pencil icon  or right-click a folder in the **Folder** menu. The **Create Artifact** option on the **Folder** menu displays the preferred artifact types.
- To create an artifact that is based on another artifact:
  a) On the **Artifacts** page, select the check boxes of one or more artifacts that you want the new artifact to be based on.
  b) Click the pencil icon  and click **Duplicate Artifact**.
  c) In the Duplicate Artifact to Folder window, enter a new name for the artifact and choose a destination folder.
  d) Optional: To copy links and tags from the original artifact to the new one, select the corresponding check boxes.
  e) Optional: To create a link between the original artifact and the new one, select the corresponding check box.
- To create an artifact by extracting text from a text artifact:
  a) Open a text-based artifact and click **Edit**.
  b) Highlight the text to base the new artifact on, and then complete one of these steps:
     – Right-click the text and, on the menu, click either **Save as New "*Artifact*" and Link** or **Save as New "*Artifact*" and Insert**.
     – From the toolbar, click the **Save Selection as New Artifact and Link** icon or the **Save Selection as New Artifact and Insert** icon.

c) Provide the information about the new artifact, click **Finish**, and then click **Done**.

Results

The newly created artifacts or content of the modules are stored by default in a folder. Use the drag-and-drop action to move one or more folders and re-organize them. You can also double-click in the content area of a text artifact or diagram artifact to put it into edit mode. After making the required changes save the artifact.

To edit an artifact, you can double-click in the content area of a text artifact or diagram artifact, make changes, and then save the artifact.

What to do next

After you create an artifact, you can capture the URL of the artifact to make it easy for your team members to directly access the artifact. You can capture the URL in a format that includes both the artifact name and ID. You can capture URLs in a rich hover from the **Artifacts** page, from dashboard widgets, or from the full-text search widget.

Related tasks

“Creating templates for requirements projects or components” on page 46
You can create a project or component template, and select the elements to include in it. When configuration management is not enabled, you create templates for a project. When configuration management is enabled, you create templates for a component. You can include or exclude artifacts, artifact templates, artifact types and attributes, links between artifacts, link types, folder structure, tags, and shared saved filters. After you create templates, you cannot modify them.

“Managing project or component properties in requirements projects” on page 28
Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

“Creating link types for requirements projects” on page 36

Requirement artifacts

A requirement describes a condition or capability to which a system must conform. A requirement is either derived directly from user needs or stated in a contract, standard, specification, or other formally imposed document.
In the Requirements Management (RM) application, you use artifacts and artifact types to define requirements and support and enhance the definition of requirements.

For example, you can use features and use cases to describe the requirements, and then enhance the definition by creating diagrams, wireframes, or storyboards.

Artifact is a general term for an object in a repository. You can manage artifacts in projects and folders, or you can use tags to filter groups of artifacts for a specific purpose. Click **Recently viewed artifacts**  to quickly navigate to the artifacts that you have accessed lately.

Artifacts and artifact types

Artifacts can be of various types, which have customizable attributes and data types.

While there is no default artifact type called "requirement," you can create one or use the default artifact types that are in the sample project templates.

Many artifact types are included in the sample project templates, including these types:

- Requirements
- Use cases
- Design documents
- Business process diagrams

- Use case diagrams

For a list of sample project templates and their included artifact types, see “Creating requirements projects” on page 26.

If you are a project administrator, you can view the artifact types that are in a project and create artifact types, attributes, data types, and links types. See “Managing project or component properties in requirements projects” on page 28.

Artifact formats

Artifact formats can be specific to individual artifact types or can be used for multiple types. For example, you might use the text format for a feature or a use case specification or a custom artifact type. However, the diagram format is typically used exclusively for creating diagrams.

You can create and populate artifacts that are based on several formats, including these:

Text
Use this format to create rich-text requirement content that can contain text, images, and embedded artifacts. This format is useful for text-based artifacts types, such as actor and use case specifications, user stories, features, business goals, and glossary terms.

Collection
Use this format to group a set of related artifacts in a collection.

Module
Use this format to create a structured document that consists of artifacts in a module.

Diagram
Use this format to create graphical artifacts such as wireframes, business process diagrams, and use case diagrams.

Documents: Rich-text requirement artifacts

You can capture text-based content in rich-text artifacts that are called *documents*. Documents use the same rich-text capabilities that are used for requirements, use case specifications, actor specifications, and all other textual artifacts. These capabilities include controls for text styles, paragraph justification and indentation, bullets, and links.

If your browser supports spell checking, you can edit and check the spelling in rich-text artifacts. Misspelled words are marked with a red wavy underline.

In a document, you can link to artifacts, and can mark and embed other artifact types, comments, requirements, and images. Embedded requirements and inserted artifacts are updated as the artifacts are modified and saved.

To provide context for presenting multiple requirements, you can embed requirements and graphics in a document. An example of a rich-text artifact that typically contains multiple high-level requirements is a vision document.

Viewing the artifact's history

From the **More actions** ☰ menu, click **Open History** > **Audit History** tab to view the changes in the artifact. This tab shows a complete history of changes that goes back to the creation of the artifact. To return to the artifact, click **Close History**. You can also access the artifact history from **Open Artifact** > **Open Artifact History**

Related tasks

“Creating requirements projects” on page 26
Jazz project administrators can create projects and modify project structure and team membership.

“Creating artifacts” on page 91

In a requirements project, you can create rich-text and graphical artifacts.

"Managing requirements" on page 188
You can manage requirements by using traceability links, tags, attributes, filtering, workflows, and dashboards. With these capabilities, you can create relationships between requirements and other artifacts, categorize requirements, assign properties to requirements, and monitor relationships and status among team applications. To learn how to optimize requirements management, reduce rework and avoid delays by using AI from Watson, go to the IBM Engineering Requirements Management site.

Related reference

Vision document
A vision document defines the high-level scope and purpose of a program, product, or project. A clear statement of the problem, proposed solution, and the high-level features of a product helps establish expectations and reduce risks. This topic provides an outline of potential content for a vision document.

Creating diagrams to support requirements

In IBM Engineering Requirements Management DOORS Next (DOORS Next), you can create diagrams that support requirements. Use the diagram editor to quickly create graphical representations of artifacts by dragging shapes from a palette onto a canvas. You can also use the diagram editor to create a graphical artifact in a module. When you create a graphical artifact in a module, you can open and edit that artifact by selecting the **Open Artifact** check box in the **Create Artifact** window.

Note: As of version 6.0.3, the graphical editor browser add-on is no longer available. However, you can create the same artifact types by using palettes in the diagram editor.

To learn about creating diagrams, see the video IBM Rational DOORS Next Generation: Collaboration through diagramming:

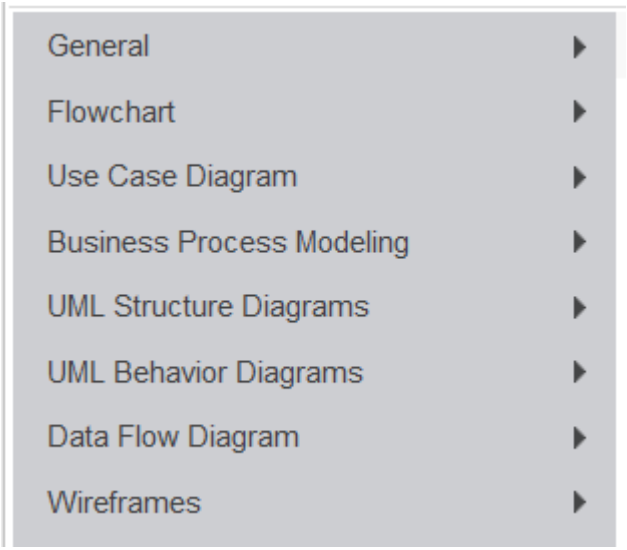
About this task

You can use the diagram editor to create several different types of graphical artifacts; choose the most appropriate palette for the type of diagram that you want.

Procedure

1. On the **Artifacts** page, click **Create** and click **Graphical artifact** or any artifact type with a format of diagram.
2. In the **Create Artifact** window, type a name for the new diagram.
3. Provide any optional information, such as a description, a folder, or tags.
4. Optional: To open the new artifact in the diagram editor, select the **Open Artifact** check box.
5. Click **OK**.

   If you selected the **Open Artifact** check box in the previous step, the new artifact opens in the diagram editor. You can also edit the diagram-based artifact by using the diagram editor.
6. To create a diagram, open the graphical artifact that you created. The shapes that you can use in your diagrams are grouped in palettes.



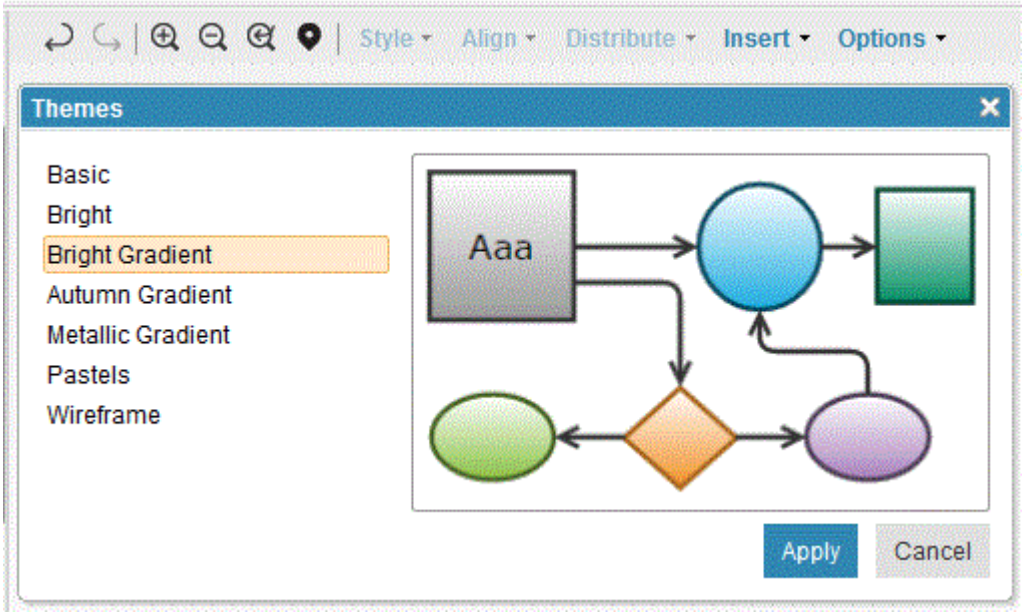
7. Expand a palette and drag the shapes onto the canvas.

8. To create connections between the shapes, select a shape, click the connector icon  and drag it to a target shape.

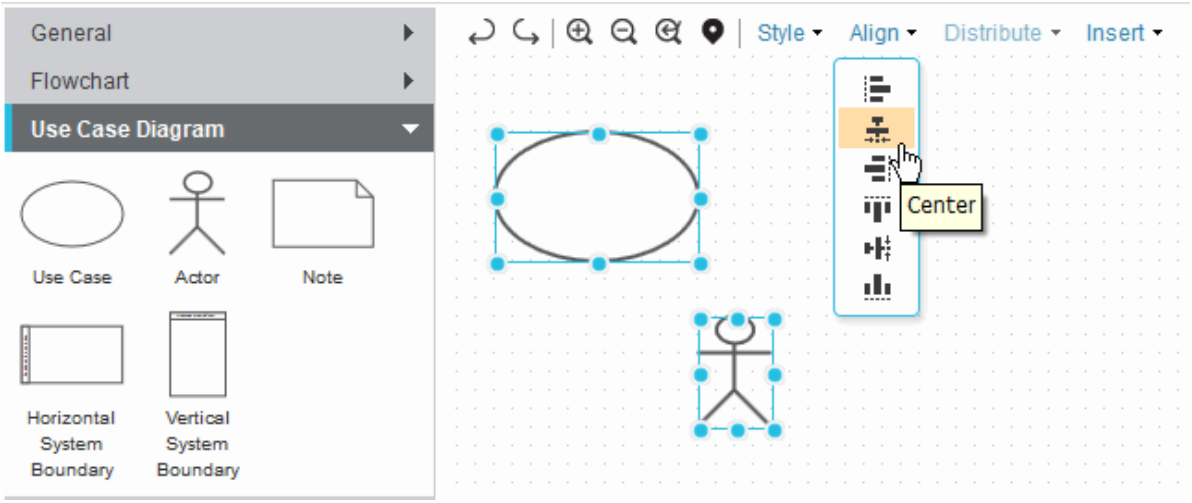
   To change the properties of the connection, right-click the connection, click **Properties**, and specify how you want the line and text to look. For example, you can choose a link style and add arrows.

9. Use the toolbar menu or the context menus to perform the following tasks:

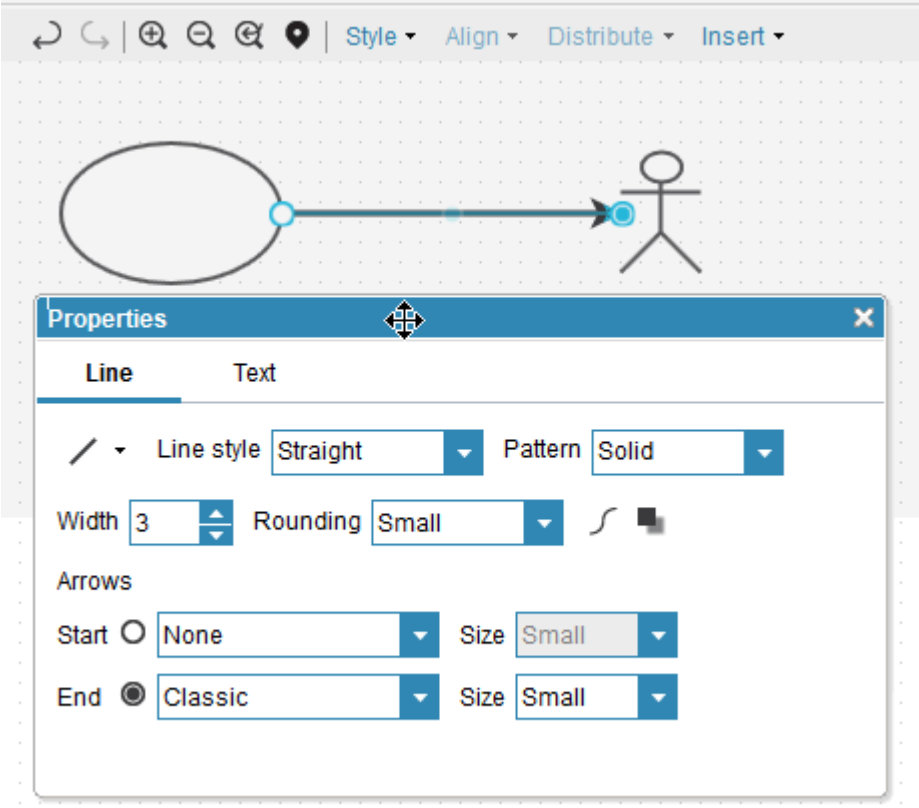
   - Control the look of your diagram by applying a theme. In the diagram editor, click **Options** > **Themes**.



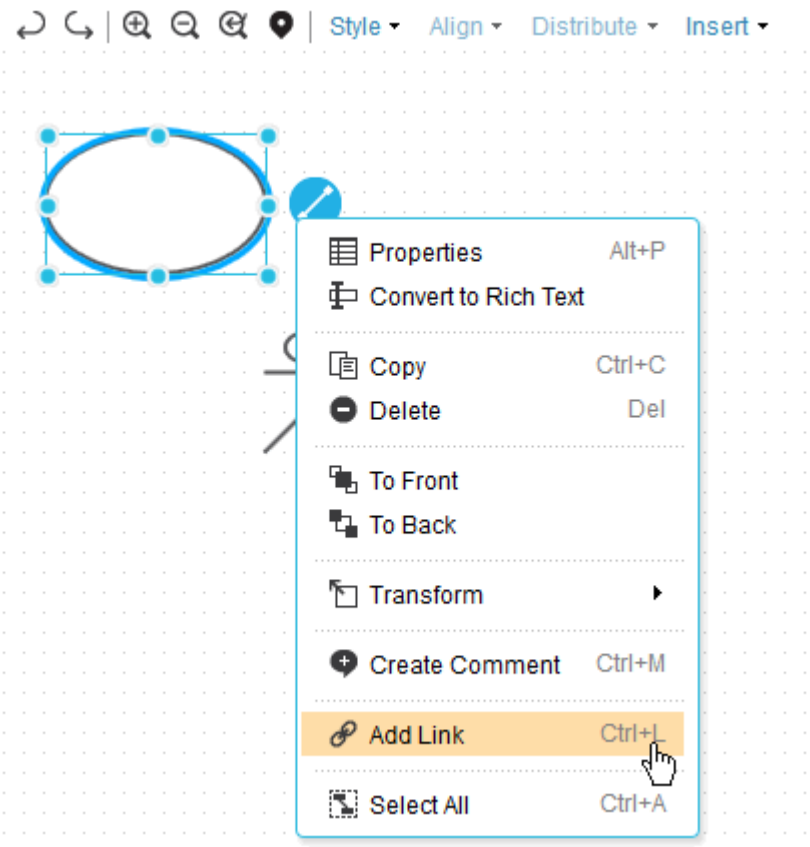
   - Align groups of selected shapes in different positions on the canvas.



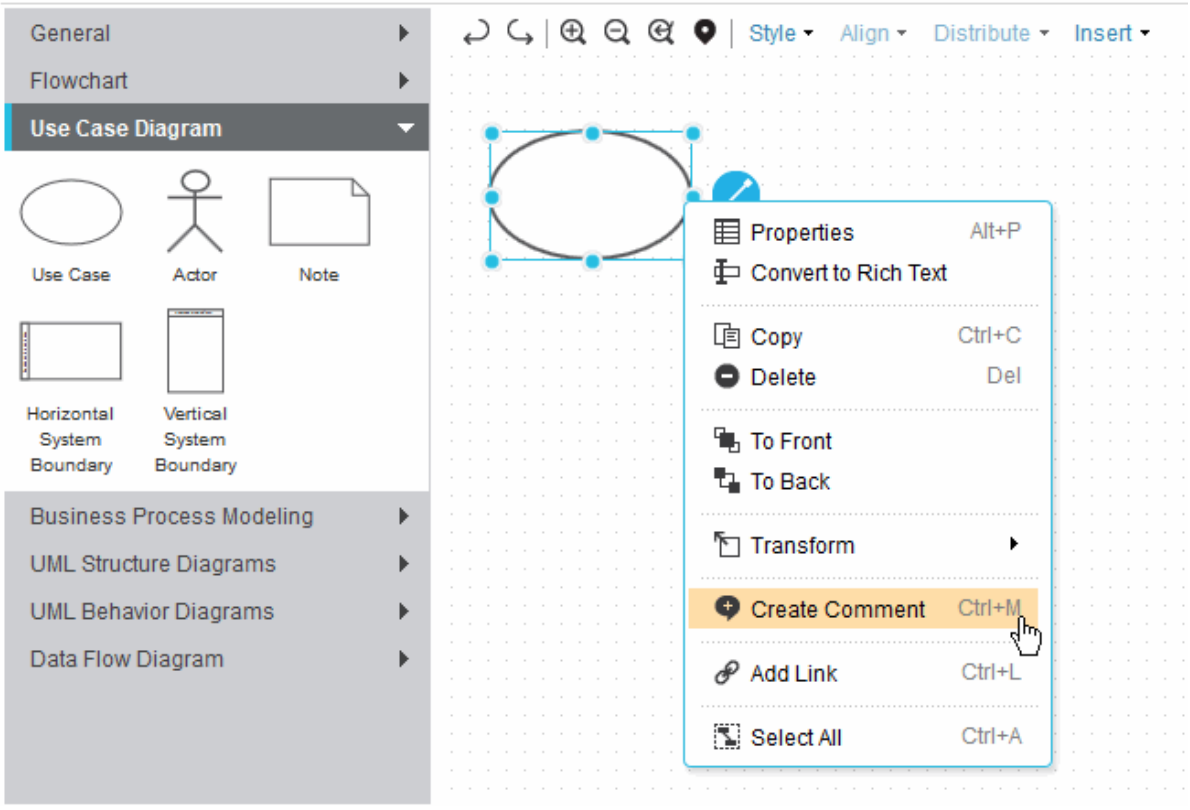
- Set shape and line properties, such as such as font, alignment, background color, line style, and rounding.



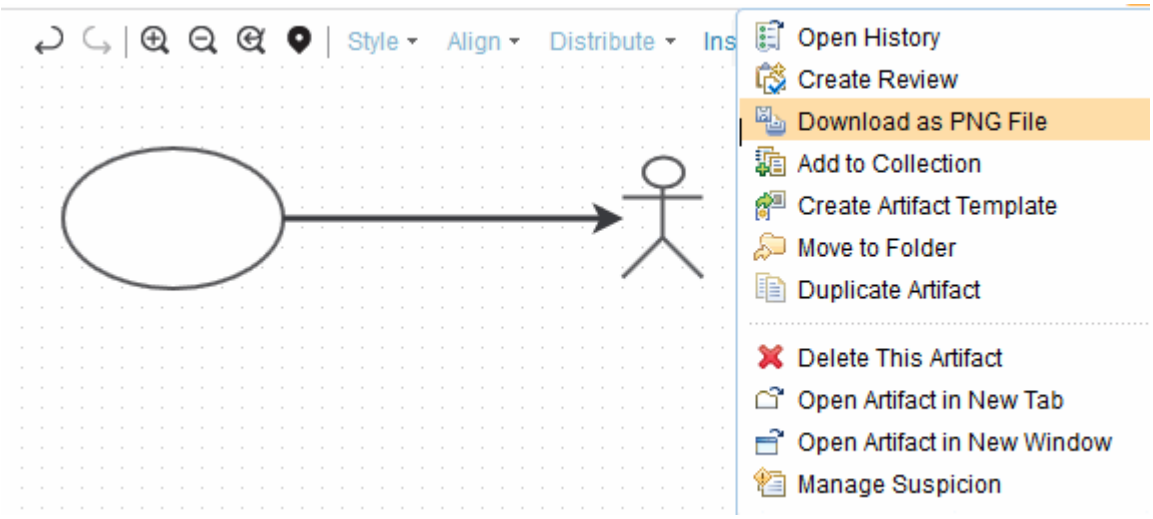
- Create links between shapes and other requirement artifacts.



- Create comments on shapes.



- Download diagrams as PNG files.



Tip: If you add links or comments to shapes in your diagram, you can display indicators to show that there are associated links or comments. To enable the comment indicators, open the Comments pane and click the **Highlight All Comments** icon  . To enable the links indicators, open the Links pane and click the **Highlight All Links** icon  . For example, the following Text shape shows that one comment and one link are associated with it.

10. To paste a link in the diagram, complete the following steps:
    a) Select the artifact in the grid and click **Copy Artifact**.
    b) Open the diagram in edit mode.
    c) Right-click the shape and click **Paste as Link**.

    The link is added to the diagram and you can see the link in the link panel in the sidebar.

    Tip:

    - You can also paste a link on shapes in a diagram.
    - If you copy multiple artifacts and paste the link on multiple shapes, multiple links are created.

Business process diagrams

You can use business process diagrams to depict business process flows. A business process diagram is a diagram that depicts a directed flow of activities that are specified by using a subset of Business Process Modeling Notation (BPMN).

A simple process represents the internal processes that occur within one organizational unit or business entity. These are sometimes referred to as workflow processes. In web services, they are referred to as *orchestration of services*. If swimlane notation is used, the process is contained within a single pool, which is assumed and therefore not shown in the diagram. Simple processes can include multiple lanes to represent roles or internal participants in the process.

A business-to-business process represents global processes that span more than one organizational unit or business entity. This process is represented by multiple swimlane pools. Message flows connect the activities across the pools.

For details about how to create a simple process representation, see “Getting started with business process diagrams” on page 104.

Business process elements

You can use four categories of elements that you can use in business process diagramming:

- "Swimlane" dividers: Group the activities of participants, roles, and systems. These divisions include pools and lanes.
- Flow objects: Identify the main graphical elements that define the behavior of a business process. These objects include events, activities (tasks and subprocesses), data objects, and gateways.
- Connectors: Connect flow objects. These elements include sequence flows, message flows, and associations.
- Annotations: Add supportive elements that add information to the diagram.

For detailed descriptions of the available process elements, see “Business process elements” on page 99.

Business rules

A business rule is a policy, constraint, or required operation that applies to a specific set of business conditions or dependencies. An example of a business rule for a bank is that a credit check is not required when an existing customer opens an account.

Business rules can be described in documents. Individual rules can be linked to elements in business process diagrams or use case diagrams, which show the rule in the context.

Business process elements
A business process diagram is a graphical representation of a business process flow, which consists of a sequence of activity elements and flow controls elements. The Requirements Management (RM) application supports a subset of elements from the core element set of Business Process Modeling Notation (BPMN) standard.

Explanations of the business process diagram elements are based on the Business Process Modeling Notation Specification from Object Management Group (OMG).

Table 8. Business process swimlane dividers

Element	Explanation	Graphical Representation
Pool	A pool represents a participant in a business-to-business process. A participant is a business entity (such as a company, company division, or customer) or a business role (such as a buyer or a seller), which controls or is responsible for a business process. High-level or complex processes can include multiple participants, each of whom controls a process in an organization. Each participant is associated with one pool. Pools are not used in simple processes.	

Table 8. Business process swimlane dividers (continued)		
Element	**Explanation**	**Graphical Representation**
Lane	A lane is a subpartition within a pool in a business-to-business process or a separate grouping of elements in a simple process. Lanes organize and categorize activities. Lanes are often used for internal roles (such as manager, associate), systems (such as an enterprise application) or an internal department (such as shipping or finance).	

Table 9. Business process flow object elements		
Element	**Explanation**	**Graphical representation**
Event	An event is something that occurs during the course of a business process. Events affect the flow of the process and usually have a cause (trigger) and an impact (result). There are three types of events, which are based on when they affect the flow: start, intermediate, and end.	
Start event	Start events begin a process.	Start event 
Intermediate event	An intermediate event occurs during a process. The event affects the flow of the process, but does not start or directly terminate the process.	Intermediate send or receive event 
End event	The end event ends the flow of a process and does not have any outgoing sequence flows.	End event 

Table 9. Business process flow object elements (continued)		
Element	**Explanation**	**Graphical representation**
Task	A task is a single activity that is included in a process. A task is used when the work in the process is not broken down to a finer level of process detail.	
Subprocess	A subprocess is a single flow object element that represents a set of activities.	
Data object	Data objects do not have a direct effect on the sequence flow or message flow of the process, but they do provide information about functions within the process, such as how documents, data, and other objects are used and updated during the process. Data objects can provide information that is required or output by the process. They can be used to represent many different types of objects, both electronic and physical. All data objects must be contained by a process or a subprocess.	

Table 9. Business process flow object elements (continued)

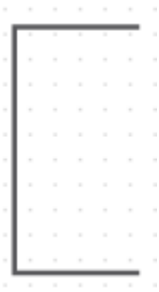
Element	Explanation	Graphical representation
Decision point (gateway)	A decision point (or gateway) controls the divergence and convergence of multiple sequence flows. It determines branching, forking, merging, and joining of paths. Icons in the diamond shape indicate the type of flow control behavior. The types of control are as follows: • **Decision point (inclusive)**: An inclusive (OR) decision and merging gateway. This decision represents a branching point where alternatives are based on conditional expressions that are contained within the outgoing sequence flow. In some sense it is a group of related independent binary (yes or no) decisions. Because each path is independent, all combinations of the paths can be taken, from 0 to all. However, set up the gateway so that at least one path is taken. A default condition could be used to ensure that at least one path is taken. • **Decision point (exclusive)**: A data-based exclusive decision and merging gateway. Data-based decisions represent a branching point where alternatives are based on conditional expressions that are contained in the outgoing sequence flow. An exclusive gateway restricts the flow so only one of a set of alternatives can be chosen during run time. • **Parallel**: A parallel (AND) gateway that provides a mechanism to synchronize parallel flow and to create parallel flow. These gateways are not required to create parallel flow, but they can be used to clarify the behavior of complex situations where a string of gateways are used and parallel flow is required. Each type of control affects both the incoming and outgoing flow.	Inclusive Gateway  Exclusive Gateway  Parallel Gateway 

Table 10. Business process connector elements.

Note: In previous versions of the RM application, the following connector elements were shapes that you could choose from the palette. As of version 6.0.3, those shapes are no longer available. You must create the connections between the shapes in your business process diagrams. For details, see step 8 in Creating diagrams to support requirements.

Element	Explanation	Graphical representation
Sequence flow	A sequence flow is represented by a solid line with a solid arrowhead. Sequence flows show the order in which activities are performed in a single process. Flow connectors show the direction of flow from a source to a target. The sequence flow can cross the boundaries between lanes, but cannot cross the boundaries of a pool.	Sequence flow:
Message flow	A message flow is represented by a dashed line with an open arrowhead. Message flows depict the contents of a communication and the flow of messages between two participants (in separate pools) that are prepared to send and receive the messages. Flow connectors show the direction of flow from a source to a target. A message flow crosses pool boundaries to show the interactions between these separate participants. Message flows are not available in simple processes.	 Message event: 
Association	An association is represented by a dotted line and is used to associate information in the form of text annotations with flow objects.	

Table 11. Business process supportive elements

Element	Explanation	Graphical representation
Annotation	Annotations are mechanisms for the designer to provide additional textual information for the reader of a business process diagram.	

Getting started with business process diagrams
Business process diagramming is a flexible requirements-definition technique. When you start, it is best to use the most simple process representation. Begin with a basic structure and the clearly identifiable elements in the process. As your diagram develops, add detail.

Your representation will incorporate process elements whose behavior is designed in accordance with the Business Process Modeling Notation (BPMN) guidelines. These elements, which are described in detail in “Business process elements” on page 99, help you to recognize the activities in the process and to organize your diagram.

Choosing a finite process

Begin with a clear objective. The business process diagram should represent a finite, clearly bounded process, even if it contains subprocesses. A complex process, such as "Processing a customer order" can have many participants and many subprocesses; a simpler process might be "Look up customer information." Consider these guidelines for diagramming:

- For a complex process, plan to create a summary only. Represent subprocesses with a single subprocess element; avoid adding too much detail at this point.
- For smaller, simpler processes, create detail as needed, but be sure to limit the detail to those activities that are performed completely within the process.

Using pools and lanes

Two types of process are supported: simple and business-to-business processes.

- A simple process represents the internal processes within one organizational unit or business entity. The process does not include *swimlane* pools; however, it can include multiple lanes to represent roles or internal participants in the process.
- A business-to-business process represents global processes that span multiple organizational units or business entities. This process is represented by multiple swimlane pools. Message flows connect the activities across the pools

If your process involves multiple participants (such as different organizations, customers, or systems), create a business-to-business process and separate the participants in different pools. Use separate pools to represent participants who control their own processes. For example, a customer is one pool and a seller is another; each has separate processes, yet they must communicate outside their own organizations (across pools) when an order is placed.

Within a simple process or a single pool in a business-to-business process, there might be multiple roles, each of which is represented by a separate lane in the diagram. For example, customer service, billing, and shipping each have their own lane within one pool.

Identifying activities

Identify the tasks and subprocesses that are included in the process. These activities are descriptions of work. The task is a finite (atomic) activity that cannot be subdivided into smaller activities. A subprocess represents a collection of tasks that are treated as one activity in this process diagram. Place each activity in the pool or lane that represents the participant, role, or system that performs the activity.

Activities can share data objects, which are containers for data. Connecting activities to data objects generates data associations, which are used to place data into or retrieve data from a data object.

Positioning the start, intermediate, and end events

Place the start and end events in the correct pool and lane, relative to the initial and final activities in the process. Add intermediate events that affect activities within the process.

Adding flow connectors and gateways

As you add flow connectors to the diagram, the tool assigns a connector that is appropriate for the context. Sequence flow connectors connect activities in a simple process or within a pool in a business-to-business process. Message flow connectors connect activities across two pools. As you add a connector between two elements, the business process diagram editor determines which type of connector to use based on the selected source and target. Associations connect text annotations with activities and events. A gateway controls the divergence and convergence of sequence flow; the gateway can determine branching, forking, merging, and joining of paths.

Adding groups and annotations

Add a text annotation to clarify a specific activity or event. Use a connector to associate the annotation with other elements.

Defining use cases

A *use case* is an artifact that defines a sequence of actions that yields an observable result of value. Use cases provide a structure to express functional requirements within the context of business and system processes. Use cases can be represented as a graphical element in a diagram and as a use case specification in a textual document.

A business use case defines a sequence of actions that a business performs that yields an observable result of value (a work output) to a particular business actor or that shows how the business responds to a business event.

A system use case is a sequence of actions that a system performs that yields an observable result of value to a particular actor (someone or something outside the system that interacts with the system).

A use case diagram can include multiple use cases and the relationships between use cases and the persons, groups, or systems that interact to perform the use case.

You can create an actor artifact that provides textual detail for an actor in a use case diagram. An actor artifact can be used in multiple use case diagrams.

Use case specifications share the same rich-text behavior that is present in all artifacts based on the text artifact format. The specifications often include content that is based on a template or process guidance. For a sample use case specification outline, see “Use case specification outline” on page 105.

Use case specification outline

A use case specification provides textual detail for a use case. You can use this sample outline to create your own use case specification documents.

Table 12. Sample outline of a use case specification

Section	Description
Use case name	States the use case name. Typically, the name expresses the objective or observable result of the use case, such as "Withdraw Cash" in the case of an automatic teller machine.
Brief description	Describes the role and purpose of the use case.
Flow of events	Presents the basic flow and alternative flows. The flow of events describes the behavior of the system; it does not describe how the system works, the details of the presentation, or the details of the user interface. If information is exchanged, the use case must be specific about what is passed back and forth. For example, instead of describing an action as "the actor enters customer information", indicate that "the actor enters the customer name and address."
Basic flow	Describes the ideal, primary behavior of the system.

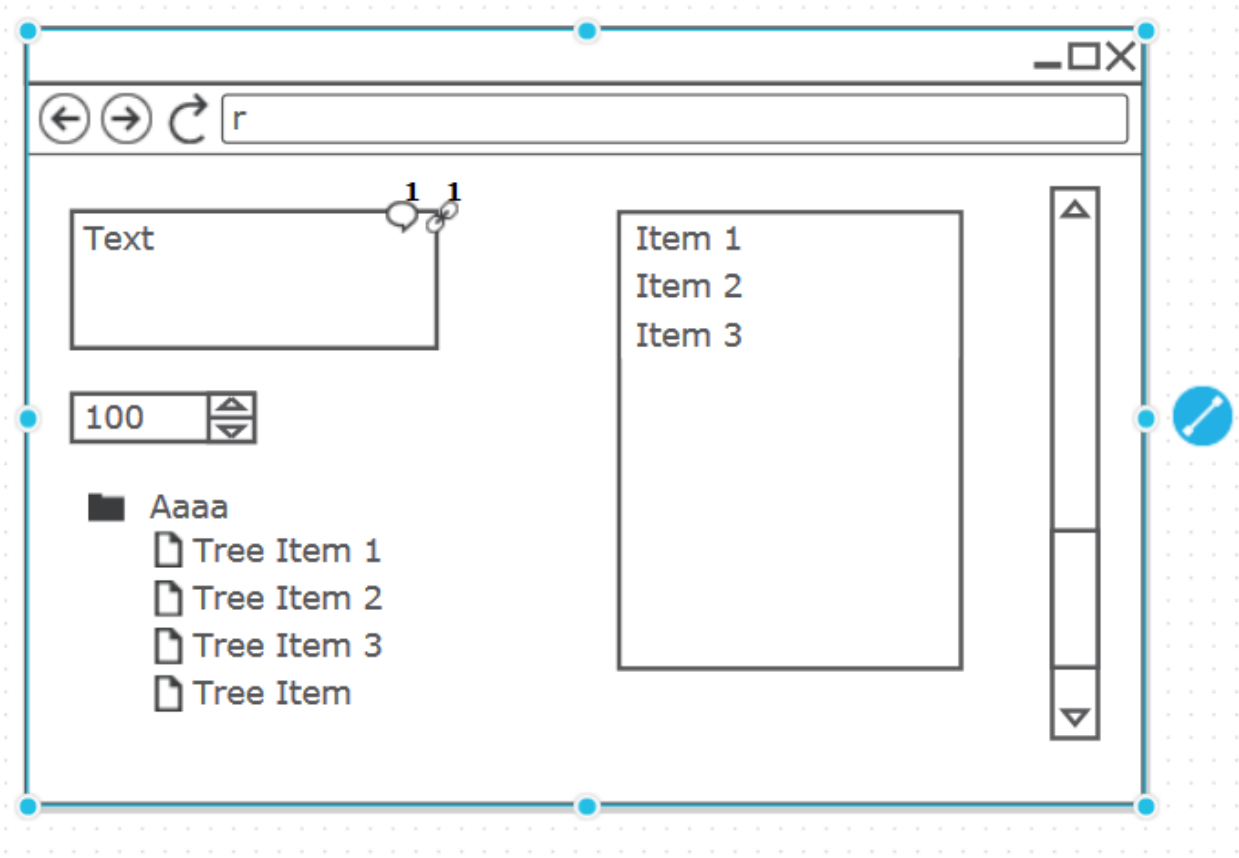
Table 12. Sample outline of a use case specification (continued)	
Section	**Description**
Alternative flows	Describes exceptions or deviations from the basic flow, such as how the system behaves when the actor enters an incorrect user ID and the user authentication fails.
Special requirements	Nonfunctional requirements that are specific to a use case but are not specified in the text of the use case flow of events. Examples of special requirements include these factors: legal and regulatory requirements; application standards; quality attributes of the system, including usability, reliability, performance, and supportability; operating systems and environments; compatibility requirements; and design constraints.
Preconditions	A state of the system that must be present before a use case starts.
Post conditions	A list of possible states for the system immediately after a use case is finished.
Extension points	A point in the use case flow of events at which another use case is referenced.

Wireframes

In the Requirements Management (RM) application, you can use wireframes to design web-based and rich-client applications. A wireframe is a simple line diagram, or schematic, for mocking up user interfaces or web pages.

The diagram editor includes a wireframe palette and themes that you can use to create wireframes. The wireframe palette contains several container-based shapes. The wireframe shapes also have custom properties that you can configure.

The following image shows how you can use wireframe shapes to sketch your ideas:

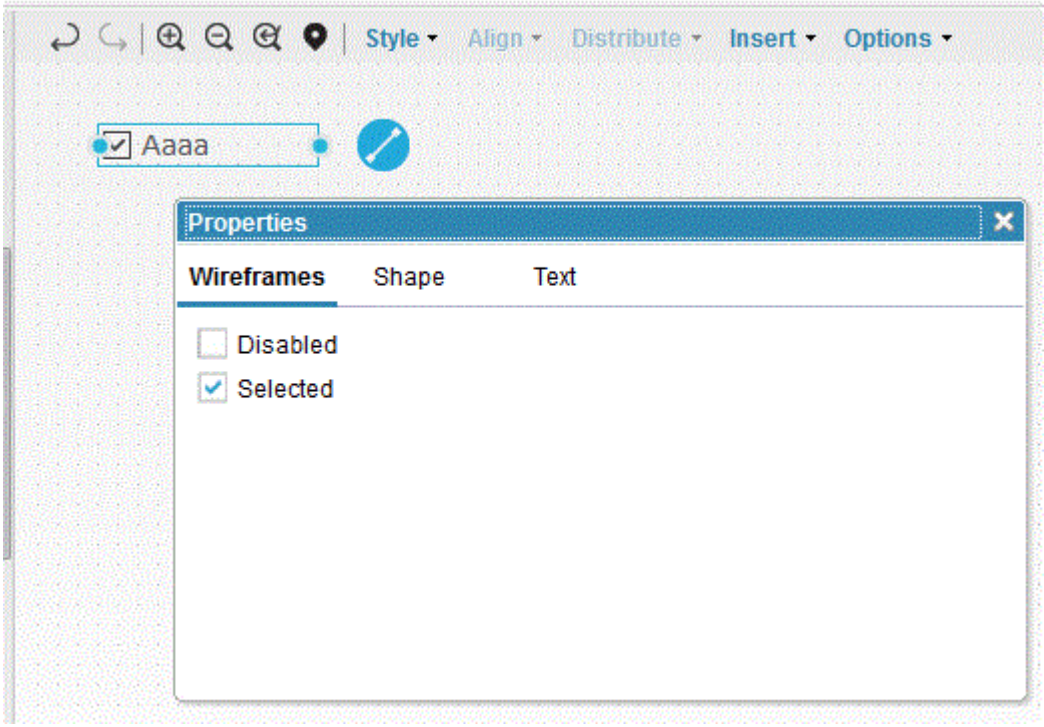


.

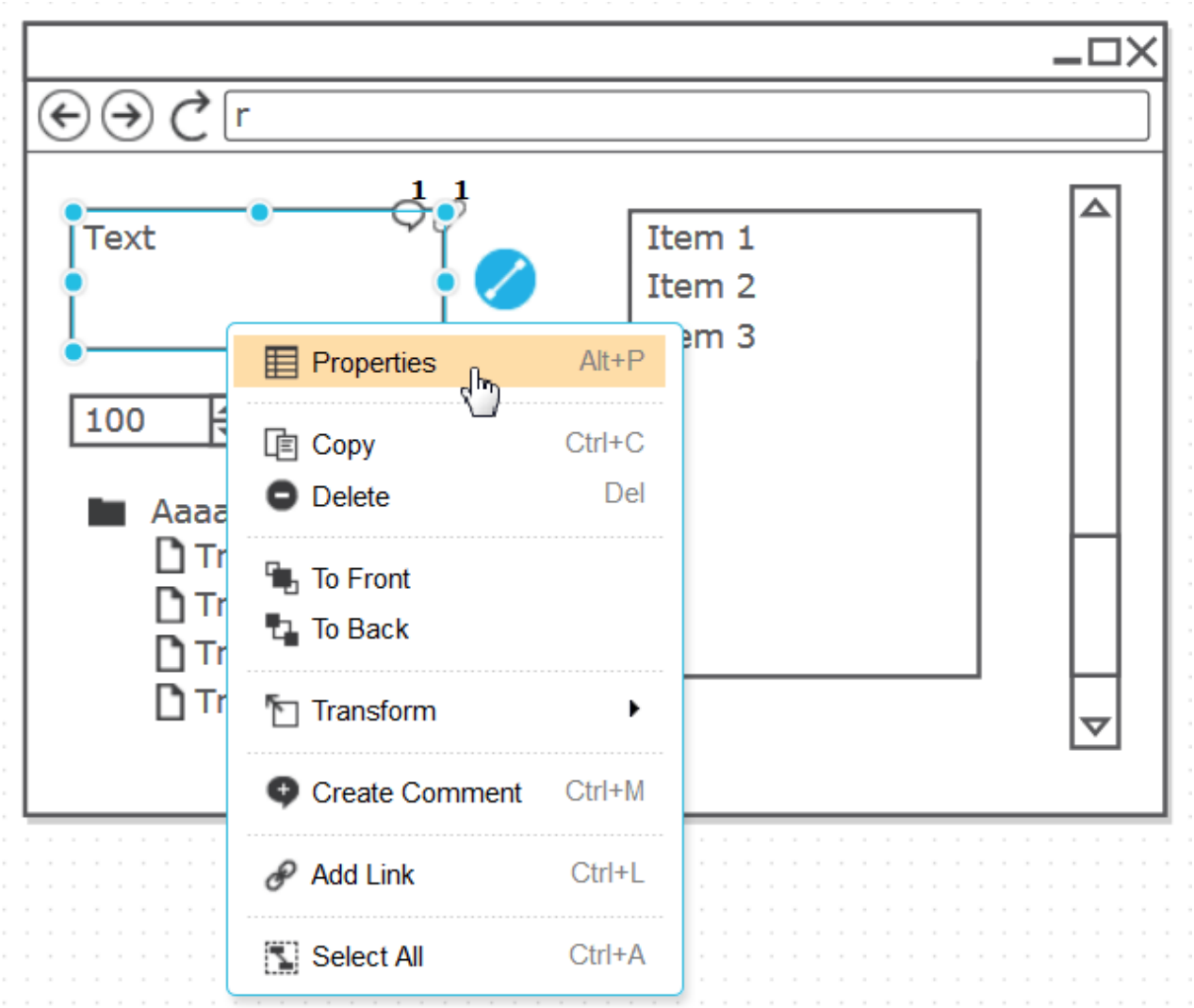
- In container elements, such as list boxes and vertical menus, you can arrange and organize the contents by dragging the items from one location to another.
- In tree structures, you can drag items to organize and nest them.

When you create diagrams, you can choose a theme to control the look of the shapes. A theme is available specifically for wireframe. For details, see step 9 in Creating diagrams to support requirements.

When you create a wireframe, you can control how the shapes are rendered by specifying properties for each one. You can also specify the state of a wireframe shape. For example, you can show check boxes as selected or cleared in your wireframe.

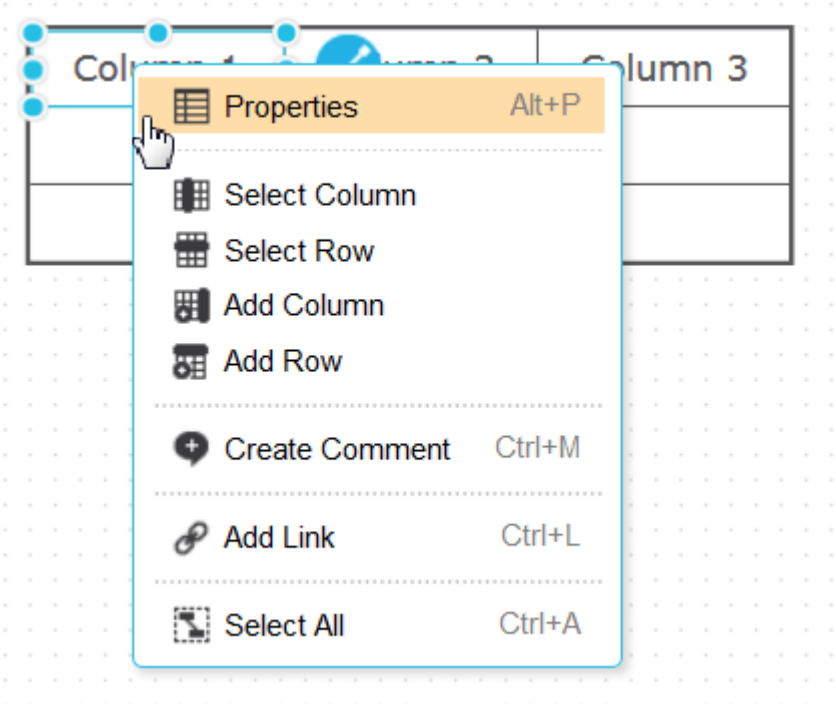


As with the other diagram palettes, you can use the context menu, or toolbar, to perform various actions on a shape. The following image shows a context menu for a wireframe shape.



In the wireframe palette, most items are single-line text elements, which means that the text you enter in the field does not flow beyond the limits of the field, and it does not wrap to the next line. In these elements, you can press Enter to finish editing. The height of these elements in your wireframe is controlled by the size of the font that you choose.

When you add tables to your wireframe, you can control the line width, header row, and other characteristics by specifying properties for the table. You can select and add rows and columns to a table by using the context menu, and then organize them by dragging them within the table. The following image shows the context menu for a wireframe table.



Editing attributes that have multiple values in a requirements project

If an attribute has multiple attribute values, you can edit the attribute values on the **Artifacts** page. On that page, you can also edit the attribute values for multiple artifacts at the same time.

Before you begin

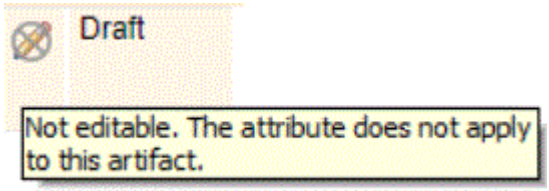
You must have defined an attribute with an attribute type that has an enumerated list of values.

About this task

To watch a video of this procedure, click the Show Me link at the beginning of the topic.

Procedure

1. On the **Artifacts** page, display the artifacts to edit.
2. If the attribute to edit does not have a column on the **Artifacts** page, add one:
   a) Click the **Configure Page Settings** icon and then click **Configure Columns to Display**.
   b) In the window that opens, add the attribute so that it is displayed as a column.
3. In the attribute column, click the cell for the artifact to edit .
   From the list that opens, you can filter and select artifacts to add or remove. The following icon indicates that cell is not editable:



4. To edit attributes for multiple artifacts, select the artifacts to which you want to apply the change and from the edit menu of one of the artifacts dropdown, click **Edit attributes**.

The **Edit Attributes** dialog box displays a progress message while processing the updates. Using bulk update, you can update multiple attributes and apply the attribute changes to all the artifacts that you saved as view in a collection or module. The following system attributes can also be changed with the bulk update function:

- Artifact types
- Folder
- Workflow
- Tags
- Team Ownership

Related concepts

Filters and views in requirement artifacts
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Filters and views in modules
In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

“Locks in the Requirements Management (RM) application” on page 116
Locks prevent multiple people from editing the same artifact at the same time. When you edit an artifact, it is automatically locked.

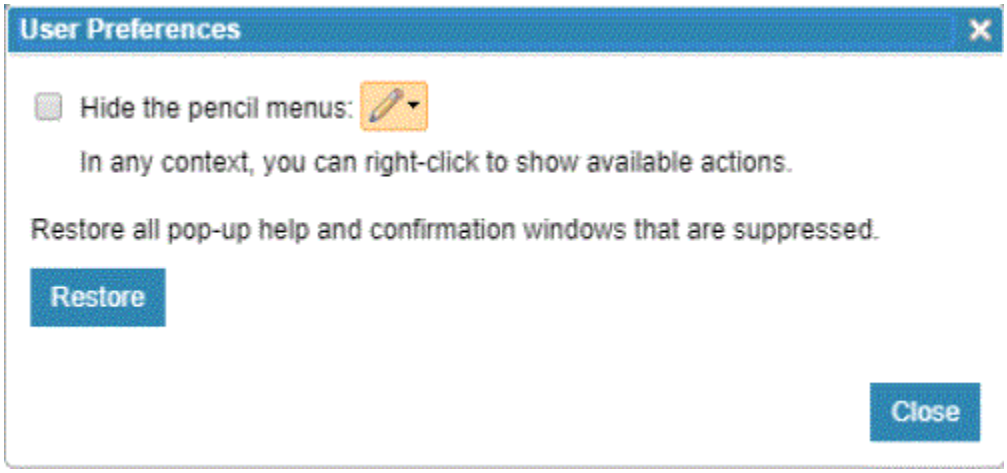
“Collections” on page 176
A collection is a set artifacts that you create for a specific purpose.

“Modules in the Requirements Management application” on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

User preferences

You can set preferences for requirements management by clicking the **User Profile** icon  , and then clicking **My User Preferences**. Preferences are applied to the ID of the user that is logged in.

The drop-down beside the pencil icon  lists all the available actions. If your screen is getting cluttered, you can set your preferences to hide the pencil menus.



Filters and views for artifacts in requirements projects

Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Watch a video that shows how to construct a filter and save a view.

Filters

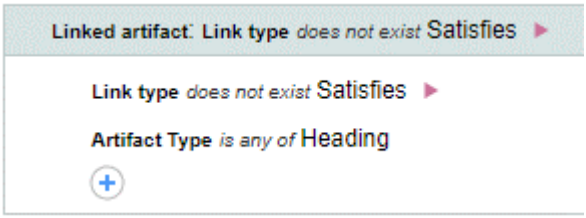
On the Artifacts, Collections, and Modules pages, you can filter artifacts by entering the artifact ID or text. Filters on string attribute values only consider the first 449 characters. Full-text and search consider all characters. See Searches for artifacts in requirements projects. You can also add filter criteria such as Artifact Type, Created by, and so on by selecting an attribute in the **Add Filter** window.

1. Open the Artifacts, Collections, or Modules page.
2. Click the **Add filter** icon .
3. In the **New Filter** window, all the attributes available for filtering are displayed. Select the attribute and the attribute value to filter by and click **Add**. You can add more than one filter.

   If you select **Link Type** as the filter attribute, you can specify more filters for the linked artifacts. Click the **Edit** icon and add conditions.

   In this example, the filter returns all artifacts that have a **Link To** or **Link From** link to an artifact of type **Feature**.

   In this example, the filter returns all artifacts that do not have a **Satisfies** link to an artifact of type **Heading**.



Folders

You can use the **Folders** tab in the left navigation to display the required artifacts. On the **Folders** tab, you can select the folder to see the artifacts in that folder. When you click the folders on the **Folders** tab, any filters in the filter field are cleared and artifacts in the selected folder are displayed.

Views

On the **Views** tab, you can select a view to see artifacts. On the **Views** tab, you can also search views by using the **Search Views** field. When you click a view on the **Views** tab, the filters in the filter field are cleared and artifacts for the selected view are displayed.

Views are a subset of the artifact content. The **Artifacts** page has a default sort order. If you do not select a sort order, the artifacts are sorted by artifact ID in descending order. After you define filter criteria, you can customize your column settings on the page. You can also sort a column by clicking the column header. Then, you can save your configuration of filters and columns as a view for future use.

A shared view is a view that can be used by all project members. Shared views can be created or changed only by an administrator or a user who has the required permissions. You can manage or filter shared views by associating them with a process area and roles from that process area. Then, users can see shared views only when they open an artifact and the view that is associated with that process area. Users must have at least one role in that artifact's process area that is also assigned to the view.

Any project member can create a personal view for private use. The **Save Personal Saved View** permission is enabled for everyone by default, but you can modify this permission.

You can mark any view as preferred view. When you mark view as a preferred, it appears in a bold font in the View column. When you open a module for the first time, the preferred view is shown as the default view because there are no cached preferences in the local storage of your browser. When you open the same module again, the previously selected (or non-selected) view is displayed as the default view because your browser retains that information. If multiple preferred views exist, one view is automatically chosen as the default view.

After you save a view, you can edit the view and work with it in other ways. For example, you can send another user a link to view, to generate a report about the view, and to export artifacts from the view. For more information about exporting artifacts from a view, see Exporting requirement artifacts to a CSV file.

You can manage views to be available in a specific collection or module type. If you save a view in a collection or module, that view is available from that collection or module only. See also “Filters and views in modules” on page 148.

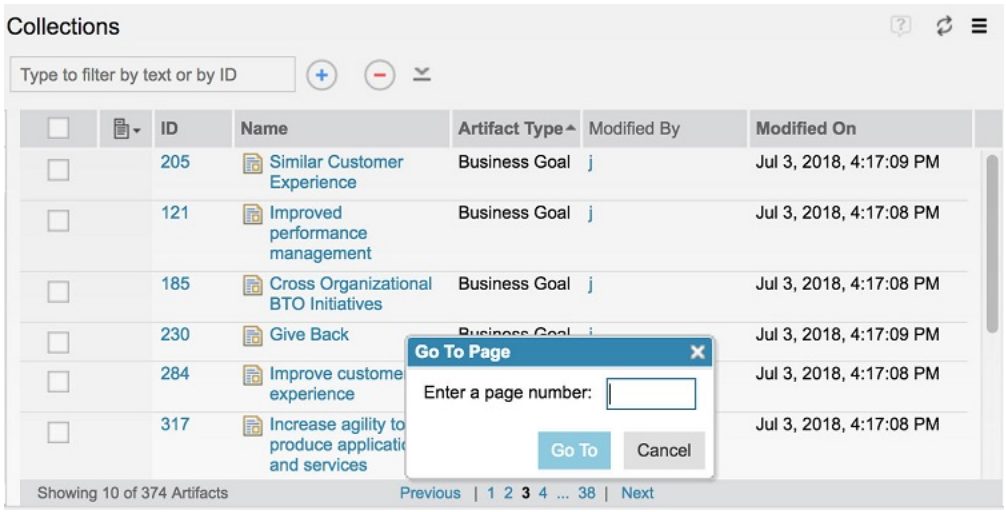
Page settings

To organize and sort the content that is displayed on the Artifacts page, use any of these methods:

- Click **Configure page settings**  > **Configure columns to display or More** > **Change Column Display Settings** and select the columns that you want displayed.
- Use the **Move Up** and **Move Down** options to organize the column display.
- Use the **Format** option to customize the column display. You can select attributes of the artifacts and wrap or trim the link text.

View a specific page of artifacts results

When you view a list of artifacts on **All**, **Collections**, or **Modules** tabs, a page navigator is shown at the bottom if the list spans multiple pages. If there are six or more pages, the page navigator includes an ellipsis. Click the ellipsis to open the Go To Page dialog box. In the dialog box, type a specific page number to navigate to the required page. The following image shows the dialog box to view a specific page:



Related concepts

"Locks in the Requirements Management (RM) application" on page 116
Locks prevent multiple people from editing the same artifact at the same time. When you edit an artifact, it is automatically locked.

"Collections" on page 176
A collection is a set artifacts that you create for a specific purpose.

"Modules in the Requirements Management application" on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

"Filters and views in modules" on page 148
In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

Related tasks

"Filtering artifacts for links to other applications" on page 218
When viewing artifacts, collections, and modules in the Artifacts, Collections, or Modules pages, you can filter artifacts that are linked to other applications integrated in the IBM Engineering Lifecycle Management (ELM).

Searches for artifacts in requirements projects

You can find artifacts by using quick search, full-text search, and filters. Search can be done with the artifact ID or with text within the artifact.

Quick Search

To see recently viewed artifacts, click the **Recently Viewed Artifacts** icon  .

Use the Quick Search feature to quickly search for artifacts in projects or components. You can search in the current project or component, another project or component, or all projects or components. In a configuration-enabled project, the Quick Search feature is only supported in a global configuration context.

1. Click the project or component icon to set the scope of the Quick Search. By default, the scope is the **Current Project**.

2. In the **Search Artifacts** field, enter an ID or text string to search for. If you enter an ID, the search returns the artifact with that ID. If you enter a string, a full-text search is performed. For more details on full-text search, see the **Full-text search** section.

   Note: In 6.x, Quick Search results were ordered by each match's relevance to the query. In 7.x, however, the results are now ordered by artifact ID in descending order.
3. Specify more options to further limit the search, such as modification details, the artifact type, and whether to search in modules, folders, or both.

The Quick Search options are saved across browser sessions.

Filters

Use the **Type to filter by text or by ID** field to filter and search for artifacts. To filter based on ID, enter an ID and the search returns the artifact with that ID.

Note: To search for an artifact by ID, in the **Type to filter by text or by ID** field, enter the complete ID. When you search by ID, the search operation performs a full-text search and uses whole-word matching to find the exact match for the ID. The search eliminates partial matches from the results and displays the artifact with that exact ID.

To filter artifacts based on text in the artifact, enter a single search string or multiple strings. A full-text search looks for the specified word or phrase within the content of the artifact and in attributes that are *String* data type. If you enter multiple search terms, the search returns artifacts that match all the terms. See the following section on full-text search for more details.

You can narrow the search results further by adding filters such as the artifact type, modification date, and tag criteria. You can also sort and group the results and add or suppress artifact details from the results. See “Filters and views for artifacts in requirements projects” on page 111 for details on filtering, page settings, and column display.

Full-text search

A full-text search looks for the specified word or phrase within the content of the artifact and in attributes that are *String* data type. For example, Name and Description. The search returns artifacts that contain a word that *starts with* the search string. By default, the full-text search operation uses word stemming. The stemming tokenizer reduces words to a root. For example, iteration is reduced to "iter". The search operation looks for roots that are an exact match of the search term. To perform a *starts with* search without using word stemming, append an asterisk to your search term.

Note:

- Searches are not case-sensitive.
- If you enter multiple search strings, artifacts that contain any of the search strings are returned.

You can preface each search term with an asterisk (*) to do a *contains* search instead of a *starts with* search.

Use double quotation marks to search for an exact phrase. The search returns artifacts that contain all the words and in the exact order that you have entered them.

Note: When you search using double quotation marks, word stemming provides the closely matched artifacts along with the exactly matched artifacts in the search results.

The following table shows some example artifacts with some textual content. The next table has some search entries and their resulting search returns.

Table 13. Example artifact content		
Artifact Number	**Artifact Name**	**Artifact content**
1	Automatic Meter Reader	A system to automatically collect data on consumption, pressure or other diagnostic, and status from a meter.
2	Meter Reading	The ability to walk by the locations where the meters are installed, and the meter is automatically registered by a handheld computer that is carried by the meter reader.
3	Usage Scenario	The Meter Reader is unable to collect usage data from the Water Meter due to lack of connection or a fault.
4	Fault Scenario	The Meter Reader sends a command to retrieve the fault status.

Table 14. Example search entries and their results	
Search entry	**Search results**
read*	Artifacts 1, 2, 3, and 4. These artifacts have the words *reader* and *reading*, which start with the search string *read*.
held	No artifacts. None of the artifacts have words that start with the search string *held*.
*held	Artifact 2. This artifact has the word *handheld*, which contains the search string *held*.
"collect data"	Artifact 1. This artifact has the exact phrase *collect data*.
auto*	Artifacts 1 and 2. These artifacts have the words *automatic* and *automatically*, which start with the search string.
automat	Artifacts 1 and 2. These artifacts have the words *automatic* and *automatically*, which have a root of “automat” and will match the search string.
auto	No artifacts. The word stems for the words *automatic* and *automatically*, which do not match the search term.
scenario	Artifacts 3 and 4. These artifacts have the word *scenario*, which starts with the search string *scenario*.
press*coll*	Artifact 1. This artifact has the words pressure and *collect*, which start with both the search strings *press* and *coll*.

Restriction:

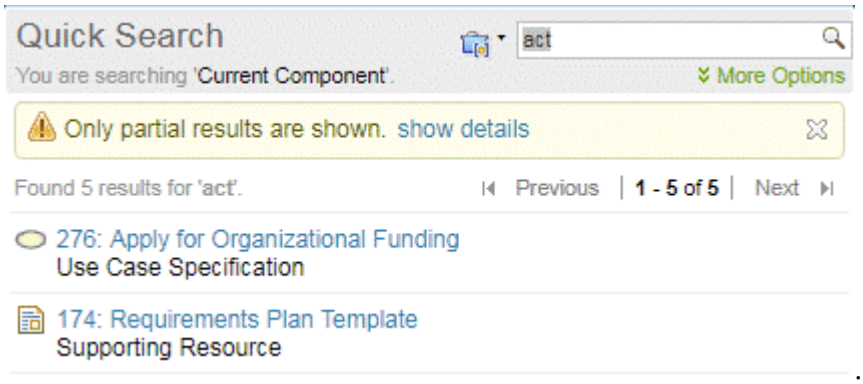
- Full-text search does not support special characters. If any of these characters `( ) { }[ ] < > / \ : ; ? ! _ - | & . , ' « » ~ ^` are included in the search string, the results are inconsistent. Also, since these characters are not indexed, they do not affect search results. For example, if your search entry is **test**, you get matches for <test>, {test} even though the search is a *starts with* search.

  For more information on this limitation, review the workarounds and limitations article on jazz.net.
- Full-text search does not index "*" and """. For more information, see Table 2.
- Full text search does not index these common words: "a", "an", "and", "are", "as", "at", "be", "but", "by", "for", "if", "in", "into", "is", "it", "no", "not", "of", "on", "or", "such", "that", "the", "their", "then", "there", "these", "they", "this", "to", "was", "will", and "with". When you perform a search by using these common words, the search does not return any result.

- Full text search does not index single letter words. For example, if an artifact has the name "Requirement X", searching for "x" does not return a match for the artifact.

Setting a limit to the full-text search results

If the full-text search results exceed the limit that is specified in **Advanced properties**, a warning message is displayed.



Note: When you add filters to the full-text search query, the specified limit is first applied to the full-text search results. These results are then filtered by the additional conditions.

To specify the number of artifacts that are returned when doing a full-text search, on the **Administration** menu, click **Manage Server Administration** > **Advanced Properties**. You can set the limit for modules in **Text search maximum results – Module** and for other requirement artifacts in **Text search maximum results – General**. When a text search scope is not set to a module, the general maximum limit is applied. When a text search scope is set to a module, the module maximum limit is applied.

If you perform a search and the query does not return any result, a message appears to indicate that no results were found.

Related concepts

Filters and views in requirement artifacts
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Filters and views in modules
In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

Related tasks

Defining requirements in the web client
You can use rich-text artifacts to define requirements and requirements documents. You can also create and link to supporting artifacts, such as business process diagrams, use case diagrams, and wireframes, to elaborate requirements and put them in the broader context of the system and business processes.

Locks in the Requirements Management (RM) application

Locks prevent multiple people from editing the same artifact at the same time. When you edit an artifact, it is automatically locked.

In the web client, a lock icon ( ) is displayed in the editor toolbar while you edit. If you click **Save**, the artifact remains locked because it is still in editing mode. However, when you click **Done**, the artifact is unlocked and saved. Then, the unlocked icon ( ) is displayed on the artifact editor toolbar. When an artifact is locked, a lock icon is displayed next to the artifact on the **Artifacts** page. If an artifact is locked by another user, you can hover over the icon to see who locked the artifact.

Note: Users can add tags, comments, and links when an artifact is locked for editing, or manually locked.

Manual locks

If you have certain permissions, you can manually lock and unlock artifacts, including modules and collections. When you manually lock an artifact, it remains locked until you unlock it, even if you are not actively editing it. Manual locks can be useful for preventing other users from editing an artifact for an extended time. For more information about permissions, see “Permissions for Requirements Management (RM) projects” on page 21.

Locks in configuration management

You can work for enabled project in configuration management. If you lock an artifact either manually or automatically, the artifact is locked in the current stream.

Overriding locks

You need certain permissions to manually lock artifacts and to override someone else's lock. You might override a lock when you must edit a locked artifact or when artifacts are locked by users who can no longer unlock them.

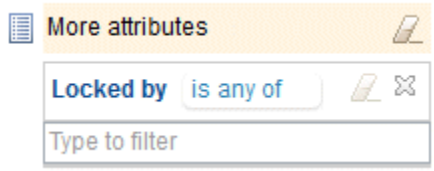
Warning: If you override a lock, you might cause save conflicts or prevent users from saving their work. The ability to override locks is primarily used to unlock an artifact when the user who locked the artifact cannot unlock it. If you are an administrator, grant permission to override locks sparingly.

Locked modules and collections

In a locked module or collection, you cannot add or remove artifacts unless you have permission to override locks. In addition, you cannot restructure the artifacts in a locked module. However, you might still be able to modify the artifacts that are in the module or collection. The ability to modify the artifacts is governed by the locks on the artifacts themselves.

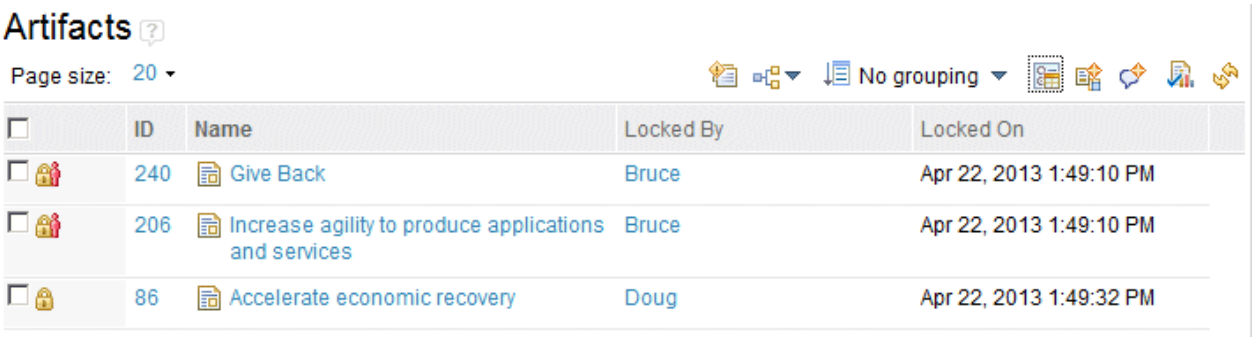
Sorting and filtering artifacts by lock status

In the web client, you can create a filter or change the column settings to display lock information. For example, to create a filter that displays locked artifacts, on the **Artifacts** page, filter the artifacts by attribute, and then select the **Locked by** attribute.



For more information about creating filters, see “Filters and views for artifacts in requirements projects” on page 111.

In addition, you can change the columns in a view to display who locked an artifact or module and when it was locked.



Related concepts

"Permissions for Requirements Management (RM) projects" on page 21

"Filters and views for artifacts in requirements projects" on page 111

Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Uploading files to a requirements project or component

You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

Before you begin

You can upload various types of files, including Microsoft Word documents, Microsoft Excel spreadsheets, image files, comma-separated values (CSV) files, and HTML files. When you start the upload process, you can view the supported file types from a list of MIME types.

Note: DOORS Next code sanitizes the uploaded HTML and removes content that is deemed as browser security risk and may contain the following:

- `<script>` block
- `<style>` block
- Any in-line JavaScript

It may also expand empty self-closing tags. For example, `<table />` becomes `<table> </table>`

About this task

When you first upload a file, the contents of the file are not imported and the file is not changed. The upload process creates a resource artifact that contains the uploaded file. However, after you upload certain types of documents, you can do one of these tasks:

- Open the file in an external application and optionally lock the artifact that contains the file. When you lock an artifact, it remains locked until you upload a new version of the artifact or you manually unlock it. You might want to lock an artifact so that you can work on a document in offline mode or prevent other users from modifying it. If you have the required permissions, you can also unlock an artifact that someone else locked and upload a new version of it.
- Convert the contents of the file into a rich text artifact.
- Extract artifacts from textual elements in the file.
- If the file is a preview-supported file, you can preview its contents. For a complete list of preview-supported files, see the Jazz.net wiki.

Note: If a processing option is not supported for the file that you are uploading, the option is unavailable. For example, if you upload a PDF file, the option to extract artifacts is unavailable.

Procedure

- You can upload artifacts and update uploaded artifacts. You can also upload multiple files at the same time.
  - To upload an artifact, use the **Artifacts** menu.
  - To update an artifact that was uploaded to the project or component, on the Artifacts page, right-click the artifact and in the context menu, click **Other Actions** > **Upload a New Version**.
  - To upload multiple files at the same time, in the **Upload File** window, click **Add Another File**. In Firefox V3.6 or later, you can upload multiple files at the same time by dragging them from the Windows desktop to a list of artifacts, a collection, or a text-based artifact.

Related concepts

"Locks in the Requirements Management (RM) application" on page 116
Locks prevent multiple people from editing the same artifact at the same time. When you edit an artifact, it is automatically locked.

"Importing requirements artifacts from CSV and spreadsheet files" on page 159
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

"Importing documents into requirements projects or components" on page 153
You can import documents of various types, including Microsoft Word, from your file system to a requirements project or component.

Related tasks

"Importing artifacts from ReqIF files to a requirements project or component" on page 168
You can import the data in a Requirements Interchange Format (ReqIF) file from your file system to a requirements project or component.

"Importing and extracting requirement artifacts from documents" on page 157
When you import a document to a requirements project or component, you can specify that certain parts of the document are imported and extracted as specific artifact types. You can also extract artifacts from a document that is already in a project or component.

Inserting files into requirement artifacts

You can insert artifacts from your project or your file system into an artifact. You can insert any type of file into an artifact. If you insert a file that has preview support, an inline preview of the file contents is shown, which you can also view in full screen mode. If you insert a file that does not have preview support, a thumbnail is shown.

Before you begin

The file types that are supported for preview include Microsoft Word documents, Microsoft Excel spreadsheets, Microsoft Visio files, and image files. For a complete list of files that have preview support, see the Jazz.net wiki. The wiki also contains information about font display issues with international characters.

About this task

When you upload and insert any kind of file from your file system, the contents of the file are not imported and the file is not changed. The upload process creates a resource artifact that contains the uploaded file.

If you insert a preview-supported file, you can complete these tasks:

- Preview the file in full screen mode
- Download the file for viewing
- Download and lock the file for editing
- Create links from the file
- Upload a new version of the file
- Convert the contents of the file into a rich-text artifact
- Extract artifacts from textual elements in the file

Note: If a processing option is not supported for the file that you are uploading, the option is unavailable. For example, if you insert a PDF file and then open it, the option to extract artifacts is unavailable.

Procedure

- Complete one of these steps:

- To insert an artifact into another artifact, open the artifact that you want to insert into and click **Edit**. From the toolbar, click the **Insert Artifact** icon. In the window that opens, select the artifact to insert.
- To insert an external file into an artifact, open the artifact and click **Edit**. From the toolbar, click the **Insert Artifact** icon. In the window that opens, click **Upload a new artifact**. Browse to the file to insert and then enter information about the uploaded file.
- Drag one or more files from the desktop to an artifact.

  Restriction: Dragging artifacts to artifacts is not currently supported in Internet Explorer.

Related concepts

"Locks in the Requirements Management (RM) application" on page 116
Locks prevent multiple people from editing the same artifact at the same time. When you edit an artifact, it is automatically locked.

"Importing requirements artifacts from CSV and spreadsheet files" on page 159
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

"Importing documents into requirements projects or components" on page 153
You can import documents of various types, including Microsoft Word, from your file system to a requirements project or component.

Related tasks

"Importing artifacts from ReqIF files to a requirements project or component" on page 168
You can import the data in a Requirements Interchange Format (ReqIF) file from your file system to a requirements project or component.

"Uploading files to a requirements project or component" on page 118
You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

"Importing and extracting requirement artifacts from documents" on page 157
When you import a document to a requirements project or component, you can specify that certain parts of the document are imported and extracted as specific artifact types. You can also extract artifacts from a document that is already in a project or component.

Comparison of data exchange methods in requirements management

You can exchange or transfer data in or out of the Requirements Management (RM) application in several ways. The methods of data exchange are described in the following table. For more information about a method, click the method name.

Table 15. Comparison of data exchange methods in the RM application

Method	Description
CSV, XLS, XLSX import and export	You can import and export CSV files or spreadsheets in Microsoft Excel and Office Open XML format. Imports and exports support: • Embedded artifacts, including graphical artifacts such as sketches, storyboards, and diagrams. • Links, including Open Services for Lifecycle Collaboration (OSLC) links. • Round trips, in which you update existing artifacts. When you import CSV files or spreadsheets, you can update existing artifacts that match imported content, or you can create new artifacts. Before you import data, you can modify a CSV file by using a third-party tool. Imported files must be encoded in UTF-8.

Table 15. Comparison of data exchange methods in the RM application (continued)	
Method	**Description**
ReqIF import and export	You can use ReqIF import and export to exchange requirement artifacts and associated metadata between software tools, including IBM Engineering Requirements Management DOORS (DOORS) products. The ReqIF specification provides a means for tools that implement this specification to exchange requirements information. You can use ReqIF import and export for round trips, in which you update existing exported artifacts. For a list of supported and restricted data, see "Importing artifacts from ReqIF files to a requirements project or component" on page 168 and "Exporting artifacts from a requirements project or component into ReqIF files" on page 173.
Migration package import	You can use migration package import to migrate data from DOORS. For more information, click the link in the left column.
Project templates	You can copy project templates to other servers; for example, from a staging server to a production server. Project templates are useful for creating requirements projects. You can create or modify a template by using another template. Project templates are also useful for sharing custom project templates that are applicable to other repositories. For a list of items that can be included in or excluded from a template, see Creating templates. **Restriction:** • A project template cannot be used as a project backup because artifact history, comments, reviews, and access controls are not preserved. • A project template does not preserve the links that are outside of the artifacts in the template.
Project properties import	You can import the project properties from a requirements management project into another requirements management project.
Project baselines	You can use project baselines for these purposes: • To capture an entire requirement project at a specific moment in time, including artifacts, folder trees, and the public tag list. • To define scope and manage change by using collections that are captured in baselines. • To track development progress and milestones. • To view specific versions of artifacts, with intact links and comments, that were captured at specific point in time. **Restriction:** Project baselines cannot be used to transfer data outside of a project.

Table 15. Comparison of data exchange methods in the RM application (continued)	
Method	**Description**
Database backup and restore	Typically, only a product administrator can back up and restore the database. Backing up and restoring the database is useful for these purposes: • To mitigate data loss by backing up the database and indexed files. • For serviceability, including these tasks: – Backing up before an upgrade – Moving data between test and production environments. For more information, see Backup the IBM Engineering Lifecycle Management (ELM) on Jazz.net. Backup is assumed to be at the level of the whole requirements management repository. Restore is assumed to be targeted to the same URI. To change the URI, you must rename the server.

Vision document

A vision document defines the high-level scope and purpose of a program, product, or project. A clear statement of the problem, proposed solution, and the high-level features of a product helps establish expectations and reduce risks. This topic provides an outline of potential content for a vision document.

See Developing a vision for an explanation of how the product owner or business analyst works with stakeholders to develop a vision document. That topic, which is part of the IBM Engineering Lifecycle Management (ELM) scenario guidance, describes the vision-development process. This topic outlines typical content for the document. You can copy this outline, paste it into a new document, and use it as the basis for your vision document. Use those portions of this outline that are relevant for your project.

When a team uses the Requirements Management (RM) capability in the ELM, the vision document can be expressed in one or more rich-text documents or modules. You can embed requirements and related artifacts in rich-text documents or use the numbered hierarchical structure of a module to organize content. Team members can set attributes, such as priority and status, on each artifact and create trace links between related documents, modules, and individual artifacts.

To review the steps for creating and linking documents and modules, see Creating modules.

The vision document outline

1: Introduction

This introduction provides an overview of the entire vision document. It includes the purpose, scope, definitions, acronyms, abbreviations, references, and an overview of the full document.

1.1 **Purpose:** State the purpose of this vision document.

1.2 **Scope:** Briefly describe the scope of this vision document, including which programs, projects, applications, and business processes the document is associated with. Include anything else that this document affects or influences.

1.3 **Definitions, acronyms and abbreviations:** Define all terms, acronyms, and abbreviations that are required to interpret the vision correctly. This information might be provided by reference to the project glossary, which can be developed online in the RM repository.

1.4 **References:** List all documents that the vision document refers to. Identify each document by title, report number (if applicable), date, and publishing organization. Specify the sources from which readers can obtain the references; the sources are ideally available in RM or in other online repositories. This information might be provided by reference to an appendix or to another document.

1.5 **Overview:** Describe the vision-document contents and explain how the document is organized.

2: Positioning

2.1 **Business opportunity:** Briefly describe the business opportunity that is addressed by this project.

2.2 **Problem statement:** Summarize the problem that this project solves. Use the following statements as a model, providing project details to replace the parenthetical elements:

The problem of (describe the problem) affects (the stakeholders affected by the problem). The impact of the problem is (what is the impact of the problem). A successful solution would include (list some key benefits of a successful solution).

2.3 **Product position statement:** Provide an overall statement that summarizes at the highest level the unique position the product intends to take in the marketplace. Use the following statements as a model, providing project details to replace the parenthetical elements:

For the (target customer), who (statement of the need or opportunity). The (product name) is a (product category) that (statement of key benefit, that is, the compelling reason to buy). Unlike (primary competitive alternative), our product (statement of primary differentiation).

A product position statement communicates the intent of the application and the importance of the project to all concerned stakeholders.

3: Stakeholder and user descriptions

To provide products and services that meet stakeholders' and users' needs, you must identify and involve all stakeholders as part of the requirements-definition process. You must also identify the system users and ensure that the stakeholder community represents them adequately.

This section provides a profile of the stakeholders and users who are involved in the project. This section also identifies the key problems that stakeholders and users consider that the proposed solution must address. This section does not describe specific requests or requirements; a separate stakeholder requests artifact captures these items. The key-problem description provides the background and justification for requirements.

3.1 **Market demographics:** Summarize the key market demographics that motivate your product decisions. Describe and position target market segments. Estimate the market size and growth by using the number of potential users. Alternatively, estimate the amount of money that your customers spend trying to meet the needs that your product or enhancement would fulfill. Review major industry trends and technologies. Answer these strategic questions:

- What is the reputation of your organization in these markets?
- What would you like the reputation to be?
- How does this product or service support your goals?

3.2 **Stakeholder summary:** List all the identified stakeholders. For each stakeholder type, provide this information:

- Name: Name the stakeholder type.
- Represents: Briefly describe which individuals, teams, or organizations this stakeholder type represents.
- Role: Briefly describe the role this stakeholder type plays in the development effort.

3.3 **User summary:** List all the identified user types. For each user type, provide this information:

- Name: Name the user type
- Description: Briefly describe the relationship of this type of user to the system under development.
- Stakeholder: List which stakeholder type represents this user type.

3.4 **User environment:** Detail the working environment of the target user. Here are some suggestions:

- How many people are involved in completing the task? Is this changing?

- How long is a task cycle? How much time do users spend in each activity? Is this changing?
- What unique environmental constraints affect the project? For example, do users require mobile devices, work outdoors, or work during flights?
- Which system platforms are in use today? Are there future platforms planned?
- What other applications are in use? Does your application need to integrate with them?

In this section, you might include extracts from the business model to outline the task and workers who are involved.

3.5 **Stakeholder profiles:** Describe each stakeholder in the project by completing the following table for each stakeholder. Remember: Stakeholder types can be users, strategy departments, legal or compliance departments, technical developers, operations teams, and others. A thorough profile covers the following topics for each stakeholder type:

- Representative: State who represents the stakeholder to the project (This information is optional if it is documented elsewhere.) Enter the representatives' names.
- Description: Briefly describe the stakeholder type.
- Type: Qualify the expertise of the stakeholder, such as "guru", "business expert" , or "casual user." This designation can suggest technical background and degree of sophistication.
- Responsibilities: List the key responsibilities of the stakeholder on the system under development; list their interests as a stakeholder.
- Success criteria: State how the stakeholder defines success. How is the stakeholder rewarded?
- Involvement - Describe how the stakeholder is involved in the project. Where possible, relate the involvement to the process roles; for example, a stakeholder might be a requirements reviewer.
- Deliverables: Identify additional deliverables that the stakeholder requires. These items might be project deliverables or output from the system under development.
- Comments or issues: State problems that interfere with success and any other relevant information.

3.6 **User profiles:** Describe each user of the system here by completing the following table for each user type. Remember user types can be experts and novices; for example, an expert might need a sophisticated, flexible tool with cross-platform support, while a novice might need a tool that is easy to use. A thorough profile covers these topics for each type of user:

- Representative: State who represents the user to the project. (This information is optional if it is documented elsewhere.) This representative often refers to the stakeholder who represents a set of users; for example, Stakeholder: Stakeholder1.
- Description: Briefly describe the user type.
- Type: Qualify the expertise of the user, such as "guru" or "casual user". This designation can suggest technical background and degree of sophistication.
- Responsibilities: List the key user responsibilities with respect to the system; for example, state who captures customer details, produces reports, and coordinates work, and so on.
- Success criteria: State how the user defines success. How is the user rewarded?
- Involvement: Describe how the user is involved in the project. Where possible, relate the involvement to process roles; for example, a stakeholder might be a requirements reviewer.
- Deliverables: Identify the deliverables that the user produces and for whom.
- Comments or issues: State problems that interfere with success and any other relevant information. Describe trends that make the user's job easier or harder.

3.7 **Key stakeholder or user needs:** List the key problems with existing solutions as the stakeholder perceives them. Clarify these issues for each problem:

- What are the reasons for this problem?
- How is the problem solved now?
- What solutions does the stakeholder want?

You must understand the relative importance that the stakeholder places on solving each problem. Ranking and cumulative voting techniques help indicate the problems that must be solved versus issues that stakeholders would like to be addressed. Use this table to capture the stakeholder needs.

Table 16. Stakeholder needs

Need	Priority	Concerns	Current solution	Proposed solution

3.8 **Alternatives and competition:** Identify alternatives that the stakeholder perceives as available. These alternatives can include buying a competitor's product, building a homegrown solution, or maintaining the status quo. List any known and available competitive choices. Include the major strengths and weaknesses of each competitor as the stakeholder perceives them.

4: Product overview

This section provides a high-level view of the product capabilities, interfaces to other applications, and systems configurations. This section typically consists of three subsections:

- Product perspective
- Product functions
- Assumptions and dependencies

4.1 **Product perspective:** Put the product in perspective with regards to other related products and the user's environment. If the product is independent and completely self-contained, state it here. If the product is a component of a larger system, relate how these systems interact and identify the relevant interfaces between the systems. One way to display the major components of the larger system, interconnections, and external interfaces is to use a business process or use case diagram.

4.2 **Summary of capabilities:** Summarize the major benefits and features that the product will provide. For example, a customer support system might use this part to address problem documentation, routing, and status reporting without elaborating on detail that these functions require. Organize the functions so that the list is understandable to the customer or to anyone else who reads the document for the first time. A simple table that lists the key benefits and their supporting features might suffice, as in the following example.

Table 17. Benefits and features example

Customer benefit	Supporting features
New support staff can quickly learn how to use the product.	A knowledge base assists support personnel in quickly identifying known fixes and workarounds.
Customer satisfaction is improved because nothing falls through the cracks.	Problems are uniquely itemized, classified, and tracked throughout the resolution process. Automatic notification occurs for any aging issues.
Management can identify problem areas and gauge staff workload.	Trend and distribution reports enable a high-level review of problem status.
Distributed support teams can work together to solve problems.	With a replication server, current database information can be shared throughout the enterprise.
Customers can help themselves, lowering support costs and improving response time.	A knowledge base can be made available over the Internet. The knowledge base includes hypertext search capabilities and a graphical query engine.

4.3 **Assumptions and dependencies:** List each of factor that affects the features that the vision document includes. List assumptions that, if changed, will alter the vision document. For example, an assumption might state that a specific operating system will be available for the designated hardware for the software product. If the operating system is not available, the vision document will require change.

4.4 **Cost and pricing:** Record relevant cost and pricing impacts and constraints. For example, distribution costs (the number of CDs and CD mastering) or other cost-of-goods-sold constraints (manuals and packaging) might be material or irrelevant to project success, depending on the nature of the application.

4.5 **Licensing and installation:** Licensing and installation issues can also directly affect the development effort. For example, the need to support serializing, password security, or network licensing will create additional system requirements that must be considered in the development effort. Installation requirements might also affect coding, or create the need for separate installation software.

5: Product features

List and briefly describe the product features. Features are the high-level capabilities of the system that are required to deliver benefits to the users. Each feature is a requested service that typically requires a series of inputs to achieve a satisfactory result. For example, a feature of a problem-tracking system might be the ability to provide trending reports. As the use case model takes shape, update the description to refer to the use cases.

Because the vision document is reviewed by a wide variety of involved personnel, keep the level of detail general enough for everyone to understand. However, offer sufficient detail to provide the team with the information it needs to create a use case model or other design documents.

To manage application complexity, for a new system or an incremental change, list capabilities at such a high level that you include approximately 25-99 features. These features provide the basis for product definition, scope management, and project management. Each feature will be expanded into greater detail in the use case model.

Throughout this section, make each feature relevant to users, operators, or other external systems. Include a description of functions and usability issues that must be addressed. The following guidelines apply:

- Avoid design. Keep feature descriptions at a general level. Focus on required capabilities and why (not how) they should be implemented.
- Designate all features as requirements of a specific feature type for easy reference and tracking.

5.1 **Feature 1**.

5.2 **Feature 2**.

6:Constraints

Note any design constraints, external constraints, such as operational or regulatory requirements, or other dependencies.

7: Quality ranges

Define the quality ranges for performance, robustness, fault tolerance, usability, and similar characteristics that the feature set does not describe.

8: Precedence and priority

Define the priority of the different system features.

9: Other product requirements

At a high level, list applicable standards, hardware or platform requirements, performance requirements, and environmental requirements.

9.1 **Applicable standards:** List all standards that the product must comply with. The list can include these standards:

- Legal and regulatory standards (FDA, UCC)
- Communications standards (TCP/IP, ISDN)
- Platform compliance standards (Windows, UNIX, and so on)

- Quality and safety standards (UL, ISO, CMM)

9.2 **System requirements:** Define the system requirements for the application. These can include the supported host operating systems and network platforms, configurations, memory, peripheral devices, and companion software.

9.3 **Performance requirements:** Detail performance requirements. Performance issues can include such items as user-load factors, bandwidth or communication capacity, throughput, accuracy, reliability, or response times under various load conditions.

9.4 **Environmental requirements:** Detail environmental requirements as needed. For hardware-based systems, environmental issues can include temperature, shock, humidity, and radiation. For software applications, environmental factors can include use conditions, user environment, resource availability, maintenance issues, error handling, and recovery.

10: Documentation Requirements

This section describes the documentation that you must develop to support successful application deployment.

10.1 **Release notes, read me file:** Release notes or an abbreviated read me file can include a "What's new" section, a discussion of compatibility issues with earlier releases, and installation and upgrade alerts. The document can also contain or link to fixes in the release and any known problems and workarounds.

10.2 **Online help:** Many applications provide an online help system to assist the user. The nature of these systems is unique to application development as they combine aspects of programming (searchable information and web-like navigation) with aspects of technical writing (organization and presentation). Many teams find that developing an online help system is a project within a project that benefits from scope management and planning at the project outset.

10.3 **Installation guides:** A document that includes installation, configuration, and upgrade instructions is part of offering a full solution.

10.4 **Labeling and packaging:** A consistent look and feel begins with product packaging and applies to installation menus, splash screens, help systems, GUI dialog boxes, and so on. This section defines the needs and types of labeling to be incorporated in the code. Examples include copyright and patent notices, corporate logos, standardized icons, and other graphic elements.

11: Appendix 1 - Feature attributes

Give features attributes that can be used to evaluate, track, prioritize and manage the product items that are proposed for implementation. Outline all requirement types and attributes in a separate requirements management plan. However, you might want to list and briefly describe the attributes for features that have been chosen. The following subsections represent a set of suggested feature attributes.

11.1 **Status:** Teams set feature status after negotiation and review by the project management team. Status tracks progress throughout the life of the project. The following table provides an example of typical status-attribute values.

Table 18. Status value examples

Status	Description
Proposed	Describes features that are under discussion but have not been reviewed and accepted by the "official channel." The official channel might be a working group that consists of representatives from the project team, product management, and user or customer community.
Approved	Capabilities that are deemed useful and feasible and have been approved for implementation by the official channel.

Table 18. Status value examples (continued)	
Status	**Description**
Incorporated	Features that have been incorporated into the product baseline.

11.2 **Benefit:** The marketing group, the product manager, or the business analyst sets the feature benefits. All requirements are not created equal. Ranking requirements by their relative benefit to the user opens a dialog with customers, analysts, and members of the development team. Use benefits in managing project scope and determining development priority. The following table provides an example of typical benefit or priority attribute values.

Table 19. Benefit priority examples	
Priority	**Description**
Critical	Essential features. Failure to implement a critical feature means that the system will not meet customer needs. All critical features must be implemented in the release or the schedule will slip.
Important	Features important to the effectiveness and efficiency of the system for most applications. The functions cannot be easily provided in some other way. Omitting an important feature might affect customer or user satisfaction, or even revenue. However, the release will not be delayed because an important feature is not included.
Useful	Features that are useful in less typical applications, are used less frequently, or that can be met with reasonably efficient workarounds. No significant revenue or customer satisfaction impact can be expected if such an item is not included in a release.

11.3 **Effort:** The development team estimates the effort that is required to implement features. Some features require more time and resources than others. Estimating the time, required code, or functions, helps gauge complexity and set expectations of what can be accomplished in a given time frame. Use the estimate in managing scope and determining development priority.

11.4 **Risk:** The development team establishes risk levels, based on the probability that the project will experience undesirable events, such as cost overruns, schedule delays, or even cancellation. Most project managers find categorizing risks as high, medium, and low is sufficient, although finer gradations are possible. Risk can often be assessed indirectly by measuring the uncertainty (range) of the project team's schedule estimate.

11.5 **Stability:** The analyst and development team establish feature stability based on the probability that the feature will change or the team's understanding of the feature will change. Stability is used to help establish development priorities and determine those items for which additional elicitation is the appropriate next action.

11.6 **Target release:** Teams record the earliest intended product version that will include the feature. You can use this field to allocate features from a vision document into a particular baseline release. When combined with the status field, your team can propose, record, and discuss various features of the release without committing them to development. Only features whose status is set to "incorporated" and whose target release is defined will be implemented. With scope management, the target release version number can be increased, and the item remains in the vision document but is scheduled for a later release.

11.7 **Assigned to:** In many projects, features are assigned to feature teams that are responsible for further elicitation, writing the software requirements, and implementation. The process helps everyone on the project team better understand responsibilities.

11.8 **Reason:** Teams use this text field to track the source of the requested feature. Requirements exist for specific reasons. This field records an explanation or a reference to an explanation. For example, the reference might point to a page and line number of a product requirement specification or point to a minute marker on a customer-interview video.

Creating modules

You can create modules and module content directly in a project or by importing a Microsoft Word document, ReqIF file, or rich-text document.

About this task

For various ways of creating modules and adding content to them, see the following topics and related links.

These artifacts or content of the modules are stored by default under **Folders**. Use the drag-and-drop action to move one or more folders and re-organize them.

Related information

Watch tutorial movies about creating modules

Importing and exporting files

Modules in the Requirements Management application

A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

You can create a module in different ways. For example, you can create an empty module and add artifacts to it, or, you can create a module by importing a Microsoft Word document or rich-text file. When you import a file, a wizard identifies and creates artifacts from the document content. The artifacts are identified and created based on structure, keyword, or text delimiter, such as a semicolon or a square bracket. To see recently viewed artifacts, click the **Recently Viewed Artifacts** icon  .

To watch a video that shows you how to create a module, see Lesson 1: Create a module and add artifacts. To compare capabilities and potential uses for collections and modules, see “Differences between collections and modules” on page 131.

Tip: You can associate modules with preferred artifact types so that when team members add artifacts to modules, the preferred artifact types are shown by default. For more information, see Creating requirement artifact types.

Module capabilities

In the web client, you can perform the following activities in a module:

- View and edit the content of artifacts. When you open a module, the **Selected Artifact** tab is shown by default. However, the tab that you select is preserved across browser sessions. If you select the **Module** tab, the next time you open that module, the **Module** tab is selected.
- Add, delete, move, and indent artifacts to create order and a hierarchy with numbered headings.
- Add a new or existing artifact before, after, or as a child of the selected artifact. When you create a new module, the **Open Artifact** option opens the newly created module in view mode.

  Note: When you create an artifact before or after the selected artifact, the new artifact is created with the same artifact type as the selected artifact.

- Remove artifacts from a module. If the artifacts have child artifacts, the Confirm Removal dialog box indicates the number the child artifacts that will be removed. To permanently delete artifacts that are not used in other modules, select the **If the artifacts are not in other modules, permanently delete them** check box.
- Set attribute values at the module level and on artifacts in the module.
- Edit the attributes of artifacts in the module and change the artifact type of the artifacts.

  Note: When you create an artifact type, you can show artifacts of that type as a heading by default. For more information, see "Creating requirement artifact types" on page 29.
- Set an attribute value for multiple artifacts in the module.
- Create links, comments, tags, and reviews for the module or for artifacts in the module.
- Change the default display settings to include links, comments, tags, and comments from base artifacts. For more information, see Reusing artifacts in modules.
- Filter your view of the module content by tag, artifact type, and other attributes.
- Create, save, and reuse views that are based on filters and display properties.
- Generate a document-style report in PDF, Microsoft Word, HTML, or XSL-FO format.

The Administrator can control the caching for modules by specifying the following properties in the module:

- **Number of artifacts in a module page:** The number of artifacts requested from the server per page in a module. The default value is 30 artifacts.
- **Number of pages to cache per module:** The total number of pages to cache when scrolling through a module. The minimum value is 3 pages and the default value is 10 pages.
- **Number of pages to prefetch in a module:** The number of pages to prefetch in either direction from the current scroll position. This value is limited to between 1 and 3 pages. The maximum is 2 pages if over 50 rows are loaded per page, and 1 page if over 100 artifacts are loaded per page.

Modules and base artifacts

Artifacts can be created and managed in a project independently from a module. These are called *base* artifacts. Base artifacts can also be used in one or more modules. You can link base artifacts with other base artifacts or with artifacts in the context of a module. Links to and from base artifacts are available in all modules in which those artifacts are used. See Base artifacts.

Modules and module content

The artifacts that are created for modules are stored by default in the same folder as the module. However, you can change this default setting and specify another module content folder to store all the artifacts that are created for new modules. When a common module content folder is used, any user that has permission to create a module also has permission to create a module content folder in the common module folder regardless of any existing permissions or team area ownership settings. If a common Module Content Folder is being used, it can be copied or cloned, but the project or component property of the Module Content Folder is not copied or cloned. If you import project properties or component properties, the module content folder is not imported.

Modules and ELM artifacts

From modules and module views, you can link to artifacts in other IBM Engineering Lifecycle Management (ELM) applications. For example, you can link from a module to development plans and test plans. You can also link to artifacts in other modules. In the Change and Configuration Management (CCM) and Quality Management (QM) applications, you can generate plan items and test cases that correspond to the artifacts in the module. For more information, see Linking collections, modules, and module views to development and test plans.

Viewing module history

To view the changes in the module, on the **More actions** menu ☰ , click **Open History** > **Audit History** tab. This tab shows a complete history of changes that goes back to the creation of the module. To return to the module, click **Close History**. You can also access the artifact history by clicking **Open Artifact** > **Open Artifact History**.

Related concepts

"Filters and views in modules" on page 148
In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

"Collections" on page 176
A collection is a set artifacts that you create for a specific purpose.

Related tasks

"Creating modules" on page 129
You can create modules and module content directly in a project or by importing a Microsoft Word document, ReqIF file, or rich-text document.

"Module options" on page 33
A module is a structured document that is composed of multiple artifacts. These artifacts or content of the modules are stored by default in a folder which is created in the same directory as the module. In the Modules Options tab, an administrator can change this default to specify another folder to store the multiple artifacts of a module. You can use drag-and-drop to move one or more folders and re-organize them. If your project area has not been enabled for configuration management, an administrator can schedule a refresh of the module view to ensure that the latest module content is loaded from the data warehouse.

Differences between collections and modules

Collections and modules offer different ways to group and manage a set of artifacts. Both of these artifact types are flexible but they do offer different capabilities. This topic summaries these capabilities and presents typical uses of each artifact type to help you get started. Adjust your usage to suit the needs of your team and your project.

Table 20. Comparing capabilities of collections and modules

Collection	**Module**
Definition: A group of artifacts with no particular order or hierarchy.	Definition: A structured artifact that is composed of other artifacts. Structure is created by modifying the order and hierarchy of the artifacts.

Table 20. Comparing capabilities of collections and modules (continued)

Collection	**Module**
Possible uses: • Produce a quick, informal group of artifacts. • Identify a set of artifacts based on a common focus, such as requirements and related artifacts for an iteration, milestone, feature, function, team ownership, or other related purpose. • Capture a set of artifacts for reviews, reports. • Create a glossary (collection of term artifacts). • Associate a set of requirements with a development plan or test plan. Generate development work items and test cases, based on requirements in the collection.	Possible uses: • Present and manage a requirements specification. • Create a structured, hierarchical requirements document with numbered section headings and subheadings. View in outline form or with full content. • Manage the requirements document with views, filters, artifact types, attributes, tags, links, and comments. • Create separate modules for high-level requirements, detailed requirements, particular systems and subsystems, or for some other common layer of abstraction, and create traceability between requirements in these specifications. • Associate a requirements specification with a development plan or test plan. Generate development work items and test cases, based on the contents of the module.
Other capabilities: • Create a collection by adding existing artifacts or by creating new artifacts within the collection. • Create a review of the collection and its artifacts. • Export the collection contents to CSV format. • Generate a document-style report in PDF, Microsoft Word, HTML, or XSL-FO format. • Create a group of modules, or modules and other artifacts.	Other capabilities: • Create a module by adding existing artifacts or by creating new artifacts within the module. Create a module by importing information from text documents. While importing, you can use the wizard to identify and create artifacts from the document content based on structure, key word, or text delimiter, such as a semicolon or square bracket. • Create links, tags, and comments that are associated with the entire module, or that are specific to individual artifacts and only viewable in the context of the module. • View in outline form (headings only) or with full content. • Search and replace text in all artifacts in the module. • Export a module view to CSV format. • Create a collection from a saved view in a module. • Generate a document-style report in PDF, Microsoft Word, HTML, or XSL-FO format.
Notes: Collections are represented as collections in the Open Services for Lifecycle Collaboration (OSLC) Requirements Management specification version 2.0 API.	Notes: Modules are represented as collections in the Open Services for Lifecycle Collaboration (OSLC) Requirements Management specification version 2.0 API.

Related concepts

"Collections" on page 176
A collection is a set artifacts that you create for a specific purpose.

"Modules in the Requirements Management application" on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

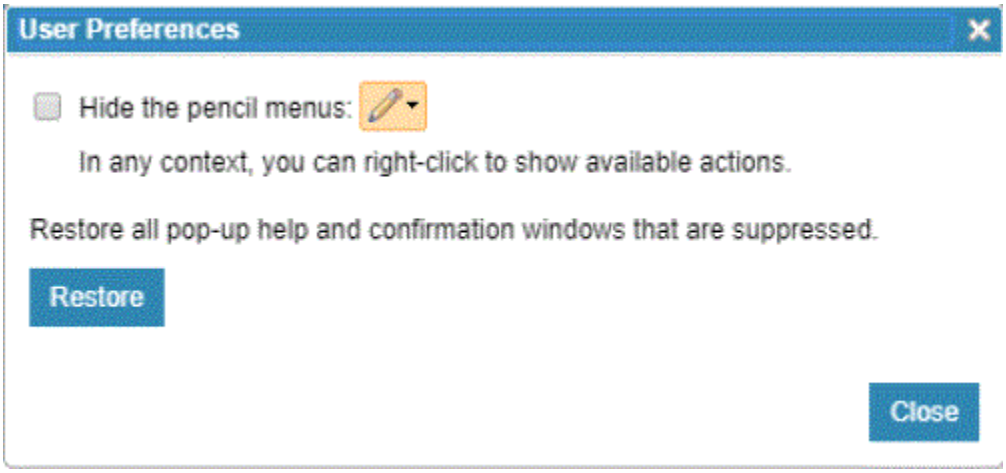
"Filters and views in modules" on page 148
In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

"Filters and views for artifacts in requirements projects" on page 111
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

User preferences

You can set preferences for requirements management by clicking the **User Profile** icon  , and then clicking **My User Preferences**. Preferences are applied to the ID of the user that is logged in.

The drop-down beside the pencil icon  lists all the available actions. If your screen is getting cluttered, you can set your preferences to hide the pencil menus.



Duplicating a module

When you duplicate a module, you have options to create copies of the content from the original module, or reuse and share the original content in the new module.

About this task

After investing effort in creating a module, you can duplicate it and use the copy as a starting point for a new module. In the new copy, you can reuse the headings and other artifacts that are in the original module, or you can copy (duplicate) them to create new headings and other artifacts in the new module. When you reuse content, any changes to the name, primary text, or diagram content that are made to those artifacts in other modules or in the base artifacts are reflected in the new module. When you duplicate a module, you can also choose to reproduce the links in the new and reused artifacts.

To summarize:

- In all cases when you duplicate a module, a new module is created.

- When you duplicate headings or other artifacts, new artifacts are created that are based on the contents of the original module.
- When you reuse headings and other artifacts, their content is shared by the instances of those artifacts in the original module, as well as in the base artifacts outside of the modules.

The following graphic shows three options for copying all content, copying only headings, and copying only non-heading artifacts. Additional options are described in the procedure that follows the graphic.

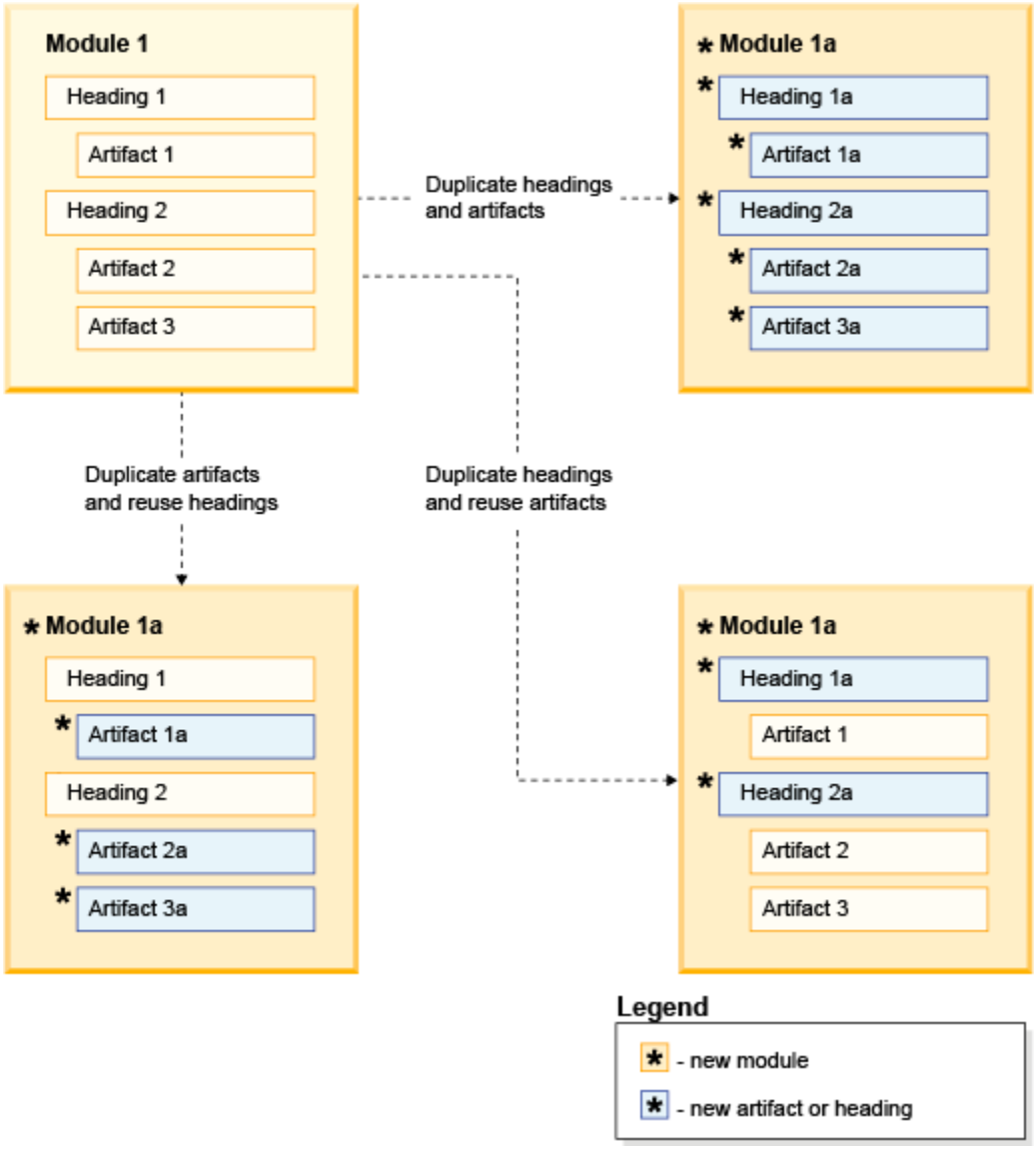


Figure 1. Examples of three options for copying a module

Procedure

1. On the Modules page, place your cursor in the left column of any module in the list, click the **Edit** menu  , and select **Duplicate Artifact**.
2. In the **Duplicate Artifact to Folder** window, type a name, and select a folder for the new module.
3. In the **Duplicating or reusing artifacts in modules** section, select one of the following options to copy or reuse content in the new module:
   - **Duplicate all artifacts**: Creates new headings and other artifacts. These are copies of the headings and artifacts that are in the original module.

- **Duplicate no artifacts**: Reuses all existing headings and other artifacts. The only new artifact is the module itself.
- **Duplicate all heading artifacts**. Creates new headings that are copies of the existing ones, and reuses other existing artifacts.
- **Re-use all heading artifacts**: Reuses existing headings. Creates copies of all other artifacts.
- **Duplicate all artifacts specified by a view, re-use all other artifacts**: Creates new headings and other artifacts that are copies of existing ones if they match the criteria of filters in a saved view. All other headings and artifacts are reused.

4. Optional: In the **Copy items from the original artifact** section, select the **Copy links** and **Copy tags** check box to copy items from the original artifact.
5. Optional: In the **Link the artifacts** section, select the check box to create a link from the original artifact to the copied artifact and select the link type from the list.
6. To save the new module and any new artifacts, click **OK**.

   A link is created between the original module artifact and the copied module artifact. All the artifacts in the new module have links to the artifact in the original module.

Related tasks

"Creating modules" on page 129
You can create modules and module content directly in a project or by importing a Microsoft Word document, ReqIF file, or rich-text document.

Searching for artifacts in a module

You can search for an artifact in a module and replace one text string with another. You can also search for an artifact by section number or artifact ID.

About this task

During the *Find* operation:

- Visible content in the module is searched. Content in collapsed sections and string attributes that are not displayed in the module view are not searched.
- String attributes and content for text artifacts are identified in a search. Embedded artifacts, such as graphical artifacts, are not searched.

Tip: If you have recently opened the artifact, click the **Recently Viewed Artifacts**  icon to locate the artifact from a module.

Procedure

- Complete the following steps to search for an artifact in a module:
  a) Open the module.
  b) Click the **Find/Go To** icon  .
  c) In the window that opens, on the **Find** tab, type the text to search for and specify other options as needed. To find an exact text phrase, type the text within quotation marks.

     Important:

     – Specifying search strings that are composed of only special characters is not supported.
     – The *Find* operation is an exact phrase search. Partial words and multiple words can be used as search strings in the **Find** tab, but wildcards are not supported.
     – The *Find* operation ignores the following common words: "a", "an", "and", "are", "as", "at", "be", "but", "by", "for", "if", "in", "into", "is", "it", "no", "not", "of", "on", "or", "such", "that", "the", "their", "then", "there", "these", "they", "this", "to", "was", "will", and "with". If you perform a *Find* operation by using any of these words, no matches are found.

- To find and replace text across all of the artifacts in a module, open the module and click the **Find/Go To** icon  . Type the text that you want to replace and the replacement text, and then click **Find**, **Replace**, or **Replace/Find** as needed.

  Note: Only string attributes and content for text artifacts are identified in a search. Use the **Go To** tab when you know the section number or the artifact ID.
- To locate and select an artifact in a module when you know the section number or the artifact ID, click the **Find/Go To** icon  . Click the **Go To** tab, and type either an artifact ID number or a section number and then, click **Go To**.

  To show section numbers, click the **More actions** icon ☰, select **Configure Columns to Display**, and add the **Section** column.

Results

In the search results, a vertical blue bar indicates that the artifact is in a module, and the module name is shown in the result description.

Related concepts

"Modules in the Requirements Management application" on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

"Filters and views for artifacts in requirements projects" on page 111
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

"Searches for artifacts in requirements projects" on page 113
You can find artifacts by using quick search, full-text search, and filters. Search can be done with the artifact ID or with text within the artifact.

Linking between artifacts in modules

You can link artifacts that are in the same module or artifacts that are in different modules.

Before you begin

You can link from an artifact in a module to another artifact in a module by using a bidirectional link type. Labels explain the directional relationship of the link. See Link direction. If you create links only between artifacts in the context of modules, the links exist only in those modules and in any copies you make of the module. To link two artifacts that are in different modules by using the drag-and-drop method, you must be working in a Mozilla Firefox, Microsoft Internet Explorer, or Google Chrome browser. In Microsoft Internet Explorer, the drag-and-drop method is supported only between modules that are open in different browser windows.

Note: You can link base artifacts with other base artifacts or with artifacts in the context of a module. Links to and from base artifacts are available in all modules in which those artifacts are used. A blue icon over the artifact type icon indicates linking with a base artifact  .

For information about linking in base artifacts, see "Base artifacts" on page 146.

Procedure

- To create a link between artifacts that are in the same module:
  a) Open a module.

b) Hover the mouse over the left side of an artifact until the cursor becomes a four-sided arrow.

c) Drag the artifact under the target artifact. When the link icon  is shown to the right of the artifact, drop the artifact on the icon.

d) Select the type of link to create, and then click **OK**.

You can also paste the copied artifacts as links in the **Link** column. To paste as a link, right-click in the **Links** column and click **Paste as Link**.

Tip: If a link column is shown on the page, you can create a link of that type by dragging an artifact to that column. You are not prompted to select a link type.

- **Firefox, Internet Explorer, or Chrome browsers only:** To link between two artifacts that are in different modules by using the drag-and-drop method:

  a) Click **Modules** > **Browse Modules**.

  b) Press Ctrl and click a module.

  The module opens in a browser tab.

  c) Press Ctrl and click the module to link to. If you are working in Internet Explorer, you must open the module in a separate window.

  d) In the module that you opened first, hover the mouse over the left side of an artifact until the cursor becomes a four-sided arrow.

  e) Drag the artifact to the browser tab that contains the target module; then continue to drag the artifact to the target artifact. When the link icon is shown to the right of the artifact, drop the artifact on the icon.

  Note: You cannot drag and drop artifacts to a module that has a sort column or at least one filter and receive a warning message if you attempt to.

  Tip: You can also link between artifacts in two different modules by opening each module in a separate window and dragging artifacts between the two modules. To open a module in a separate window, right-click the module name, and then click **Open in new window**.

- To create a link between two artifacts that are in different modules by using the copy-and-paste method:

  a) Select the artifact to link from and then click **Copy Artifact**.

  b) Select an artifact in another module and click **Paste Special**.

  The **Paste Special** window opens.

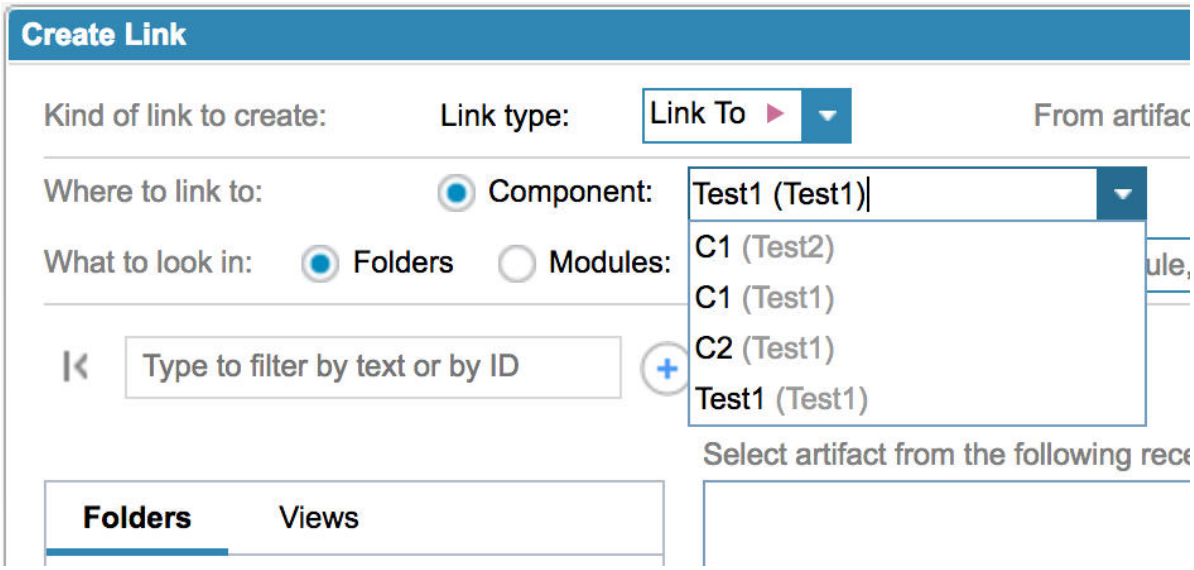
  c) Click **Create a link to this artifact** and then follow the prompts.

- To link to an artifact in a module by using the **Create Link** option:

  a) From the **Link type** list, select the link type.

  b) In the **Where to link to** field, select **Project**.

  c) From the **Project** list, select the project where you want to link the artifact. If configuration management is enabled for the project, from the **Component** list, select the required component. You can also view the project that is associated with each component.



Tip: To search for projects or components, you can type the name of the project or component in the **Project** or **Component** field. Project or component names that match the search keywords are shown in the list.

d) Optional: To link the artifact to a web link, select the **The web** option. You can define the link label and the URL link to link the artifact.

e) Select the **Folders** or **Modules** option and select the destination artifact.

f) Click **OK**.

When you delete links from modules within a project or a component, the link is removed from the source module and the target module. For module links across projects or components, you can delete Outgoing links and the link is removed from the source module and the target module. However, if you delete an Incoming link, the link is deleted from the source module but not the target module. So, in the target module, the link appears as an Outgoing link with an inaccessible target.

Related concepts

"Modules in the Requirements Management application" on page 129

A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

Linking by attribute

You can quickly and automatically create links between multiple artifacts by artifact attribute.

Before you begin

You can use the **Link by Attribute** function to automatically create, update, and delete links between artifacts based on an attribute value. To use this feature, type the artifact IDs of the target artifacts (separated by commas) in a custom string attribute type, select **Link by Attribute** and then follow the prompts. You can use this function in a module, a collection, or in any artifact view.

Note: This feature can also be used in conjunction with the CSV round-trip support to handle creating and changing links when you import data.

The following example provides a more thorough explanation of how the **Link by Attribute** function works. The examples show how to create links between multiple artifacts in a single module and between artifacts in different modules. First, the example shows how to complete these tasks:

- Create a custom attribute called `MyString`.
- Add the `MyString` attribute to a Feature artifact type.

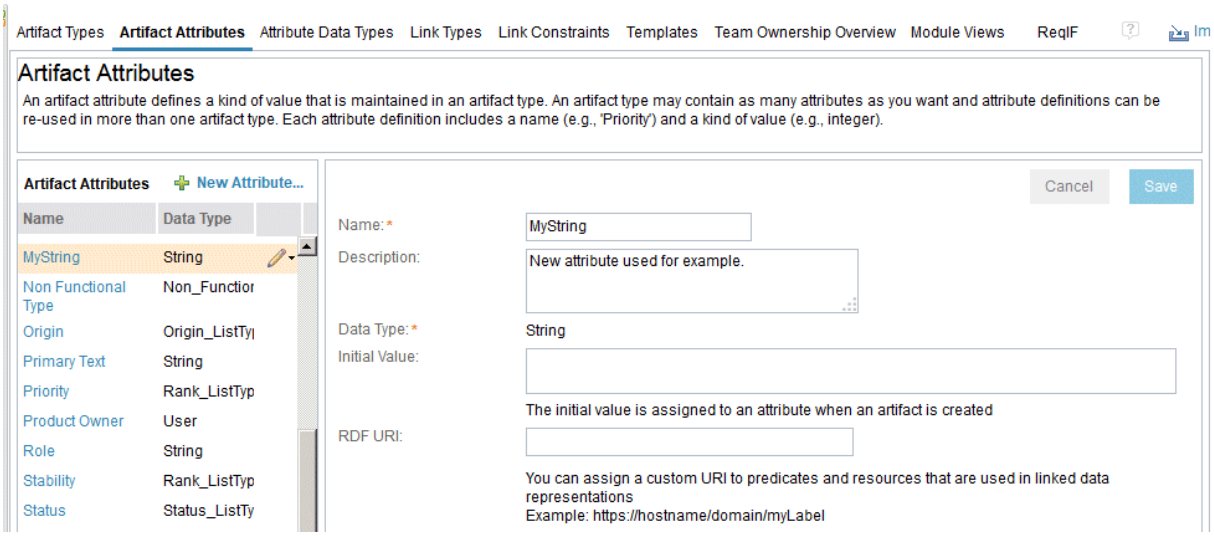
- Change the column headings in a sample module to display the `MyString` attribute.

Then, the example shows how to add artifact IDs of the artifacts to link to in the `MyString` attribute, and how to run the **Link by Attribute** function to automatically create the links.

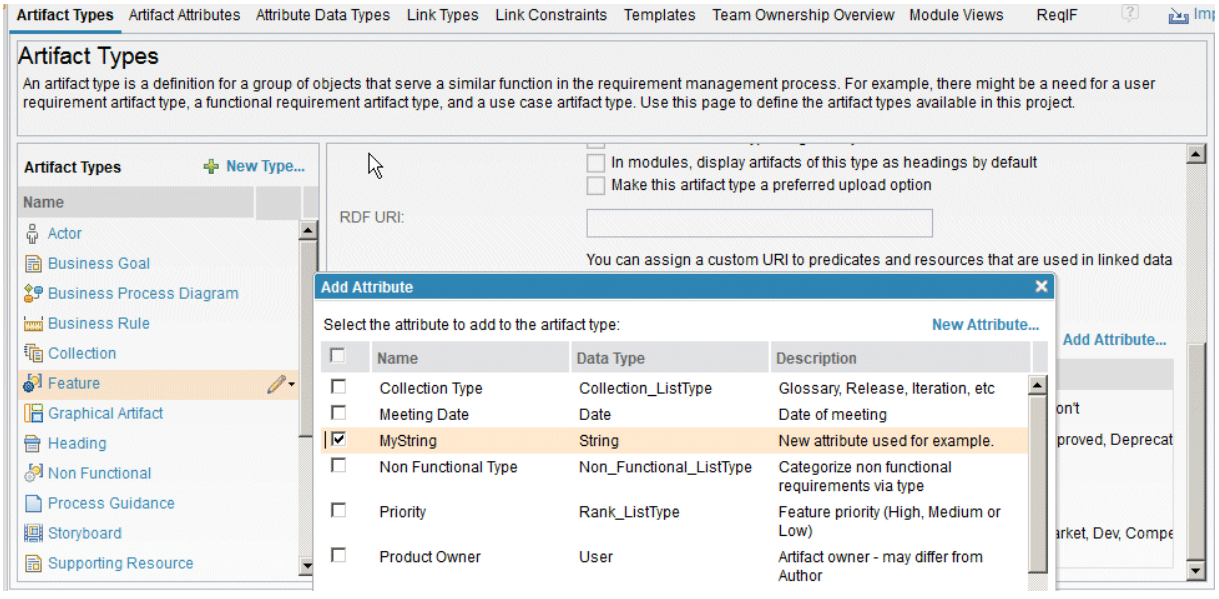
Procedure

1. Click the drop-down menu for the **Administration** icon and select **Manage Project Properties**.

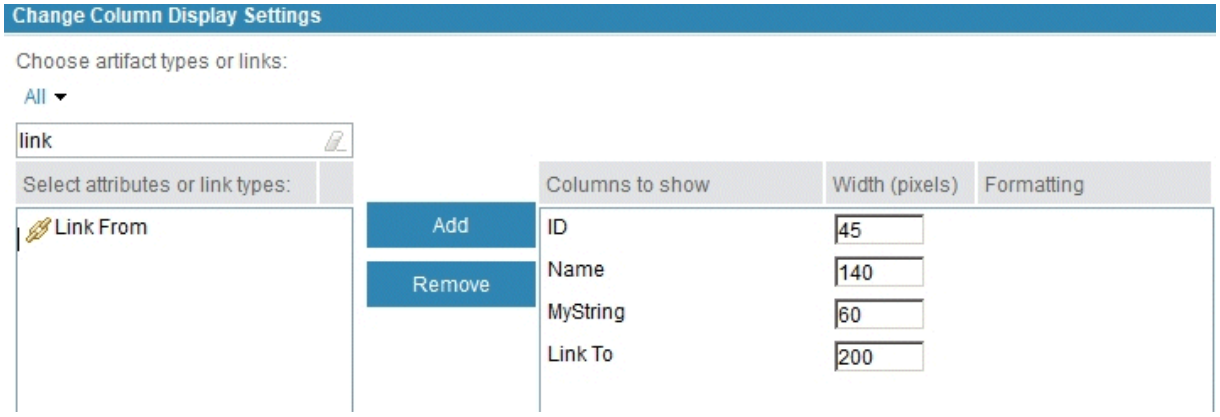
   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. On the Artifact Attributes page, click **New Attribute** and create a custom attribute that is called `MyString` with a data type of `string`, as shown in the following image:



   Note: You can use any custom attribute type as long as the type is `string` and is not a predefined system attribute.
3. Add the newly created `MyString` attribute to a Feature artifact type, as shown in the following image:

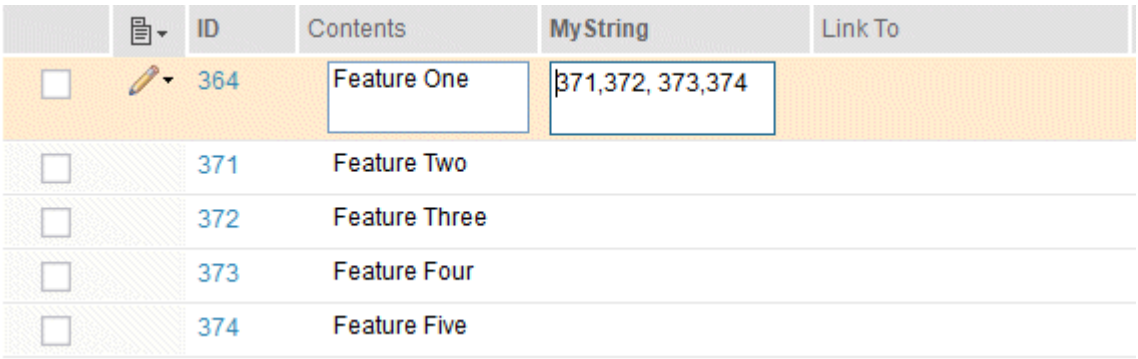


4. Create a sample module that contains several Feature artifacts.
5. Change the column headings in the module to show the new `MyString` attribute column and the `Linked To` column, as shown in the following image:

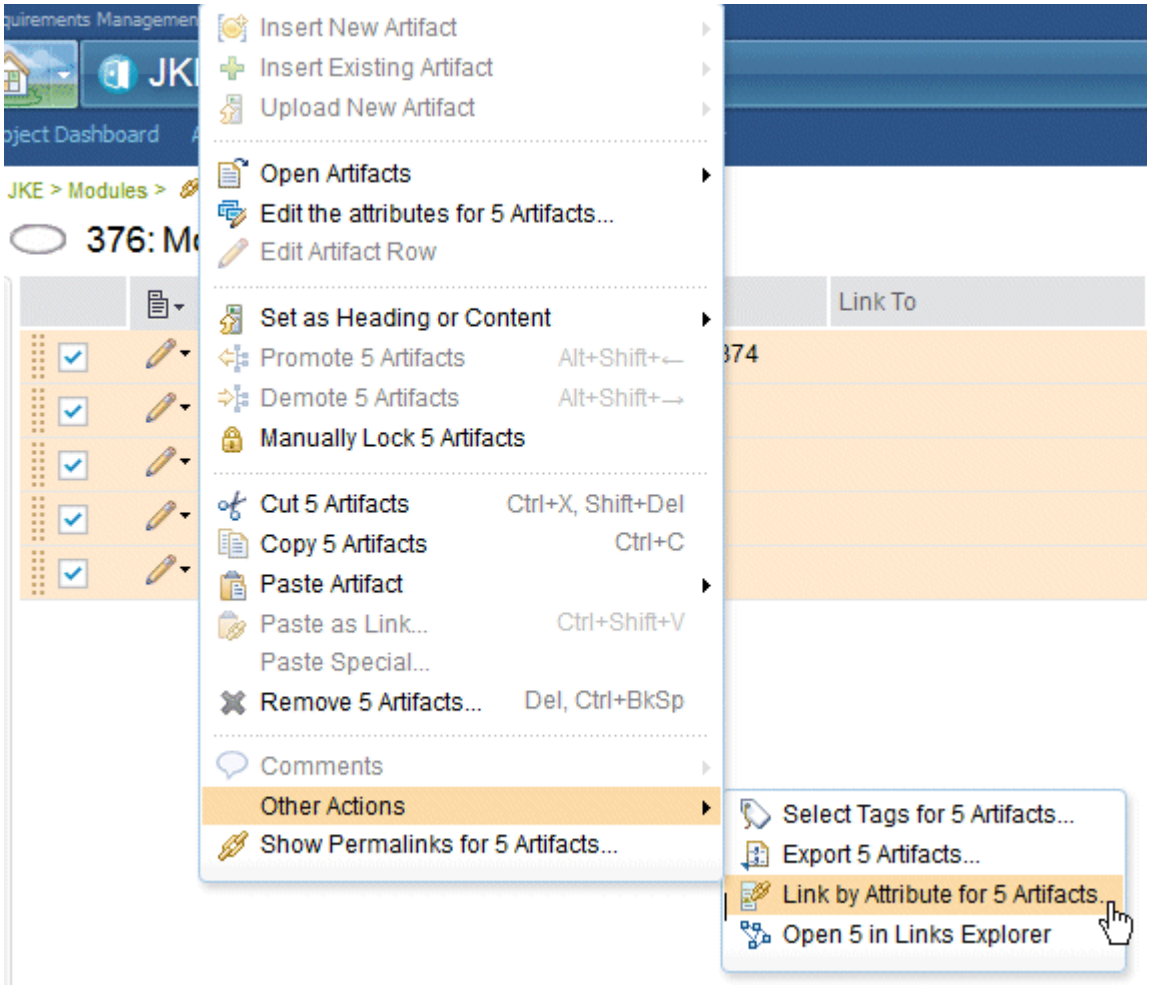


The sample module is displayed with the new columns:

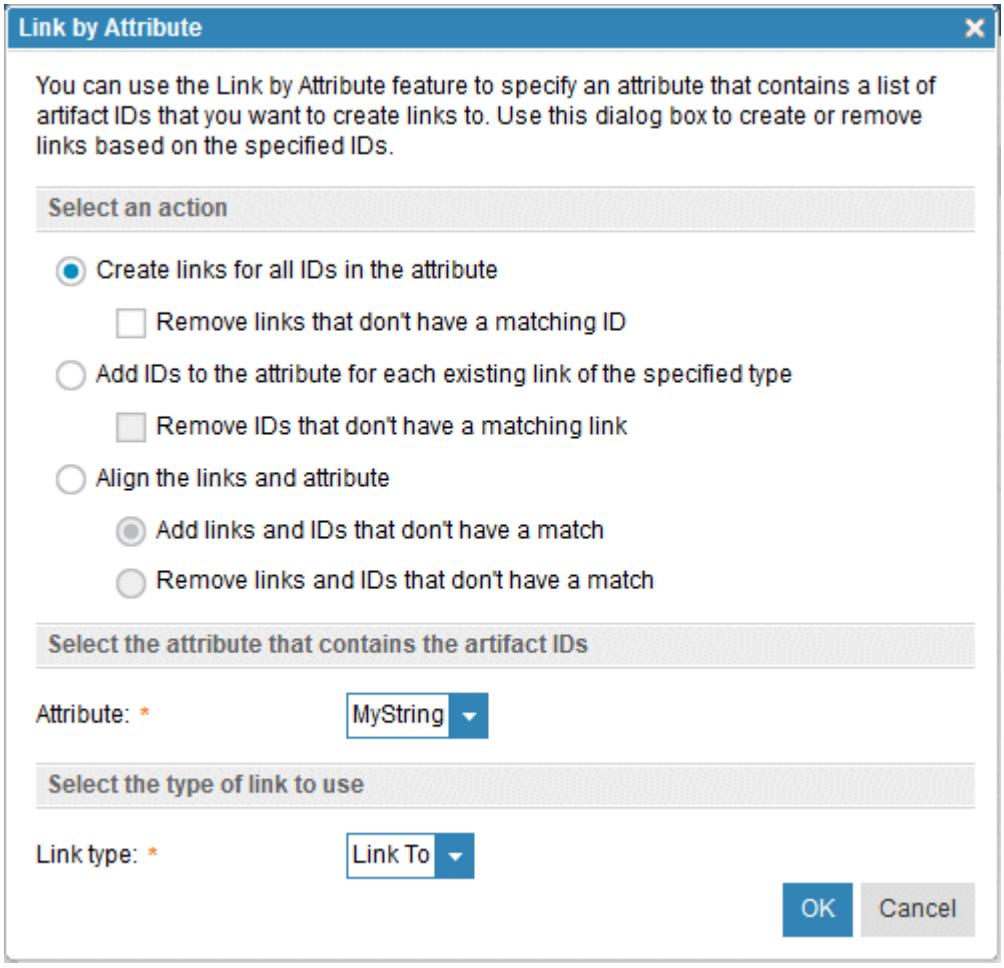
6. To create links from Feature One to Feature Two, Feature Three, Feature Four, and Feature Five. To create these links, type the ID of each target artifact (separated by commas) in the `MyString` column, as shown in the following image:



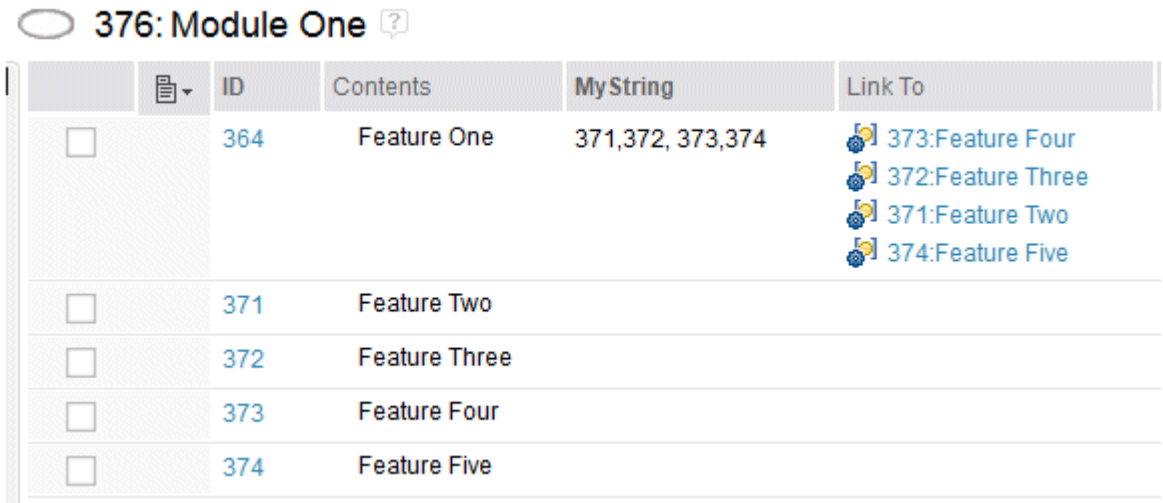
7. Then, to automatically create the links, select the check boxes for the artifacts and click **Other Actions** > **Link By Attribute**, as shown in the following image:



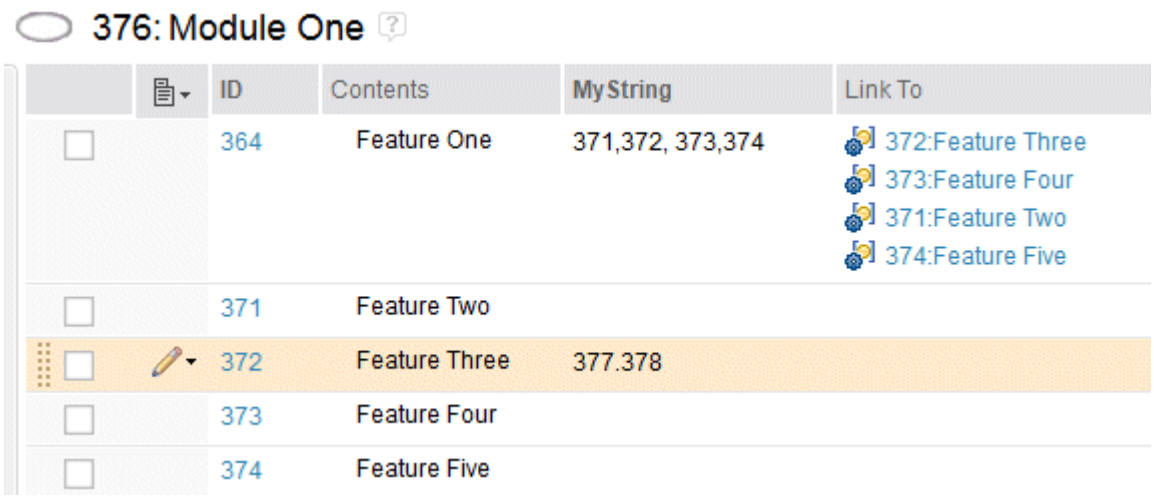
8. In the **Link by Attribute** window, in the **Attribute** field, select **MyString** and, in the **Link type** field, select **Link To**. Click **OK**.



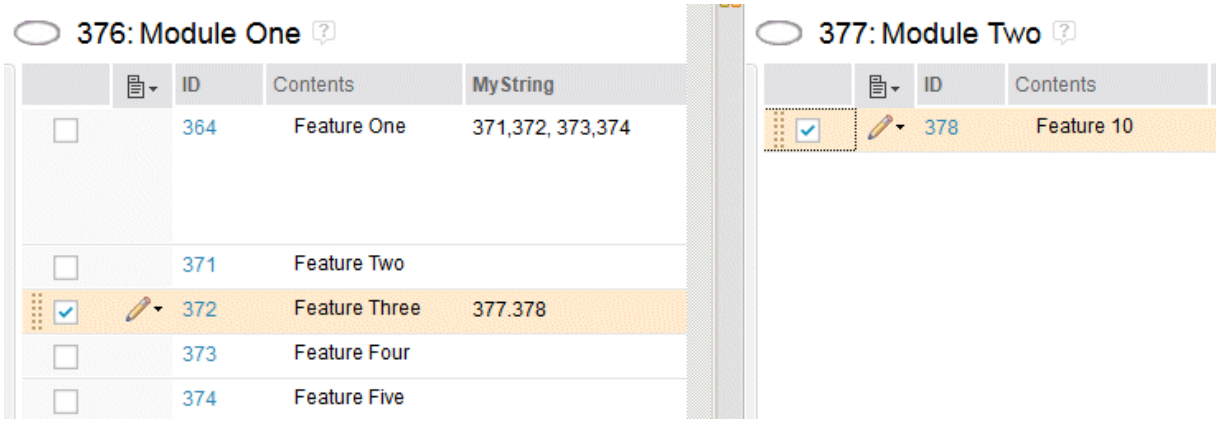
The links that you specified are automatically created, as shown in the **Link To** column in the following image:



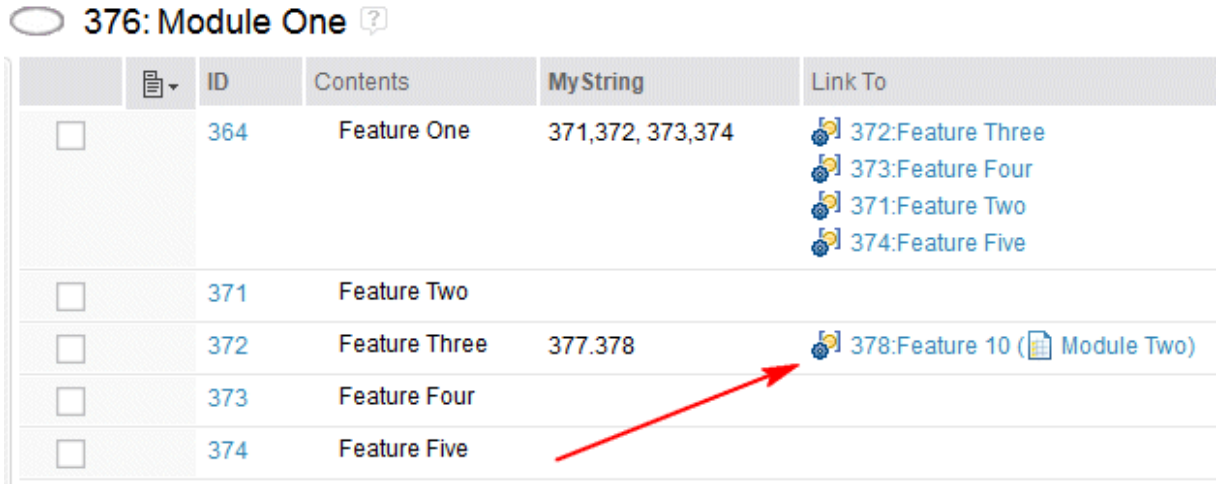
9.
10. To create a link from Feature 3 to an artifact in another module, such as to Feature 10 in Module Two, enter the artifact ID of Module Two (377) and the ID of Feature 10 (378), separated by a period, as shown in the following image:



11. Then, select Feature Three (in Module One) and Feature 10 (in Module Two) as shown in the following side-by-side view of both modules:



12. Then, run **Link By Attribute** and enter the **Attribute** and **Link To** data in the **Link by Attribute** window. When you click **OK**, the link is automatically created in the **Link To** column in Module One, as shown in the following image:



Related concepts

“Modules in the Requirements Management application” on page 129

A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules

are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

“Importing requirements artifacts from CSV and spreadsheet files” on page 159
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

Modifying the hierarchy of artifacts in a module

You can modify the hierarchy of artifacts in a module by moving an artifact or a section of artifacts, or by promoting or demoting artifacts.

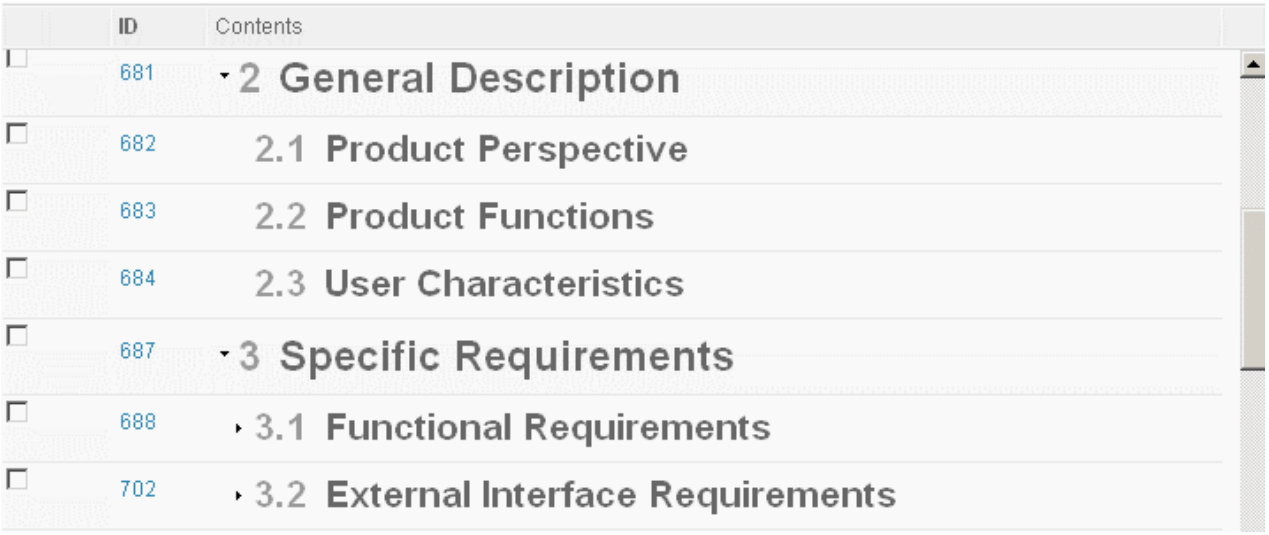
About this task

Watch a video about modifying the hierarchy of artifacts in a module.

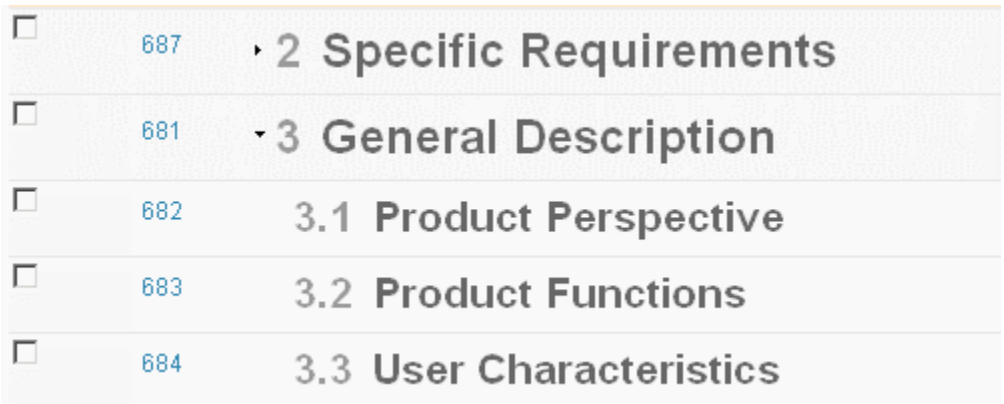
You can select how many hierarchy levels to show in a module from the **Configure Page Settings** list. When you select a level, only rows with a depth at or below that level are shown. After you specify the hierarchy levels of artifacts, you can modify the levels.

When you demote an artifact, you place it in a lower hierarchy level than its preceding artifact. Demoted artifacts are indented. When you promote an artifact, you move an indented artifact to a higher level in the hierarchy. You can move artifacts within one module or between two modules.

If you move an artifact that is at the top level of the hierarchy, all the artifacts in its section are also moved. For example, this image shows a module that contains the General Description artifact and its child artifacts, and the Specific Requirements artifact and its child artifacts:



If you move the **General Description** artifact below the **Specific Requirements** artifact, the **General Description** artifact and all its child artifacts are moved. In addition, the numbering of the hierarchy is reordered.



Tip:

You can move an artifact by dragging it to a new position in the module. However, the drop behavior changes based on whether you drop the artifact on a collapsed or expanded section. If the target section is collapsed, the artifact is dropped as a sibling artifact. If the target section is expanded, the artifact is dropped as a child artifact.

You can control whether a section is collapsed or expanded before or while you move an artifact. To expand a collapsed section while you are dragging an artifact, hover the cursor in front of the section number, as shown in this image: 

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Procedure

You can move artifacts by cutting and pasting them or by dragging them. You can also promote or demote them in the module hierarchy.

- To move an artifact by cutting and pasting it:
  a) Hover the cursor over the left column of the artifact to move, click the menu  , and then click **Cut Artifact**.
  b) Hover the cursor over the left column of another artifact, click the menu  , and click **Paste Artifact** to paste the artifact in the same hierarchy level as the selected artifact. For more paste options, click **Paste Special**, and then click one of these menu items:
     – Click **Paste Artifact Below** to paste in the hierarchy level that is below the selected artifact.
     – Click **Paste Artifact Before** to paste in the same hierarchy level as the selected artifact. The pasted artifact is displayed above the selected artifact.
     – Click **Paste Artifact After** to paste in the same hierarchy level as the selected artifact. The pasted artifact is displayed under the selected artifact.
- To move an artifact by dragging it:
  a) Hover the cursor in front of an artifact until it changes to a four-sided arrow, as shown in this image:
  

  b) Drag the artifact to a new position in the hierarchy.
  The numbering of the hierarchy changes to reflect the new position of the artifact.
  Tip: If you press the Ctrl key while you drag the artifact, the **Paste Special** window opens, in which you can duplicate or reuse the artifact instead of moving it.
- To promote or demote an artifact:
  - Hover over the artifact, click the menu  , and select either **Promote Artifact** or **Demote Artifact**.
  - While you edit an artifact row, from the toolbar that opens, click the **Promote Artifact** or **Demote Artifact** icons.
- To duplicate or reuse an artifact in one module in another module:
  a) On the **Modules** page, select two modules.
  b) From an artifact's menu, click **Open Artifacts** > **Open 2 Artifacts Side-by-Side**.
  The modules open in two separate browser windows.
  c) Drag the artifact in the first module to a new position in the hierarchy of the second module.
  The **Paste Special** window opens, in which you can specify duplication or reuse options.

Reusing artifacts in modules

Artifacts can be reused in multiple contexts in a project, including collections and modules. You can edit artifact content in a module or by opening the artifact outside the module. Content changes are reflected in all contexts. Links, tags, and comments are specific to the context in which they are created. If you want links, tags, and comments to reflect in all contexts, edit the artifact outside the module as a base artifact.

About this task

To reuse artifacts in a module, you can add existing artifacts to a module or create new artifacts in the module. You can also reuse an artifact by copying it from one module and pasting to another module. You can also select and insert an existing artifact from another module into a module. The base artifact is reused and added to the module.

Note: When you open an artifact in a module, a light blue banner at the top of the page indicates that the view is associated with an artifact in a module, rather than a base artifact. The name and ID of the module displays in the blue banner.

When you work with an artifact outside a module, you are working with the *base* artifact.

After you add or create artifacts in modules, you can work with the artifacts in the module or on the **Artifacts** page. Changes to the artifact name, content, attributes are reflected in all contexts: in the base artifact and in all modules that include the artifact.

Procedure

Viewing artifacts in a module that are reused in other modules:

- Click the **Configure Page Settings** menu  icon.
- Select **Used in Modules**.

  The **Used in Modules** column appears. In that column, the artifacts that are used in other modules are indicated by the reuse icon  . To view a list of links to modules that the artifact is reused in, hover your cursor over the icon.

  Tip: You can also view reuse in these places:

  - The **Where Used** section of an artifact sidebar
  - The **Used in Modules** column on the **Artifacts** page
  - The artifact summary that is shown when you hover over a link

Related concepts

"Base artifacts" on page 146

Artifacts that are created and managed in a project independently from a module are called *base* artifacts. Base artifacts can be used in one or more modules.

Related tasks

"Creating modules" on page 129

You can create modules and module content directly in a project or by importing a Microsoft Word document, ReqIF file, or rich-text document.

"Linking between artifacts in modules" on page 136

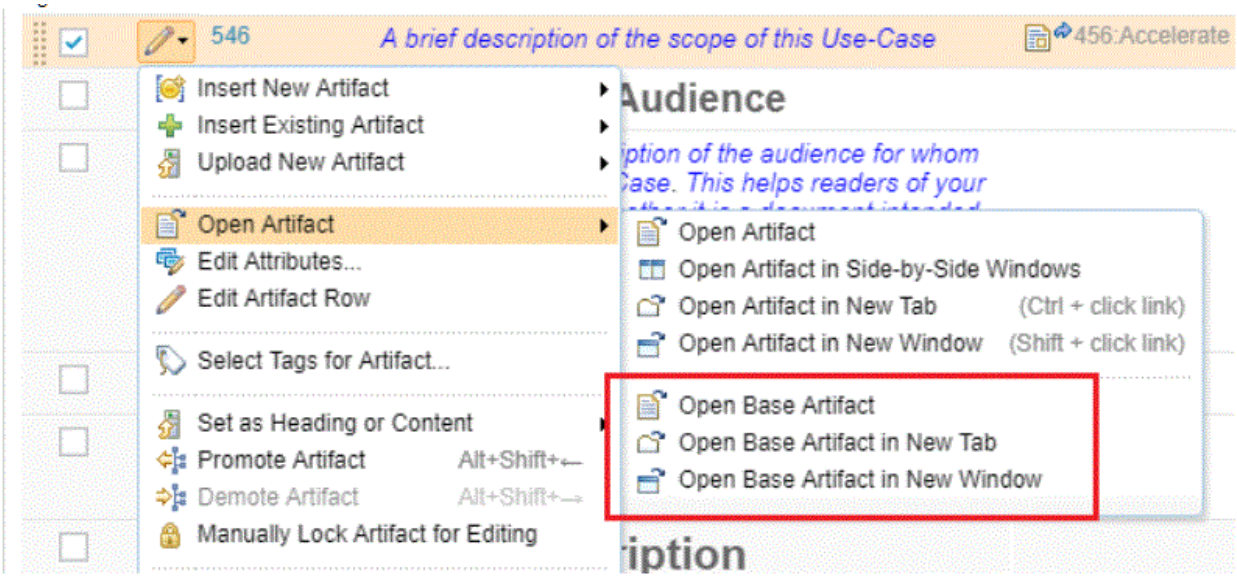
You can link artifacts that are in the same module or artifacts that are in different modules.

Base artifacts

Artifacts that are created and managed in a project independently from a module are called *base* artifacts. Base artifacts can be used in one or more modules.

When you work with an artifact outside a module, you are working with the base artifact. From a module you can navigate to the base artifact:

- From the Edit menu



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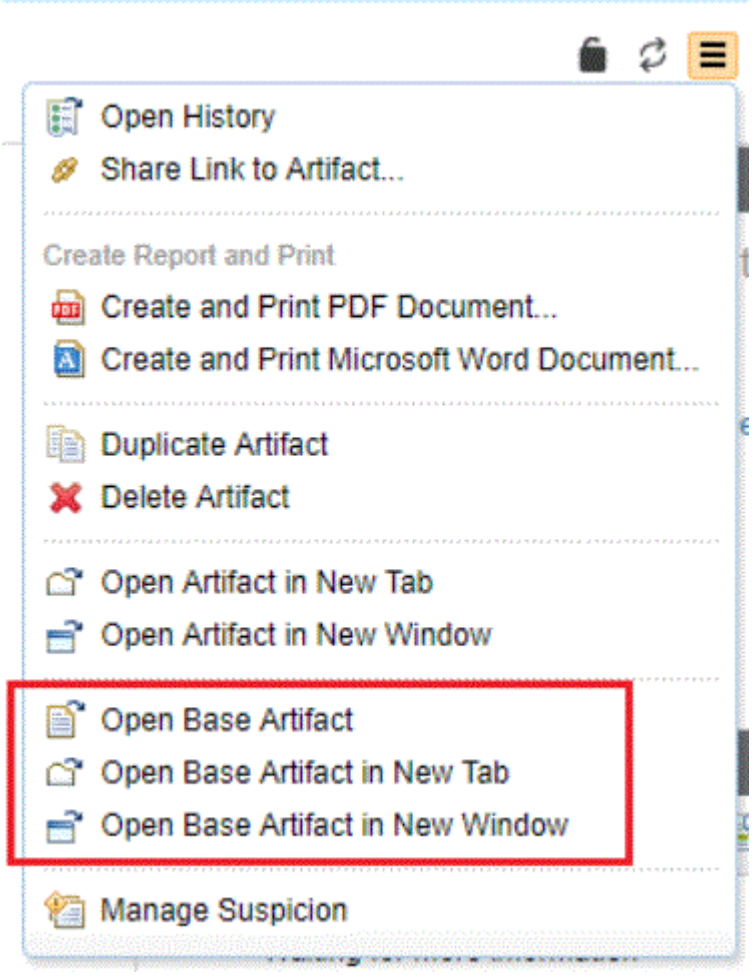
- From the More Actions menu



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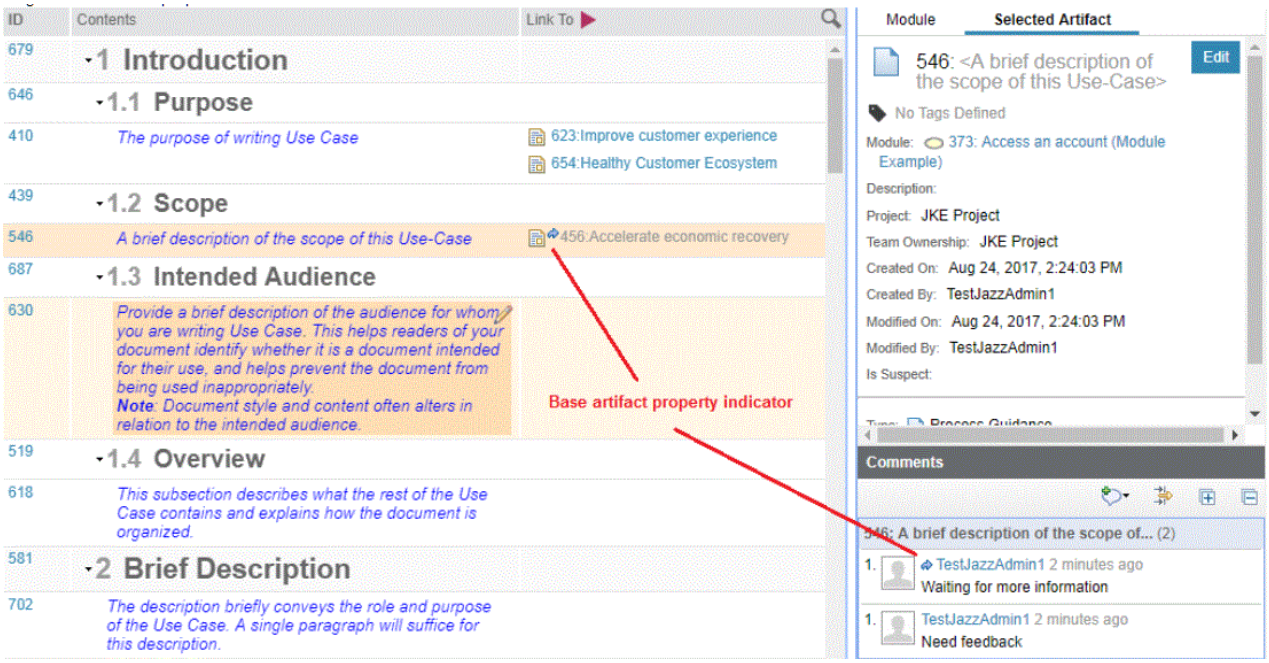
If you edit a base artifact, you can see whether the artifact is in a module by viewing the **Overview** section of the sidebar.

When you create links, tags, and comments for base artifacts, those elements apply to the artifact in all contexts in the project. Base artifact properties are indicated with a blue arrow:



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If you create links to or from *base* artifacts, those links are available in every module that the base artifacts are used in. The blue icon indicates linking with a base artifact  .

Related tasks

Reusing artifacts in modules

Artifacts can be reused in multiple contexts in a project, including collections and modules. You can edit artifact content in a module or by opening the artifact outside the module. Content changes are reflected in all contexts. Links, tags, and comments are specific to the context in which they are created. If you want links, tags, and comments to reflect in all contexts, edit the artifact outside the module as a base artifact.

Linking between artifacts in modules

You can link artifacts that are in the same module or artifacts that are in different modules.

Creating link types

Filters and views in modules

In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

You can filter artifacts in modules by using the same techniques that you use on the **Artifacts** page and the **Collections** page. When you filter artifacts in a module, the filter summary displays the number of the filtered artifacts. You can name and save views, including the column settings and filtering criteria. For more details, see Filters and views.

Module views

Module views are a subset of the module content. Module views are a simple way to filter content from the module and can help you reuse and share requirement artifacts. Using consistent sets of criteria, module views are a quick method to share common requirement entries across the team. You can create a personal view for private use, or a shared view for use by the project team. When you create a view in a module, you can either show the view in only the current module or in all the modules.

To create a module view:

1. Select an artifact or entry within the module.
2. In the **View** column to the left, click **Save as new view** 

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3. In the **New view** dialog box, enter a name.
4. Under **Type**, select **Personal** or **Shared**.

   Any project member can create a personal view for private use. A shared view is a view that can be used by all project members. Shared views can only be created or changed by an administrator or a user who has the required permissions.
5. Select where you want this view to be visible: **Just this module**, **All modules of this type (Module Specification)**, or **All modules**.

   Tip: If you plan to link the module view to development and test plans, select **Shared** in step 4 and **Just this module** in step 5.
6. In the **Who can see this view** option, select the roles. Users must have at least one role in the artifacts process area that is also assigned to the view.
7. To easily identify and retrieve a view, select the **Make this view preferred** check box. When a view is marked as a preferred, it appears in bold font in the **View** column and is also the default view that is displayed. If you have multiple preferred views, the default one is chosen by a predefined algorithm.
8. Enter a description to summarize the contents of the view.

Tip: You can also use the **Edit View** option to select roles, modify the view name, or make the view preferred.

With module views, you have more control over which artifacts in a module are available for reuse or linking. To find a module view quickly, enter the module ID or module name that contains the module view in the **Search View** field.

Important: Module views are loaded as collections into the data warehouse during the ETL process. A view can become outdated if someone updates its contents without editing the view itself. To ensure that these module views contain the latest content, you can add them to a list in the **Refresh Module Views** section. You must have permission to add views to the list. Click **Manage Project Properties** > **Module Views**, and in the **Refresh Module Views** page, add the views to the list. When you add a view to the list, it is shown only if it is unique to the module and is shared.

Related concepts

Filtering requirement artifacts and creating views
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

“Reporting in the Requirements Management (RM) application” on page 254
You can run and view reports that are based on a data warehouse and create document-style reports that are about requirement and other lifecycle data.

Related tasks

“Creating modules” on page 129
You can create modules and module content directly in a project or by importing a Microsoft Word document, ReqIF file, or rich-text document.

Related information

Associating test plans with requirement collections, modules, and module views in the Requirements Management application

Adding comments to artifacts in a module

A comment is a textual discussion item that you can add to an artifact in a module. You can use comments to provide team feedback during the development of a module, and can direct comments to other team members.

About this task

When you add comments to an artifact in a module, the comments appear in the artifact comments sidebar, which you can view in the sidebar one artifact at a time. However, if you add the Comments column to your display settings, comment icons are displayed next to all the artifacts in the module that have comments. These icons indicate the state of the comment. You can hover over a comment icon to display a hover window in which you can either view the comment, create a new comment, or show all the comments for the artifact. The following table describes the comment icons that can appear in the Comments column:

Table 21. Comment icons that can appear in the comments column

Comment Icon	Description
	Indicates that there are one or more recent comments and one or more unresolved comments. A recent comment is a comment that was created, modified, resolved, or reopened within the last 14 days. **Note:** You can modify the duration period for comments on the server, in the `teamserver.properties` server configuration file. You can also modify this configuration property to specify which comments to display in the Recent Comments widget.
	Indicates that there are one or more recent comments, but that all comments are resolved.
	Indicates that there are no recent comments, but that some comments are still unresolved.
	Indicates that there are no recent comments, and all the comments are resolved.
	Indicates that there are no comments. This icon appears when you hover over a row. You can click this icon to add a new comment to the artifact.

To add a comment to an artifact in a module:

1. Click the artifact menu  and then click **Comments** > **Create comment for this artifact**.

   Tip: You can also add a comment by hovering over a row and clicking the no comment icon  .
2. In the **Create Comment for Artifact** window, enter subject and comment text.
3. In the **Directed To** field, search for and select the user to whom to direct the comment.
4. From the **Priority** list, select a priority.
5. Click **OK**. Your comment appears in the **Artifact Comments** section of the sidebar.

To show the comment for an artifact, click the artifact menu  and then click **Comments** > **Show comments for artifact**. The comments appear in the sidebar.

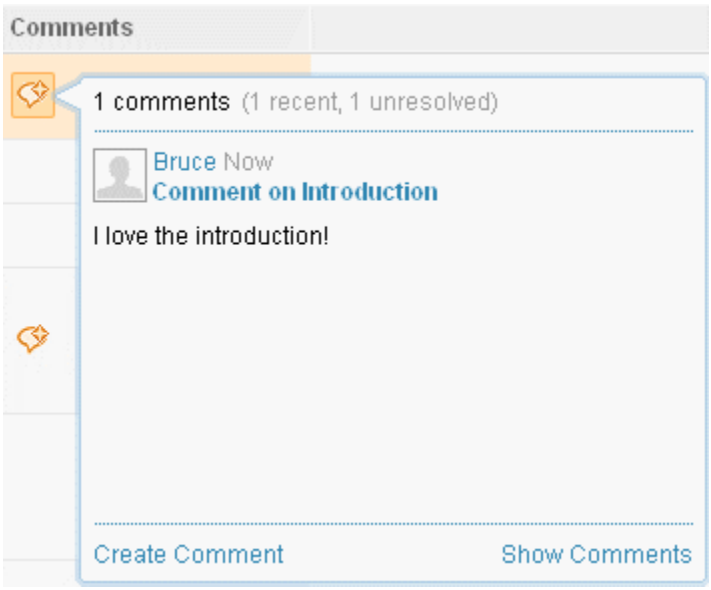
To see all of the artifacts in the module that have comments, add the Comments column to the module. To add the Comments column:

1. Click the **Configure Page Settings** icon  and then click **Configure Columns to Display**.
2. In the Change Column Display Setting window, add `Comments` to the **Columns to Show** field and then click **OK**.

Tip: You might want to save your changes as a view to make it convenient to return to this display setting.

If there is a recent comment for an artifact, the recent comment icon appears in the Comments field:

If you click this icon, all the comments for the artifact are displayed in the sidebar; however, you can also hover over the icon to display the most recent comment that was made for the artifact:



From the hover window, you can create new comments or show all the comments for the artifact.

Sorting comments

To sort the Comments column, click the top of the column. When you sort the column, artifacts are displayed in this order: artifacts with recent comment activity (indicated by the and icons from Table 1), artifacts with recent comments, artifacts with unresolved comments, artifacts with resolved comments, and artifacts with no comments.

Related tasks

Commenting on artifacts
A *comment* is a textual discussion item that you can add to an artifact or an element within an artifact. You can use comments to provide team feedback during the development of an artifact. In the web client, comments are displayed in the **Comments** section of an artifact sidebar, in the **Recent Comments** section of the Artifacts page sidebar, and in **Recent Comments for Me** on the user dashboard.

Exporting artifacts from modules to CSV and spreadsheet files

You can export the artifacts from a module to a CSV file or a spreadsheet in Microsoft Excel (XLS) and Office Open XML (XLSX) format.

About this task

You can export artifacts from a module in two ways:

- Export a module view. When you export a module view, you can customize the attributes and link types in the view before you export the artifacts.
- Export one or more artifacts from within a module.

Exports to CSV and spreadsheet formats now include special markup for links and embedded artifacts. This markup can be used to retain or create links and embedded artifacts if the file imported later. You

can export links by including a link column in the view. Links, images, or embedded artifacts can also be present in the primary text of the requirement, which can be shown in the view and exported.

Exporting base artifacts links

You can export base artifacts links to a CSV file or a spreadsheet in Microsoft Excel (XLS) and Office Open XML (XLSX) format. You can create links between base artifacts and artifacts that are included in a module. You can then create a module view to export these base artifacts to a CSV file or XLS file.

You must enable an advanced property to complete this action. To enable the property, click the **Administration** icon, and then click **Manage This Project Area**. Click **Application**.

In the Configuration section, set the value of the **EnableCoreBaseArtifactLinksWhenExporting** property to true. After you enable the advanced property, you can export the base artifacts to a CSV file.

Procedure

- To export a module view to a CSV file or spreadsheet file:
  a) If you do not already have a module view to export, create a view:
     a. In an open module, click the **Configure Page Settings** icon  to display the menu. Select **Configure Columns to Display**, and then follow the prompts to configure the attributes and link types to include in the view.
     b. Optional: In the left sidebar, select and configure filter settings. For more information about filters, see the related links below.
     c. In the left sidebar, click the **Save View** icon, type a name for the view, and then click **OK**.

     The new view is displayed in the Views section of the sidebar.
  b) Hover over the view, expand the **View Options** menu, and click **Export**. Follow the prompts to save the data into a new CSV file or new spreadsheet file in Microsoft Excel (XLS) and Office Open XML (XLSX) format.
- To export one or more artifacts from within a module to a CSV file or to a spreadsheet file:
  a) Open a module and select one or more artifacts to export.
  b) Click an artifact menu, and then click **Other Actions** > **Export Artifacts**. Follow the prompts to save your data into a CSV file or spreadsheet file in Microsoft Excel (XLS) and Office Open XML (XLSX) format.

What to do next

For information about the fields that are included in an exported CSV file, see Export process for CSV and spreadsheet files.

Related concepts

“Filters and views for artifacts in requirements projects” on page 111
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Importing and exporting files

You can exchange requirements and associated metadata between requirements tools or requirements repositories by importing and exporting several different types of files. You can import Microsoft Word documents into requirements projects or components. You can also import and export comma-separated value (CSV) files, spreadsheet (.xls or .xlsx) files, IBM Engineering Requirements Management DOORS (DOORS) migration packages, and ReqIF (.reqif or .reqifz) files as textual artifacts.

Importing documents into requirements projects or components

You can import documents of various types, including Microsoft Word, from your file system to a requirements project or component.

In the import wizard, if you click **Import a text document and convert to a rich text artifact**, the wizard imports the entire document and converts it to one rich-text artifact. You can import these document types:

- Microsoft Office (`.doc` and `.docx`)
- Open Office (`.odt`)
- Rich text format (`.rtf`)

To watch a video that shows how to import a document, see "Lesson 4: Import Microsoft Word documents" in the related links.

Import planning

Planning and awareness of limitations are key to a successful import. Before you begin the import process, make sure that you are familiar with the structure of your document. Then, plan how you want the content to be structured in the new artifact. For information about planning to import, see “Planning to import documents” on page 153.

Comments and links

When you import a Microsoft Word document that contains comments, you can specify that the wizard create comments in the new artifact from the comments in the document. Otherwise, you can add comments after you import the document. You can add comments to the whole document or to specific paragraphs. You can also add links to the imported document and embed other artifacts in it. If the imported document contains images, a folder is created that contains the images.

Related concepts

“Requirement artifacts” on page 92

“Modules in the Requirements Management application” on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

Related tasks

“Importing and extracting requirement artifacts from documents” on page 157
When you import a document to a requirements project or component, you can specify that certain parts of the document are imported and extracted as specific artifact types. You can also extract artifacts from a document that is already in a project or component.

“Uploading files to a requirements project or component” on page 118
You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

Related information

Lesson 4: Import Microsoft Word documents

Planning to import documents

You can import entire documents or parts of documents to requirement artifacts by using the import wizard. To avoid issues when the artifacts are extracted and imported, ensure that you plan the import before you run the wizard.

When you plan your import, you can more efficiently organize and structure the modules and artifacts that you want to create. Based on the content of your document, you must determine the folder structure, location, and name of the module, and the types of requirement artifacts. To identify requirement artifacts

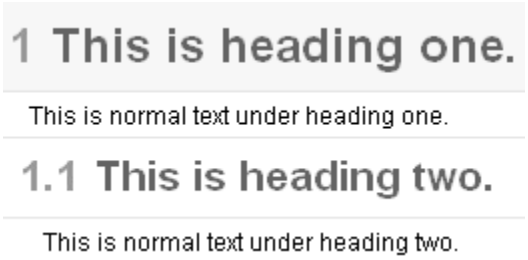
in your document, the wizard uses four criteria: headings, images, keywords, and delimiters. You can specify the artifact type that is created for each criterion.

Headings

In a document, if a heading style is applied to one or more entire paragraphs, you can specify that those paragraphs are imported as artifacts of a specific type. In addition, if the document contains delimiters or keywords, you can import them as specific types. For more information, see the following Keywords and Delimiters sections.

All other text in the document that is not a heading, delimiter, or keyword can be imported as an artifact type that you specify. For example, you can specify that all headings are converted into use case specification artifacts and that all other text is converted into feature artifacts.

Importing document text to modules: If you create a module from a document, the heading levels in the imported document are used to create the numbering for the module hierarchy. For example, a document might have a line of text at Heading 1 and a line of text at Heading 2. If you import that document to a module, the numbering for the module hierarchy might look like this example:



If you import data into a module and the data contains a name but no primary text, the name is used to populate the primary text. If the data contains primary text but no name, the name is created from either the first 156 characters or the first paragraph of the primary text.

Importing options

When you import a word document, you can specify the import option according to the document viewing criterion. The types of import options are:

- **Optimize for editing:** This option imports the word document and converts the style information to match the styling and functionality of the rich text editor. For example, if a font is not supported by the editor, it is converted to a supported font. Some style information might be lost with this option, but this option will offer the best editing experience.
- **Maintain original style:** This option imports the word document without converting any style information. The document can be edited, but with limited editing features. For example, unsupported fonts are not listed in the fonts drop down. This option is best suited for viewing documents.

Formatting

The rich text editor attempts to maintain the imported artifacts in a format that is as close as possible to their original format when the Import for editing and viewing option is selected. However, formatting is limited in a few ways:

- Most fonts are supported. Unsupported fonts are converted to Arial or to a font and size that closely matches the specified font family.
- Spacing between sentences might differ from the original document. However, spacing is maintained as close to the original formatting as possible.
- Object anchors and text wrapping around images and other content is not supported. Any layout or formatting that is based on these Microsoft Word features is not preserved.

- Tabs are converted to a sequence of spaces and paragraph indentation is rounded to the nearest multiple of 40 pixels. Any formatting or layout that uses tabs or indentation is not preserved exactly like the original document.
- If a numbered list contains fractional or segmented parts, the list is converted to a paragraph.
- Web address links that begin with `http` or `https` are imported as RM links. All other links are converted to text.
- If any cell in a table has a border or a partial border, a full cell border is used.
- For an imported table to be displayed correctly, its outer border must be perfectly aligned. Any slight misalignments in the left or right border of the original table can cause display issues after the table is imported.
- If a document is structured into columns of text, that structure is not preserved in the imported content.

Images

You can map images to specific artifact types. When you import a document that contains images, a folder is created. These image formats are not supported, but are converted to `.png` format and might be missing some details such as the following items:

- DrawingML content, such as diagrams and charts
- Embedded images that are in `.emf`, `.wmf`, or `.pict` format
- Word art

Keywords

If you use keywords throughout a document or table, you can use them to indicate specific artifact types. Before you start the import process, ensure that you know how keywords are affected:

- Keywords are not extracted from tables.
- Keywords cannot be used within tables. Lists and tables are extracted as a whole, not per item.
- If a keyword is in a list, the entire list is assigned the artifact type that is associated with the keyword.
- In version 4.0.4 and later, keywords are case-insensitive.
- Keywords that are used for sentences are supported in English only.
- During the import process, the white space around any keywords that you defined is ignored. As a result, text that contains keywords might be inadvertently identified as keywords. To avoid this issue, use infrequently used text as keywords. For example, if " he " is a keyword, commonly used text such as *the*, *they*, and *them* are inadvertently associated with that keyword's type.

Delimiters

Documents can be tagged with special characters, *delimiters*, to identify information, such as glossary terms. The delimiters that you use throughout a document can identify specific artifact types. The text that is within both sides of a delimiter becomes an artifact of the type that is associated with that delimiter. Any text that is before the opening side of the delimiter or after the closing side is treated as separate artifacts.

If you use delimiters in a document or table, before you start the import process, ensure that you know how delimiters are affected:

- Delimiters cannot be used within tables. Lists and tables are extracted as a whole, not per item.
- Delimiters cannot be nested. Only the delimiter that is specified first is used.
- In version 4.0.4 and later, delimiters are case-insensitive.
- During the import process, if you defined a delimiter, and either or both of its opening and closing parts are surrounded by white space, that white space is ignored. As a result, text that contains delimiters might be inadvertently identified as delimiters. To avoid this issue, use infrequently used text

as delimiters. For example, if the first part of a delimiter is " （" and the second part of the delimiter is " ） ", commonly used formatting such as *that(s)* are split by the delimiter.

All other text

Any content in your document that is not a heading, image, keyword, or delimiter can be assigned to specific artifact types. You can change the artifact types after the import is complete.

Unsupported items

These additional items are not supported in a document import:

- Tables of contents
- VBA macros
- Mail merge fields, field codes, and frames
- Text boxes
- Table styles
- OLE embedded documents, such as Microsoft Visio contents
- Embedded XML
- Document properties
- Password-protected documents

Organizing data for import process

The size of the document determines the time that is required for the import process. If the size of the document is large, the time that is required to import the document might increase. Other elements in the document such as images, shapes, and OLE objects might also increase the import time. If the import process creates more than 10,000 artifacts, split the document further before the import. If you split the documents, the smaller sections get imported faster. This also speeds up the word import requests from other users. The resulting module or import folder that is created after the import also gets loaded faster. For more information, see Organizing requirements for best performance.

Related concepts

“Requirement artifacts” on page 92

“Modules in the Requirements Management application” on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

“Importing documents into requirements projects or components” on page 153
You can import documents of various types, including Microsoft Word, from your file system to a requirements project or component.

Related tasks

“Importing and extracting requirement artifacts from documents” on page 157
When you import a document to a requirements project or component, you can specify that certain parts of the document are imported and extracted as specific artifact types. You can also extract artifacts from a document that is already in a project or component.

“Uploading files to a requirements project or component” on page 118

You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

Importing and extracting requirement artifacts from documents
When you import a document to a requirements project or component, you can specify that certain parts of the document are imported and extracted as specific artifact types. You can also extract artifacts from a document that is already in a project or component.

Before you begin

Planning and awareness of limitations are key to a successful import. Before you begin the import process, make sure that you are familiar with the structure of your document. Then, plan how you want the content to be structured in the new artifact. For information about planning to import, see "Planning to import documents" on page 153.

Restriction: You can import only one document at a time. If you try to start a second import before the previous import is completed, the second import cannot start until the previous import is completed.

About this task

Artifacts are extracted based on criteria, such as headings, images, keywords, and text delimiters. You can specify where the artifacts are saved and whether to include them in modules.

You can extract artifacts from documents that are in or outside of a project or component. If you extract artifacts from a document that is outside of a project or component, you must import the document, and the document content is extracted during the import process.

You can import these document types:

- Microsoft Office (`.doc` and `.docx` files)
- Open Office (`.odt` files)
- Rich Text Format (`.rtf` files)
- Compressed (`.zip` files that contain a supported document type)

You can extract these document types:

- Microsoft Office (`.doc` and `.docx` files)

Procedure

- To import a document from outside of the project or component and extract artifacts from that document:
  a) Open the project or component.
  b) Click **Artifacts**.
  c) On the **Artifacts** page, click **Create** to expand the menu and click **Import Artifact**.
  d) In the Import wizard, click **Import requirements from within a text document** and follow the prompts in the wizard to complete the import and extract the artifacts.
- To extract artifacts from a document that is already in the project or component:
  a) On the **Artifacts** page, select an artifact.
  b) Click the **Edit** icon for the artifact and click **Extract Requirements from Artifact**.
  c) In the Extract Requirements wizard, specify the details about the artifacts to create, and follow the prompts to extract the artifacts.

Related concepts
"Requirement artifacts" on page 92
"Modules in the Requirements Management application" on page 129

A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

"Importing documents into requirements projects or components" on page 153
You can import documents of various types, including Microsoft Word, from your file system to a requirements project or component.

"Importing requirements artifacts from CSV and spreadsheet files" on page 159
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

Related tasks

"Uploading files to a requirements project or component" on page 118
You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

Importing and exporting CSV and spreadsheet files

You can import or export text-based artifacts to and from requirements projects by using comma-separated values (CSV) files or spreadsheets (XLS and XLSX) files. Round trip importing and exporting is also supported. For example, you can export artifacts to a CSV file, change the attribute values in the file, and then import that file back into IBM Engineering Requirements Management DOORS Next (DOORS Next).

Important: You must be aware about the following restrictions on the importing and exporting process:

- Although the import is an asynchronous process, if you log out during the import process, you might encounter problems. For example, imported data might be truncated since the import process is not completed after you log out.
- If you export a view that includes system-defined and OSLC links, and then delete those links in the exported file, the links are not deleted when you import that file into the RM application.
- You can create new tags for artifacts by importing a file, but if tags exist in the artifacts, they are ignored during the import process. You cannot delete tags from artifacts by importing a file.
- You cannot export or import comments in requirement artifacts.
- You can create text, heading type, module, collection, and diagrams when you import a CSV XLS, or XLSX file. When you import into a module, you can import text and diagrams only.
- Rich text is not supported when you import or export CSV files. If the artifacts that you are importing or exporting contain styles or formatting, the resulting content is plain text. (The rich text in spreadsheet files is imported or exported.)
- Exporting and importing of horizontal lines in text is not supported. If you include horizontal lines in a text artifact, export that artifact to Microsoft Excel, and then import the file, the horizontal lines are lost.
- If you modify text format in a Microsoft Excel file, but do not change the text itself, when you import the file, those format changes are not imported. The format is only changed when the text is also changed.
- Bullets that are used within the cell of a Microsoft Excel spreadsheet are not supported. If you export or import these files, the bullets are removed.
- Text alignment is not supported when you import or export artifacts.
- Indents are not supported when you export CSV files or Microsoft Excel files. If you import the CSV files or Microsoft Excel files that you exported, the indent is removed and the content is left aligned. If you are working in a configuration-enabled project area, these changes are flagged as unexpected differences.
- When exporting a module view, if you select the **Include links, tags, and comments from base artifacts** option, the base artifacts themselves are not exported; only the bindings are included in the exported file.

- You can export artifacts to a CSV or spreadsheet file, change the attribute values in the file, and then import that file back using **Update artifacts that match entries and create artifacts for new entries**. The **Update artifacts that match entries and create artifacts for new entries** process is only for creating new entries or for updating attributes for artifacts that are part of the module. If you remove any of the exported artifacts from the module and then import the modified file the update option will not work.
- Nested levels are not supported when importing or exporting a Microsoft Excel file. Even if there have been no changes to the original artifacts comparison with the original artifact will indicate changes.
- You can export a module with identical artifact IDs. When you import a module, you cannot delete the artifacts with the identical IDs that are removed from the exported file.

Importing requirements artifacts from CSV and spreadsheet files
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

You can import and export CSV files or spreadsheets in Microsoft Excel (XLS) and Office Open XML (XLSX) format. When you import requirements that were previously exported from IBM Engineering Requirements Management DOORS Next (DOORS Next), they can include markup text for links and embedded artifacts. During the import process, this markup text is used to create or update the links and embedded artifacts.

When you export requirements to CSV or spreadsheet files, metadata is created during the export process.

Note: You must not delete the metadata before the reimport process. If you delete the metadata and remove any artifacts from the spreadsheet files and reimport requirements, the artifacts are not deleted after the reimport process.

Prerequisites for importing CSV and spreadsheet files

- Review the limitations described in the "Importing and exporting CSV and spreadsheet files" on page 158 topic.
- Read the "CSV file format and examples" on page 163 topic.

  Note: Spreadsheet files must conform to the same content rules as CSV files.
- Make sure that the file to import is encoded in UTF-8. If you are working with data in an external application, make sure that the application supports UTF-8.
- Make sure that the project has an artifact type that is defined for each unique type name in the Type column. If type errors occur when you import a CSV file, limit the file to only one artifact type at a time. Also, you might want to divide large CSV files into smaller chunks. If other errors occur, make sure that special characters are escaped, as described in the RFC 4180 document.
- If you created the CSV file in another application, remove extra spaces or unsupported fields from the file before you import it.
- Escape any apostrophes or quotation marks in the file, as described in the RFC 4180 document.
- Depending on your needs, you might assess and create custom attributes. For more information, see "Managing project or component properties in requirements projects" on page 28.
- To import a CSV file that has attribute values of the `enumeration` type, verify that those values are defined for the corresponding attribute type in the target project. Otherwise, the import fails.
- To import a CSV file into a DOORS Next module, the CSV file must include the isHeading, parentBinding, and Artifact Type columns. The prerequisite is applicable regardless the application where the CSV file is generated.

Import process

To build a correctly formed CSV file for import, export from a view that contains columns that correspond to the content to import. If you export from a view, the exported file contains unsupported system-maintained fields. However, these fields are ignored if they are included in an import operation. For more

information about exporting from a view, see “Exporting requirements artifacts to CSV and spreadsheet files” on page 161.

If you export the hierarchy of artifacts in a module, remove a parent artifact, but not the associated child artifacts, and then try to import the file, the import fails. You can prevent this by either removing the child artifacts from the parent artifact, or promoting the child artifacts to the nearest parent artifacts.

To start an import, open the Artifacts page and at the **Create** or **More Actions** menu, click **Import Artifact**. Click **Import requirements from a CSV file or spreadsheet**. After you select a CSV file or spreadsheet, you can choose to import requirements into a folder or into a module. You can choose to update artifacts that match the imported requirements, or create new artifacts. When you update existing artifacts, you can ignore imported requirements that do not match existing artifacts or create new artifacts from the new imported content. After you make your selections, click **Finish**.

You can import artifacts in a hierarchical import by using special fields in the CSV file.

Example 1

The following sample CSV file represents the module artifacts, Feature 1, Feature 11, and Feature 12:

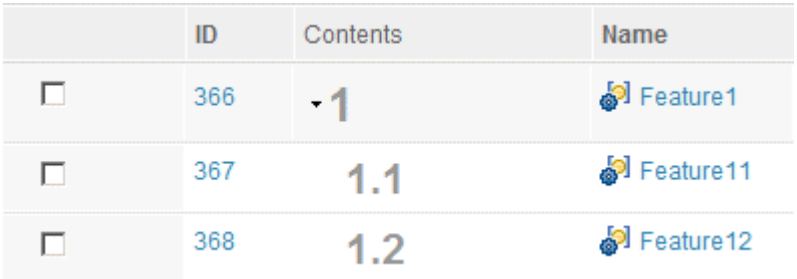
```
Identifier,Artifact Type,Name,parentBinding
100,Feature,Feature1,""
101,Feature,Feature11,100
102,Feature,Feature12,100
```

The Identifier column is required for module-related imports. The identifier is used to establish a parent relationship between the CSV records representing the module artifacts. The identifier is also used to group the module artifacts with their modules.

The parentBinding column is also used for module related imports along with Identifier.

The module column is used for module related imports and dictates which modules that are defined in the CSV file are the intended target for the records that represent module artifacts. The module column can be ignored when there are nomodules that are defined in the CSV file.

When imported, Feature 11 and Feature 12 are placed under Feature 1 and the artifacts are hierarchically arranged in a module:



Example 2

The following sample CSV file defines two modules, Module 1 and Module 2. The module artifacts Feature 1, Feature 11, and Feature 12 belongs to Module 1. The module artifacts Feature 2 and Feature 4 belongs to Module 2.

```
Identifier, Artifact Type, Name, parentBinding
99, Module, Module1, ""
100, Feature, Feature1, ""
101, Feature, Feature11, 100
102, Feature, Feature12, 100
103, Module, Module2, ""
104, Feature, Feature2, ""
105, Feature, Feature4, ""
```

After the import, the Feature 11 and Feature 12 will be placed under Feature 1. If the order of CSV record is changed, the import result is different. For example, if the modules are defined first, the Feature 1,

Feature 11, Feature 12, Feature 2, and Feature 4 are imported in the Module 2. In this case, to obtain desired result, the module column can be used:

```
Identifier, Artifact Type, Name, parentBinding, module
98, Module, Module1, "", ""
99, Module, Module2, "", ""
100, Feature, Feature1, "", 98
101, Feature, Feature11, 100, 98
102, Feature, Feature12, 100, 98
104, Feature, Feature2, "", 99
105, Feature, Feature4, "", 99
```

For information about the special fields and setting up a CSV file before you import data into a module, see Importing and exporting using the CSV format on Jazz.net. Content on Jazz.net is governed by the Jazz.net Terms of Use and is provided as-is without warranties of any kind.

Warning: When importing a CVS file, if there is an error in any row or column, then the entire import fails and no data will be imported.

Related concepts

"Exporting requirements artifacts to CSV and spreadsheet files" on page 161
You can export text-based artifacts from a requirements project into comma-separated values (CSV) files or into spreadsheet (XLS and XLSX) files. The content of the exported file is governed by the columns that are in the current view.

Related tasks

"Uploading files to a requirements project or component" on page 118
You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

Related reference

"CSV file format and examples" on page 163
Before you import a comma-separated values (CSV) file, ensure that the file adheres to the CSV format. In addition, CSV files, as well as spreadsheet files, must follow the content rules for rows and columns and must be encoded in UTF-8.

Exporting requirements artifacts to CSV and spreadsheet files

You can export text-based artifacts from a requirements project into comma-separated values (CSV) files or into spreadsheet (XLS and XLSX) files. The content of the exported file is governed by the columns that are in the current view.

When you export text-based artifacts, you must specify whether to write the data into CSV, XLS, or XLSX format. You can then import the artifacts into the same project or into another project. If you import into another project, the target project types and their predefined values must match the types in the project that you exported from.

You can export artifacts from many places, including the **Artifacts** page and from within collections and modules. To export artifacts, select the artifacts to export, click the pencil icon  for a selected artifact, and then click **Export**.

The following columns cannot be included when you export data:

- Collections
- Comments
- Reviews
- Team Ownership
- Used in Modules

Note:

- You can add the Team Ownership column to a view; however, the export of Team Ownership information is not currently supported. If you include the column in an export operation, the Team Ownership field in the resulting CSV or spreadsheet file is empty.
- You can add the Validity Summary column to a view, but the validity summary and link validity information are excluded from the resulting CSV or spreadsheet file.

You can also export from a view to capture the column settings and artifacts that are defined in that view. You can create and export artifact views, collection views, or module views; the steps to create any type of view are similar. For detailed instructions to create and export a module view, see Exporting artifacts from modules to CSV files.

Exports to CSV and spreadsheet formats include special markup for links and embedded artifacts. This markup can be used to retain or create links and embedded artifacts if the file is imported later. You can export links by including a link column in the view. Links, images, or embedded artifacts can also be present in the primary text of the requirement, which can be shown in the view and exported.

Contents of exported CSV and spreadsheet files

The exported CSV or spreadsheet file contains the contents that are shown in the view that you exported from. Tags are also included in exports. In some instances, your exported file might contain UTF-8 representations of non-breaking spaces that are shown as Â characters. To remove those characters, load the exported file into a text or spreadsheet program and remove them by using the search and replace function.

When you export artifacts from a saved view on the **Artifacts** page or the **Collections** page, the Artifact Type column is included by default. If the saved view contains the Artifact Type column, the column is displayed in the same position in the exported file as in the saved view. If the saved view does not include that column, the column is added at the end of the exported fields.

When you export artifacts from a saved view in a module, the following columns are included in the exported file. The columns preserve information about the module structure, which might be used during an import to another module. The columns cannot be added or removed by editing the view.

- isHeading
- parentBinding
- Artifact Type

Important: If you remove any of the listed columns from a CSV file and then import the CSV file in a module, the import fails, and an error message is displayed. For example, if you export a module view to a CSV file, remove the "parentBinding" column from the file, and then import the CSV file, the import operation fails. To resolve this issue, ensure that you import the CSV file that contains all the required columns.

Tip: For more flexibility in importing CSV data, you can manually modify the columns in the exported CSV file by using an external tool. For example, by manually modifying columns in CSV files, you can import the artifacts from multiple modules into a folder. You can also combine the artifacts from multiple module exports into a one module. For more information, see Importing and exporting using the CSV format on Jazz.net. Content on Jazz.net is governed by the Jazz.net Terms of Use and is provided as-is without warranties of any kind.

Note: When you import CSV data, you can instruct the import wizard to perform these actions:

- Create new requirements
- Update matching requirements and create new requirements for new entries
- Update matching requirements and ignore new entries

Related concepts

“Importing requirements artifacts from CSV and spreadsheet files” on page 159

You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

"Collections" on page 176
A collection is a set artifacts that you create for a specific purpose.

"Modules in the Requirements Management application" on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

"Filters and views for artifacts in requirements projects" on page 111
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Related tasks

"Exporting artifacts from modules to CSV and spreadsheet files" on page 151
You can export the artifacts from a module to a CSV file or a spreadsheet in Microsoft Excel (XLS) and Office Open XML (XLSX) format.

"Uploading files to a requirements project or component" on page 118
You can upload files from your file system to a requirements project or component. After you upload a file, depending on its file type, you can modify it, convert its contents to a rich-text artifact, or extract artifacts from it.

"Adding tags to artifacts and viewing tagged artifacts" on page 191
You can add user-defined shared or personal tags to new and existing artifacts. Use tags to categorize artifacts in a project area. You can view all artifacts that have the same tag by creating a filter for that tag. If you save that view, you can use that view in your project dashboard. Shared tags are available to all users in the project. Personal tags are only available to the user who creates them.

Related reference

"CSV file format and examples" on page 163
Before you import a comma-separated values (CSV) file, ensure that the file adheres to the CSV format. In addition, CSV files, as well as spreadsheet files, must follow the content rules for rows and columns and must be encoded in UTF-8.

CSV file format and examples

Before you import a comma-separated values (CSV) file, ensure that the file adheres to the CSV format. In addition, CSV files, as well as spreadsheet files, must follow the content rules for rows and columns and must be encoded in UTF-8.

CSV format

IBM Engineering Requirements Management DOORS Next (DOORS Next) implements the CSV format as specified in the RFC 4180 document from the Network Working Group of the Internet Society. For general information about CSV file format, see Comma-separated values on the RFC Editor website.

CSV and spreadsheet content rules

To successfully import a CSV or spreadsheet file, the content must adhere to these rules:

Rows
: Each row in the file must contain the same number of cells. This rule also applies to the header row.

Header row
: The first row must contain column headers. These headers must not contain escaped characters or apostrophes.

Columns of the first row

The following table contains the requirements for the columns of the first row. You can have as many columns as needed to correspond to the fields in an artifact type. The artifact type that the columns map to is determined by the entry in the Type column of each content row.

Table 22. Content rules for rows and columns: columns of the first row

Column name	Presence
Artifact Type	Required. Each row in the CSV file must contain an entry in this column that corresponds to an artifact type in the system.
Name	Required if the primary text is omitted. By default, each artifact in the system has a **Name** field. The data in this field is displayed when you view the folder hierarchies or view search and filter results.
Primary Text	Required if the name is omitted. Each text-based artifact type in the system contains a **Primary Text** field, which corresponds to the primary content that is associated with the artifact. For example, if the artifact is a requirement, its primary text represents the actual requirement, such as "The vehicle must have two wheels."
Description	Recommended. By default, each artifact in the system has a **Description** field. The description is displayed in a tooltip when you hover over a title.

The following example shows a CSV entry for an artifact with a custom artifact type named `MyRequirementType`:

```
Artifact Type, Primary Text, Name, Description, Owner
MyRequirementType, "The vehicle must have two wheels.", "Vehicle wheels", "This requirement
defines the rules for vehicles", "Joe Blogs"
```

For information about creating a custom artifact type, see Creating requirement artifact types.

In the exported file, links in link columns are represented by markup that is similar to this example:

```
{LINK id=3129 uri=https://server/rm/resources/_abaf26f172a149b2aaf8f22933be1661}
```

Links in the Primary Text column are similar to this example:

```
"The text contains a link:{LINK id=3129 title=""3129: AMR Information Architecture""
uri=https://server/rm/resources/_abaf26f172a149b2aaf8f22933be1661}."
```

Images and embedded artifacts are similar to these examples:

```
{EMBEDDED id=3498 title=""new requirement"" uri=https://server/rm/resources/
_klHmkbljEeWqUL0WZ--HjQ}
```

```
{IMAGE id=3496 title=""watson-analytics-logo.png"" uri=https://server/rm/wrappedResources/
_dyVrMLljEeWqUL0WZ--HjQ}
```

Content rows

A CSV file can have multiple rows after the header row. Each row corresponds to an artifact that will be created. The entry in the Type column corresponds to the artifact type in the system that will be created. The other cells in the row correspond to the matching fields on the artifact.

Important: If a cell that contains content for a column does not match the specified artifact type, as denoted by the Type value, the cell is ignored. Even if a CSV import is complete, certain data might not be included because the corresponding columns do not exist for an artifact type. To avoid this

situation, import the content by artifact type. For example, you can import different artifact types separately, in which case all rows will contain the same value in the Type column.

Unsupported fields

The following fields are system-maintained and are not supported in the CSV import function. If you import a CSV file that contains any of these fields, the fields are ignored on import.

- Identifier
- Creator
- Created By
- Created On
- Contributor
- Modified By
- Modified On

Note: You can add the Team Ownership column to a view; however, the export of Team Ownership information is not currently supported. If you include the column in an export operation, the Team Ownership field in the resulting CSV or spreadsheet file is empty.

Date formats

Several date formats are supported for all locales that are typically defined by various standards, such as ANSIC, XSD, RFC822, and RFC3339. The date formats are included for scenarios where CSV files are generated programmatically. Examples:

```
2011-08-01T10:54:12+01002011-08-01T10:54:12.203Z
2011-08-01T10:54:12Z
Mon, 01 Aug 2011 10:54:12 BST
Monday, 01-Aug-11 10:54:12 BST
Aug 01, 2011 10:54:12 AM BST
2011-08-01T10:54:12
Mon Aug 1 10:54:12 2011
2011-08-01
10:54:12 AM BST
10:54:12
```

In addition, the long, medium, and short forms that are defined on the locale by the International Components for Unicode (ICU) are supported. This example shows the long forms for the locales at Berlin:

```
de_DE Montag, 1. August 2011 11:58:36 Deutschland
de_DE Montag, 1. August 2011 11:58:36 MESZ
de_DE Montag, 1. August 2011 11:58:36
de_DE Montag, 1. August 2011 11:58
de_DE 1. August 2011 11:58:36 Deutschland
de_DE 1. August 2011 11:58:36 MESZ
de_DE 1. August 2011 11:58:36
de_DE 1. August 2011 11:58
de_DE 01.08.2011 11:58:36 Deutschland
de_DE 01.08.2011 11:58:36 MESZ
de_DE 01.08.2011 11:58:36
de_DE 01.08.2011 11:58
de_DE 01.08.11 11:58:36 Deutschland
de_DE 01.08.11 11:58:36 MESZ
de_DE 01.08.11 11:58:36
de_DE 01.08.11 11:58
```

This example shows the long forms for the locales at Chicago:

```
en_US Monday, August 1, 2011 5:08:17 AM CT
en_US Monday, August 1, 2011 5:08:17 AM CDT
en_US Monday, August 1, 2011 5:08:17 AM
en_US Monday, August 1, 2011 5:08 AM
en_US August 1, 2011 5:08:17 AM CT
en_US August 1, 2011 5:08:17 AM CDT
en_US August 1, 2011 5:08:17 AM
en_US August 1, 2011 5:08 AM
en_US Aug 1, 2011 5:08:17 AM CT
en_US Aug 1, 2011 5:08:17 AM CDT
en_US Aug 1, 2011 5:08:17 AM
```

```
en_US Aug 1, 2011 5:08 AM
en_US 8/1/11 5:08:17 AM CT
en_US 8/1/11 5:08:17 AM CDT
en_US 8/1/11 5:08:17 AM
en_US 8/1/11 5:08 AM
```

Related concepts

"Importing requirements artifacts from CSV and spreadsheet files" on page 159
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

"Exporting requirements artifacts to CSV and spreadsheet files" on page 161
You can export text-based artifacts from a requirements project into comma-separated values (CSV) files or into spreadsheet (XLS and XLSX) files. The content of the exported file is governed by the columns that are in the current view.

Related information

UTF8

Importing migration package files

You can import requirements from an IBM Engineering Requirements Management DOORS (DOORS) migration package file into IBM Engineering Requirements Management DOORS Next (DOORS Next). The migration package file must be in your file system.

Importing data from a migration package file is a one-way, non-destructive migration method for moving requirements from DOORS into DOORS Next. Historical data is not migrated; however, the import process creates URIs in DOORS Next that link back to the corresponding records in DOORS. These links provide access to history, baselines, and other non-migrated data. During the import process, the wizard searches for existing compatible types to use. If an existing type cannot be found, a new type is created.

Migration options for incoming packages:

- On entering the artifact type, for **Attribute for imported modules**, all attribute values are imported successfully, regardless if the attributes are mapped to the types before migration.
- On entering the artifact type, for **Attribute for imported artifacts** and **Attribute for imported modules**, the attribute values are imported successfully only if the attributes are mapped to the types before migration.
- On not entering any artifact type for **Attribute for imported artifacts**, all attribute values are imported successfully, regardless if the attributes are mapped to the types before migration.

To import data from a migration file:

1. Click **Artifacts** > **Import Artifacts**.
2. In the import wizard, click **Import requirements from a migration package**.
3. Browse for and select the migration option and file to import, and then complete the steps in the wizard. The migration options are:
   - **Attribute for imported artifacts**
   - **Attribute for imported modules**

   The migration package file must have a `.migiz` file extension.

After the import process is complete, a migration report is generated. You can access the report at any time from the project properties Migration page. For information about how to create a migration package, see Migrating data to DOORS Next.

You can watch a short overview video below, to learn about Migrating data from IBM Rational Doors to IBM Rational Doors Next Generation:

You can also watch the detailed video below, to learn about Migrating data from IBM Rational Doors to IBM Engineering Requirements Management DOORS Next:

Related tasks

"Integrating the Requirements Management application and DOORS" on page 15
You can integrate IBM Engineering Requirements Management DOORS (DOORS) with the Requirements Management (RM) application in the IBM Engineering Lifecycle Management (ELM). You can link requirement artifacts in the RM application to requirement objects in DOORS modules. After you create links, you can display a summary of the linked object or go to the object. You can also add a widget to your dashboard to monitor the status of linked objects.

Related reference

"Comparison of data exchange methods in requirements management" on page 120

Importing and exporting ReqIF files

Requirements Interchange Format (ReqIF) files are XML files that you can use to exchange requirements and associated metadata between requirements tools or requirements repositories. For example, you can exchange data between IBM Engineering Requirements Management DOORS (DOORS) and IBM Engineering Requirements Management DOORS Next (DOORS Next). When the exchange is finished, a report is generated that shows the data that was imported or exported. Using ReqIF to migrate multiple components or a single component with multiple streams from one environment to another is not supported. The supported method to migrate a repository to a new environment is Server Rename. If you want to migrate a partial Requirements Management repository to another environment, you need to consider engaging IBM Expert Labs, or an IBM Business Partner to explore options that comprise of custom utilities in addition to ReqIF.

About this task

You can import or export data to and from a requirements project or component by using ReqIF (.reqif or .reqifz) files. Exporting and importing data back into the original requirements project or component is also supported. You can export data from a requirements project or component, to another requirements project or component. On making changes to the data, you can import the data back into the original requirements project or component. For example, you can export objects to a ReqIF file from DOORS and then import that file into DOORS Next. You can change attribute values, export the artifacts to a ReqIF file, and then import that file back into DOORS. If you import a ReqIF file into DOORS Next after you already imported or exported the data, the data is merged and updated.

Note:

- In DOORS Next, you can specify write restrictions on attributes in a ReqIF definition from the ReqIF properties tab. The write restrictions are used while exporting data to a DOORS repository, and enables the DOORS repository to merge the imported data.
- You can restrict or lock attributes while exchanging requirements between DOORS Next and DOORS version 9. If you specify the attributes as locked in the definition, they are locked on the DOORS side of the ReqIF exchange and this enables the DOORS ReqIF merge algorithm to correctly update attribute content. The feature does not add locks of any kind to the exporting DOORS Next repository.

If the ReqIF packages contains attributes and types associated with a workflow in DOORS Next, these associated attributes and types are supported during the export process of the package, but are ignored during the import process.

For information about supported and restricted data, see "Importing artifacts from ReqIF files to a requirements project or component" on page 168 and "Exporting artifacts from a requirements project or component into ReqIF files" on page 173.

After you import or export a ReqIF package, a report is automatically generated. Information in the reports is grouped by module. Any artifacts that are not in a module are listed separately in the reports. The following information is included in the reports:

- For each module, the report displays attribute definitions, artifact types, and artifacts.
- The summary, data types, artifact types, links, and folder for a specific import or export of a ReqIF package are displayed at the root level.

- Artifact types are displayed at both the root level and the module level. Artifact types for the root level are specific to the ReqIF package and artifact types for the module level are specific to that module.

For information about moving the contents of a server, such as moving a pilot deployment to a production server or moving a production deployment to a different server, see Supported scenarios for using server rename. The server rename operation moves all existing projects or component and artifacts from one deployment to another. The operation does not support a selected project or component move function; that is, you cannot move only selected projects or components when you rename a server.

Related information

Migrating and Integrating DOORS with DOORS Next

Importing artifacts from ReqIF files to a requirements project or component

You can import the data in a Requirements Interchange Format (ReqIF) file from your file system to a requirements project or component.

Before you begin

Before you import a ReqIF (`.reqif` or `.reqifz`) file, ensure that the file that you are importing is encoded in UTF-8.

To import a ReqIF file, you must have write access and the Import ReqIF permission.

About this task

When you import a ReqIF file (`.reqif` or `.reqifz`), you use a wizard in which you select the ReqIF file to upload and import. After you upload the file, you can either import the ReqIF data or close the wizard and import the ReqIF data at another time. After the import process is complete, a report is displayed that shows a list of the imported data. You can go to imported artifacts in the project or component by using the links that are generated in the report.

You can use the standard import option, where you can select the ReqIF file to import and follow the instructions. For more information, see Using the standard import option.

You can also use the advanced import option, where you can specify more import options. For more information, see “Using the advanced import option” on page 172.

Important: The first time that you import ReqIF data, types, and artifacts are created. If you import the same data later, all data is updated except for the view column information. During an import, system attributes and system data types are merged. If a mapping context is selected, then the importer attempts to match attributes and data types by their title. Artifact types, attributes, data types, and folders that were not already imported from a ReqIF file are created in the project or component that you are importing to. If an imported type resource has the same name as an existing type resource, then the incoming type is renamed by adding a suffix. "[DNG-Renamed-<X>]" where <X> is the next available number for the type name and suffix. For example, the file that you are importing and the project or component that you are importing to might both contain a Priority attribute. In that case, an attribute named Priority [DNG-Renamed-1] is created during the import.

You can import several types of data from a ReqIF file, including these types:

- Textual artifacts
- Graphical artifacts
- Diagram artifacts
- Attribute definitions
- Data types
- Folders and folder hierarchies
- Links
- Link types
- Tags

- Modules
- Artifact types
- Collections
- View column information, which is imported during the first import only.

If you import the following types of items in a configuration-enabled environment, the import creates a new version of the resource. Also, it maps it to the import configuration if the resource was already imported into another configuration in the component or project.

- Data types
- Attributes
- Artifact types
- Modules
- Artifacts
- Folders
- Links
- View column information

For more information about ReqIF usage scenarios, see ReqIF Usage Scenarios.

Important:

- If a resource was previously imported into a different stream or change set in a component or project, the import completes the following actions:
  1. Creates a version of the resource in the stream or change set at the import location.
  2. Updates the resource if it is already available at the import location.
- If a resource was not previously imported into any of the streams or change sets in a component or project, the import creates the resource at its import location.
- If a resource was previously imported into the stream or change set in a component or project, the import updates the resource if it was changed.

Note: If any items imported into the configuration are deleted, a new version of the deleted resource is created and mapped to the imported configuration.

The following types of data cannot be imported:

- View filtering information
- Comments
- Reviews
- Audit histories

You can import ReqIF files in XML format or a compressed file format. If a ReqIF file references external attachment files or embedded OLE files, which occur in some exports from IBM Engineering Requirements Management DOORS (DOORS), the ReqIF file, and the referenced external files must be in one compressed file to ensure that the correct associations are created in the requirements project or component. When you import a ReqIF file that contains embedded OLE objects from DOORS, the OLE objects are created as file resources in the requirements project or component.

When you import a ReqIF package, existing artifact types are updated and the attributes are retained: they are not removed.

For example, you have an existing artifact that is named Artifact Type A, with attributes A and B. You import a package that contains Artifact Type A, with attributes A and C, the updated artifact is Artifact Type A, with attributes A, B, and C.

If the package includes only portions of a module, when the package is imported, new artifacts are added to the existing module structure. Artifacts that are not included in the package but exist in the module structure are never deleted.

If child artifacts are moved to new parent artifacts as described in the imported package, the previous parent is also included in the package. If the previous parent is not included in the package, the child artifact is not moved. The following example shows that how a child artifact can move during the import process:

Table 23. Example of how the structure of artifacts can change during the import process

Existing package	**Package being imported**	**Resulting structure (moved artifacts are in bold)**
Parent artifact 1 • Child artifact A Parent artifact 2 • Child artifact B Parent artifact 3 • Child artifact C	Parent artifact 1 • Child artifact A • Child artifact B • Child artifact C Parent artifact 2	Parent artifact 1 • Child artifact A • **Child artifact B** Parent artifact 2 Parent artifact 3 • Child artifact C

If you import a ReqIF package that has only one link endpoint, and you later import another ReqIF package that has the other endpoint and the link. As a result, the link is created between the two endpoints. Incremental links are supported for the following imports:

- Artifact to artifact
- Artifact to module
- Artifact to collection
- Module to module
- Module to collection
- Collection to collection

Packages from IBM Engineering Requirements Management DOORS Next (DOORS Next) contain a link when either endpoint is exported. Packages from DOORS contain a link only when both endpoints are exported.

You can also import data by using ReqIF from DOORS to DOORS Next. You can create a ReqIF definition in DOORS and export the definition to a ReqIF package. You can then import the ReqIF package in DOORS Next to get the required data. For more information about exchanging requirements data that uses ReqIF, see Exchanging requirements with other databases and Migrating DOORS project data to DOORS Next.

Some ReqIF packages contain system properties. If the system property values are not usable, they are not displayed in the **comparison wizard**. This principle applies to packages from DOORS, DOORS Next, and tools in the ProSTEP ReqIF Implementation Guide. For more information, see prostep. The following attribute values are set only when, from an import, an artifact is created for the first time in a component:

- **ForeignID**
- **ForeignCreatedOn**
- **ForeignCreatedBy**

For example, when you import a new artifact, the **ForeignModifiedOn** and **ForeignModifiedBy** attribute values are set. But, when you import an existing artifact, the **ForeignModifiedOn** and **ForeignModifiedBy** attribute values are only set when one or more values change.

For more information about the ReqIF format specification, see Requirements Interchange Format.

When you export ReqIF data from DOORS to DOORS Next, you must map system attributes to URIs in DOORS. For more information, see System attributes and Mapping attributes to URIs for external applications.

Procedure

1. Open a requirements project or component.
2. On the **Artifacts** page, click **Create** and click **Import Artifact**.
3. In the Import wizard, select **Import requirements from a ReqIF file** and click **Next**.

   You can use this standard import option where you can select the ReqIF file to import and follow the instructions.

   Tip: You can also use the advanced import option with extended options to configure the import. For more information, see "Using the advanced import option" on page 172.
4. Browse the file to import and click **Import**.
5. After the file is fully uploaded, complete one of the following steps:
   - To close the Import wizard and continue the import later, click **Close**. When you are ready to continue the import, start the Import wizard and click **Import requirements from a ReqIF file in this component or project**.
   - To continue the import, click **Next** and follow the prompts in the wizard.
6. Optional: Specify the import options for the import:
   a) Specify the folder or module where you want to import the ReqIF file. To place new artifacts that do not define module hierarchy in the specified module, select the **Place new artifacts with no module hierarchy in a module** checkbox.

      Important: When you select the folder or module to place the new artifacts in, that folder or module is used only for artifacts that do not have a defined folder or module hierarchy. If a ReqIF file was exported with the **Include Folders** option that is selected, that folder hierarchy is used starting from the root folder, regardless of the folder that you specify. This premise also applies to ReqIF files exported by DOORS because they always include the folder structure.

   b) To tag the existing artifacts that are not present in the ReqIF package, under the **Import Tagging Options** section, select the **Tag artifacts that are present in repository modules being updated, but are not present in the package** checkbox. Use one of the following options:
      - To define a new tag for the artifacts, select **Create new tag**. Specify the new tag.
      - To use an existing tag, select **Use Existing tag**. Click **Pick Tag**. In the **Select Tag** window, type the name of the tag or select an existing tag from the list and then click **OK**.

      Note:
      - The Import Tagging Options feature determines whether an artifact that was previously imported in a module is absent in a subsequent import. The most common reason for an artifact to be absent in subsequent import is that the artifact is deleted on the sender side of the ReqIF exchange.
      - Tagging Options work on artifacts only and you cannot apply them to any modules that are deleted.

   c) To apply mapping context to an imported package, under the **Apply Mapping Context** section, select **Select Context**. Select an existing context from the **Available Contexts** list and then click **OK**.

      For more information about mapping contexts, see "Mapping Contexts" on page 35.
7. Optional: Select the attributes to import. You can select either all attributes or specific attributes.
8. Optional: To see a list of the data that is imported, click **Show Report**.

   The report includes the name, ReqIF ID, and URI of the data, and other information. You can access the report at any time from the project or component properties ReqIF page.

About this task

You can use the advanced import option to import artifacts from ReqIF files to your requirements project or component. The following steps describe the procedure of using the advance import option.

Procedure

1. Open a requirements project or component.
2. On the **Artifacts** page, click **Create** and click **Import Artifact**.
3. In the Import wizard, select the **Import requirements from a ReqIF file (Advanced)** checkbox and then click **Next**.

   Note: You can upload a package (compressed file) that contains multiple `.reqifz` files. If you use the **Import requirements from a ReqIF file (Advanced)** option wizard to import the package, the import settings apply to all files in the package.
4. Select the file to import and click **Upload**. After the file is uploaded, detailed information for each uploaded ReqIF file is available. You can see a summary of the package and ReqIF files, and view how many specifications, artifacts, types, and attributes are in the uploaded package. Click **Next** to continue the import. To view the import report, click **Analysis Results**. The analysis report shows information about these types of errors if they occur in an incoming ReqIF package:
   - A specification hierarchy in a specification points to a specification object that isn't in the package.
   - An attribute definition points to a data type that doesn't exist in the package, or the types of both are mismatched.
   - A specification object value points to an attribute definition that doesn't exist in the package, or the types of both are mismatched.
5. Optional: Specify the following import options for the import:
   a) To select the location to which to import the new module files, select the **Choose location for new modules** checkbox and specify the location.
   b) To add new artifacts that are not in a module hierarchy in the selected module, select the **Place new artifacts with no module hierarchy in a module** checkbox.
   c) To restrict the creation of artifacts, clear the **Allow artifact creation** checkbox in the Advanced Import Options section of the page.
   d) To prevent artifacts in modules from being moved to other modules, clear the **Allow artifact move (within modules)** checkbox.
   e) To prevent modifications to artifact types, clear the **Allow modification of existing artifact types** checkbox. This option prevents changes to the title, description, and RDF URI of all the artifact types.
   f) To prevent modifications to attribute definitions, clear **Allow modification of existing attribute definitions** checkbox. This option prevents changes to the title, description, and RDF URI of all the attribute definitions.
   g) To prevent changes to the title, description, and RDF URI of all the data types, clear the **Allow modification of existing data types** checkbox.
   h) Click **Next**.
6. Select the specifications to import to the current project or component and click **Next**. If you hover over a specification in the import wizard, a preview window shows the details of the specification and the artifact types in it.
7. If mapping context is not specified, select the attributes to import and click **Next**. You can select either all attributes or specific attributes. After you specify the advanced import options, the ReqIF file is imported. You can view the status of the import on the **Importing Requirements** page.

Results

Artifacts get successfully imported from ReqIF files from your system to a requirements project or component.

You can watch the below video, to learn more about Data migration from DOORS to the RM application:

Related concepts

“Modules in the Requirements Management application” on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

Related information

Data migration from DOORS to the RM application

Exporting artifacts from a requirements project or component into ReqIF files

You can export artifacts, modules, and folders from a requirements project or component into a ReqIF (Requirements Interchange Format) file by creating a definition and then exporting the artifacts. The artifacts that are exported are determined by the content in the definition.

Before you begin

To export data to a ReqIF file (`.reqif` or `.reqifz`), you must have:

- Export ReqIF permission
- A ReqIF definition in the ReqIF editor. To create a ReqIF definition, you must have the Manage ReqIF permission.

About this task

You can export several types of data from a requirements project or component to a ReqIF file, including these types:

- Attribute definitions
- Data types
- Textual artifacts
- Graphical artifacts
- Diagram artifacts
- Artifact types
- Modules

  Important: To export a module to a reqIF file, the default artifact format of that module must be "Module".
- Tags
- Links to other artifacts in the RM project or component
- Link types
- Folders
- Folder hierarchy
- View column information

The following types of data cannot be exported:

- Comments
- View filtering information

- Reviews
- Audit History
- Links to artifacts in applications that are integrated by using OSLC, such as IBM Engineering Workflow Management (EWM) and IBM Engineering Test Management (ETM)
- Date
- Time
- User

If you are exporting artifacts to IBM Engineering Requirements Management DOORS (DOORS), the following data types are not supported. These data types are from the Requirements Management (RM) application for the IBM Engineering Lifecycle Management (ELM).

- Full rich-text formatting.
- Graphical artifacts, such as business process diagrams, use case diagrams, and wireframes.
- Requirements that include embedded collections.

If you use modules to capture information about your project or component requirements, you can export specific artifacts in the module. Start by creating a view of the module that contains only those artifacts that you want to export; then, during the export process, you can add the new view to the definition. If the view is a non-personal, single-module view (non-module shared), only the artifacts in the view are exported to the ReqIF output package.

Important: During the export process, any embedded artifacts or images that are added from a different component, which is linked through a global configuration are not exported.

Procedure

1. On the **Administration** menu  , click **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. Click the **ReqIF** tab.
3. Click **New Definition**.
4. Type a name for the definition. If necessary, specify other information, such as a description or whether to include links or folders in the export.
5. Click **Add Artifact** or **Add Module** and follow the prompts to add the artifacts to include in the export.

   When you add a module, you can use a shared view to describe exported artifacts and attributes from the module, as defined by the view's filter and columns.

   Note: You can add shared views and shared module views to a definition for export. However, doing so exports the view query and not the artifacts in the view.
6. Optional: Specify attributes to be restricted during export to aa version 9. Click the **attributes restricted** link and select the attributes that you want to restrict and add them in the **Selected Attributes** list. Click **OK**. For more information, see restricting attributes.
7. After you finish adding artifacts, click **Save**. The definition is displayed in the ReqIF Definitions section.
8. To start the export, click the pencil icon () that is next to the ReqIF definition, and then click **Export**.
9. Optional: To apply a mapping context during export, click **Export with context**. Select an existing context from the **Available Contexts** list and then click **OK**.

   For more information about mapping contexts, see “Mapping Contexts” on page 35.
10. When the export is complete, click **Download** to save the export to a file on your computer.

The downloaded ReqIF file has the (`.reqifz`) extension. To see the data that was exported, click **Show Report**.

What to do next

You can download packages and view report information in the **ReqIF Manager** window. Click the action icons in the ReqIF Files section of the editor.

Related tasks

"Importing properties from another Requirements Management (RM) project or component" on page 61

You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

Creating collections

A collection is a set of artifacts that you create for a specific purpose.

Procedure

1. Open either the Artifacts page or the Collections page.
2. In the **Collections** menu, click **Create Collection**.
3. Type a name for the collection plus any optional information. Optionally, select the **Open Artifact** check box if it is not already checked.
4. Click **Finish**. If you selected the **Open Artifact** check box, the Collection Editor is displayed.
5. Click **Add Artifact**, and select the artifacts you want to add. (Refer to keyboard shortcuts for information on how to select multiple artifacts.)
6. Click **Add and Close**. The selected artifacts open in the Collections editor.

   Note: If you are using a supported browser, you can upload a file into a collection by dragging the file from the Windows desktop into the collection editor. See Uploading files to a requirements project for more information.
7. Select **Save** or if you are done with this editor, select **Done**.
8. Optional: Click the **Create Review from Collection** icon in the toolbar if you want to create a review of the collection.

Results

After you save your collection, it is displayed in both the Artifacts page and in the Collections page. To return to the Artifacts page after saving a collection, either click the project name breadcrumb or click the project name in the Home menu  .

You can export the artifacts in a collection to a CSV file by selecting the **Export collection to CSV file** icon  or by selecting individual artifacts and then selecting **Export** from the pop-up menu.

Saving collections to other formats

You can save a collection to a Microsoft Word or to a PDF document from within the collection editor by selecting a choice from the **Create and Print** menu  .

Related concepts

"Requirement artifacts" on page 92

"Exporting requirements artifacts to CSV and spreadsheet files" on page 161

You can export text-based artifacts from a requirements project into comma-separated values (CSV) files or into spreadsheet (XLS and XLSX) files. The content of the exported file is governed by the columns that are in the current view.

Related tasks

"Comparing collections" on page 177
You can use the Requirements Management application to compare two different collections.

"Creating templates for requirements projects or components" on page 46
You can create a project or component template, and select the elements to include in it. When configuration management is not enabled, you create templates for a project. When configuration management is enabled, you create templates for a component. You can include or exclude artifacts, artifact templates, artifact types and attributes, links between artifacts, link types, folder structure, tags, and shared saved filters. After you create templates, you cannot modify them.

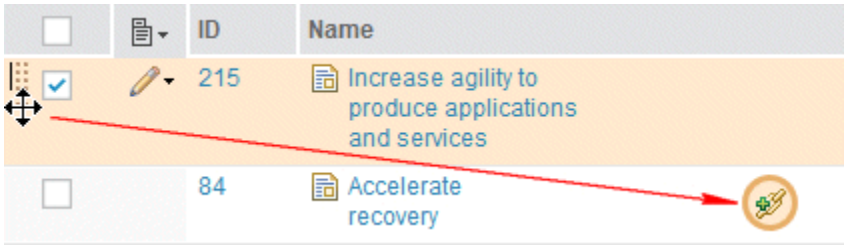
"Managing project or component properties in requirements projects" on page 28
Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

Collections

A collection is a set artifacts that you create for a specific purpose.

After you create a collection, you can link the collection to and from other artifacts, embed the collection in a text-based artifact, create reviews from the collection, and perform other actions.

Tip: You can create links between artifacts in a collection by dragging an artifact and dropping it on the link icon of another artifact, as shown here:



Collections do not display artifacts in any particular order or hierarchy, nor do they contain context specific links, attributes, or comments. If you need these features, you should create a module. Also see comparison of collections and modules for more information.

Reasons for creating collections:

You might want to create a collection for the following reasons:

- Identify a group of related artifacts to work with
- Add terms to the collection to use as a glossary
- Group artifacts that are now mature and ready to be reviewed
- Capture a set of requirements that are ready for review or that have been reviewed and approved
- Identify artifacts related to a common goal
- Link collections to release plans and test plans
- Link requirements in the collection to development work items and test cases
- Export the artifacts in a collection to a CSV file

Other information about collections:

- Note that you cannot add a collection to a collection; however, you can add a module to a collection.
- When you save a view from within the collection editor, the view appears in the current collection and in all other collections in the project. The view will not appear in any other context within the project.

- To compare capabilities and potential uses for collections and modules, see “Differences between collections and modules” on page 131.

Related concepts

“Requirement artifacts” on page 92

“Reviews” on page 181

Related tasks

“Comparing collections” on page 177
You can use the Requirements Management application to compare two different collections.

“Managing project or component properties in requirements projects” on page 28
Each project template contains predefined artifact types. You can also create customized artifact types, artifact attributes, and artifact data types for a project or component. Those artifacts types can then be used by team members to create project or component requirements or related artifacts, such as customized collections.

“Linking to development, design, test, and requirement artifacts” on page 201

Comparing collections

You can use the Requirements Management application to compare two different collections.

About this task

To compare two different collections:

1. Open a collection.
2. Click the Compare Collection icon  in the toolbar. The Compare Collection window opens.
3. On the left side of the window click the collection name. The Compare Collections Selection window opens. Search for and select a collection.
4. On the right side of the window click **Select Collection**. The Compare Collection Selection window opens. Search for and select another collection.
5. Click **Compare**.

If you want to compare two versions of the same collection, you must be working in a project that has been enabled for configuration management.

Related concepts

“Collections” on page 176
A collection is a set artifacts that you create for a specific purpose.

Related tasks

“Creating collections” on page 175
A collection is a set of artifacts that you create for a specific purpose.

Managing terminology and glossaries

Develop a glossary of terms that are drafted and published as part of the project process. A glossary provides the context for agreeing on consistent project terminology. This is especially important as teams grow and become more geographically distributed and projects become more complex. Create terms and add them to one or more glossaries.

Glossaries

A glossary is a group of terms that you create to build consistent, common terminology for a project.

You can display the terms that constitute your glossary:

- Create a filter that displays artifacts by artifact type.
- Add terms to a collection.

You can look up terms from within the artifact editor using the **Lookup Term**  icon, which becomes visible whenever you open and edit a text-based artifact.

You can link to a glossary term or create a new glossary term from selected text within a text based artifact.

Glossaries can contain attribute settings and comments. Glossary terms can be defined with the following content:

- Name
- Definition
- Synonyms
- Alternative spelling
- Links to new and existing artifacts, including requirements
- Comments
- Custom attributes

Creating a glossary and terms

A glossary is a group of terms that you have defined to build consistent, common terminology for your project.

About this task

You can create a glossary by first defining the terms to include in the glossary. After you have defined terms, you can then either:

- Add the terms to a collection.
- Use tags to keep track of your glossary terms.
- Put the terms in a folder and create a view to display relevant attributes.

Glossary terms can contain links to new and existing artifacts, related terms, and synonyms. They also can contain comments and alternative spellings. You can assign attributes to the glossary and view, filter, and sort links to other artifacts using the sidebar.

Creating Terms

Before you can create a term, make sure that a term artifact type has been created for the project and that the **Use Artifacts of this Type as Glossary Terms** check box is selected. To display or create artifact types for a project, click **Manage Project Properties** from the **Administration** icon menu.

Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

To create a term:

1. From the Artifacts page, click the **Create Artifact** menu, and select **Term** (or whatever type name that was created for glossary use). The "Create an artifact with attributes" window opens.
2. Type a name for the term.
3. Ensure the artifact type is **Term** (or whatever type name that you configured to be used as a term) and the **Artifact Format** is **Text**. For more information, see Creating artifact types.
4. Provide optional information, such as a description, a folder, or tags.
5. Optional: Check the **Open Artifact** check box if it is not already checked.
6. Click **Finish**. If you selected the **Open Artifact** check box, the rich-text editor opens.
7. To start editing the term, click **Edit**.

Note: You can also import an existing set of terms using the requirements management import facility.

Defining alternative spellings and synonyms for a term

To define alternative spellings for a term, edit the term, and enter a value in the **Alternative Spelling** attribute. To define more than one alternative spelling, separate entries by a comma. To define a synonym of a term, create a **Synonym** link type between two term artifacts.

For more information on creating glossaries, refer to the documentation on the Jazz.net development site.

Note: Content on Jazz.net is governed by the Jazz.net Terms of Use and is provided as-is without warranties of any kind.

Commenting on artifacts

A *comment* is a textual discussion item that you can add to an artifact or an element within an artifact. You can use comments to provide team feedback during the development of an artifact. In the web client, comments are displayed in the **Comments** section of an artifact sidebar, in the **Recent Comments** section of the Artifacts page sidebar, and in **Recent Comments for Me** on the user dashboard.

About this task

The following table provides instructions for how to comment on artifacts by using the web client. You can also watch a video that shows how to comment on artifacts.

You can comment on an artifact as a whole (by using artifact-level comments) and on specific elements in the artifact. Comments on artifacts become part of the stream and must be delivered before they are visible in other streams in a configuration. In rich-text artifacts, you can comment on the whole document (by using document-level comments), a paragraph, or an item in a bulleted list within the document. Comments are accessible to all team members who have access to the artifact.

When you create a comment, you can direct it to one or more users, so that it is displayed on their project dashboard. If your server has email notifications set up, you receive an email when comments are directed to you. For more information, see Configuring email settings.

A comment and its replies are maintained as a group in the comments section. Replies to a comment are indented under the top-level comment. The number next to the **Comments** icon on an artifact toolbar displays the total number of comments on the artifact. Click the icon to highlight the comments on the artifact or to add a new comment. You can also view comment totals on the **Artifacts** page when you view the artifacts list with details. You can add a comment there without opening the artifact.

Note: Comments on reviews or on artifacts in a review behave differently and are not part of any stream or baseline.

When you select a comment on an artifact, its associated element is selected in the editor. When you select an element in an artifact editor, its associated comment is selected in the sidebar.

The following table describes additional tasks for managing comments.

Table 24. Controls and associated tasks in the Comments section of the sidebar in the web client

Task	Icon	Steps
Expand or collapse a comment.		Click the header portion of the top-level comment. The comment text and replies are shown or hidden.
Expand or collapse all comments.		Click the **Expand All** or **Collapse All** icons to show or hide the text and the replies for all comments in the **Comments** section.

Table 24. Controls and associated tasks in the Comments section of the sidebar in the web client (continued)

Task	Icon	Steps
Add or reply to a comment in an artifact.		To create a comment that applies to a whole artifact, in the Comments section of the sidebar, click the **Comment** icon and click **Create a New Comment for the Artifact**. You can also add a comment to a selected element by clicking the **Comment** icon in the sidebar and using the option **Create a New Comment for <element>**. To create a reply, select a comment and click the **Reply** icon .
Highlight elements or paragraphs in the editor that have associated comments.		Click the highlight elements icon to highlight all elements in the artifact editor that have comments. When you are working with a document, all paragraphs that contain comments are highlighted. The number of comments that are associated with each element or paragraph is also shown in the editor; this number is adjusted depending on your filter settings for the **Comments** section of the sidebar. To remove the highlighting, click the icon again.
Filter the comments in this view.		Click the **Filter** icon to limit the display to only those comments that include or match your criteria. The filter criteria includes priority, comment author (**By**), targeted recipient for the comment (**For**), resolution state (unresolved only, by default), and a date range for recent comments only. Click the **Filter** icon to collapse the filter section. Collapsing the filter section does not clear the filtering conditions; only those comments that match the filter criteria are displayed. To show all comments, click **Show All**.
Resolve a comment to indicate that the comment requires no further actions or replies.		To resolve a comment, select the comment, and click the **Resolve Comment** icon. Resolved comments are displayed with light gray text. After a comment is resolved, you can reopen it and reply to it.
Resolve a discussion thread, which resolves a comment and all replies to it.		To resolve a discussion thread, select the comment and click the **Resolve Discussion Thread** icon.

Table 24. Controls and associated tasks in the Comments section of the sidebar in the web client (continued)

Task	Icon	Steps
Edit a comment.		To edit a comment, select the comment and click the **Edit Comment** icon. Only the user who created the comment can edit it.
Sort and group comments.		Click the **Sort and Group** icon in the **Comments** section to access sorting and grouping options. The **Author** refers to who created the original comment. The **Date** refers to when the last activity occurred on the comment, including replies.
Display the **Recent Comments** section in the Artifacts page sidebar.		Open a project by selecting it from the **Home** menu. If necessary, expand the sidebar on the Artifacts page by clicking the arrow on the right. Expand the **Recent Comments** section sidebar.
Display the **Recent Comments for Me** section in the Artifacts page sidebar.		Open your dashboard by clicking the **Dashboard** menu. Comments that were recently directed to you are displayed in the **Recent Comments for Me** section.
Delete comments.		To delete a comment, select the comment, and click the **Delete Comment** icon. A comment can only be deleted by its author, and only if it has no replies. Comments are not deleted if the associated element is deleted. These comments are marked with **(element not in this revision)** in the comment title. To hide these comments in the comment section, click **Hide comments on orphaned elements** in the filter panel.

Reviewing artifacts

You can create a review of selected artifacts or a module or collection. You can designate other team members as participants in the review. Participants receive requests and, depending on their designated role in the review, they can approve, disapprove, review, or abstain from reviewing each artifact.

Reviews

You can create a review for specific team members to review artifacts, collections, or modules. The status of a review changes as participants complete the review. You can create a review from within a stream or a baseline.

You can generate reports about reviews and send email notifications to participants when reviews start and when certain events occur in a review. For instructions on how to create a review, see "Creating reviews" on page 185.

Remember: You can modify artifacts in a stream, but not in a baseline.

- Reviews in a stream or baseline
- Reviewer roles
- Lifecycle review states
- Review editor
- Reports and email notifications
- Collection reviews
- Module reviews

Reviews in a stream or baseline

When you create a review in an editable stream, the artifacts in the review can change. For example, if a team member edits the artifacts in the stream, those changes are reflected in the review. Therefore, you should create a review in a stream only if you know that the artifacts are not going to change significantly during the review.

If you have projects that are not enabled for configuration management, and you do *not* want the artifacts in a review to change, you should create the review from within a baseline.

If your project or organization requires validation of baselines you can configure a project to require electronic signatures (e-signatures) on baselines. See Enabling Electronic signatures for a baseline for details on how to configure a baseline to require electronic signatures and Signing a baseline electronically for details on how to add an electronic signature to validate and sign a baseline.

Note: In projects enabled for configuration management (CM), the baseline contains the artifacts in a component, not the project.

Tip: Reviews are visible on the Reviews page, regardless of the configuration (stream or baseline) you are currently working in. When you click a review, you automatically switch to the configuration in which the review was created.

Reviewer roles

When you add a participant to a review, you assign a role to the participant that determines the actions required to complete the review. The following table describes the roles and actions.

Table 25. Reviewer role and required action

Reviewer role	Required action
Approver	Approvers must approve, disapprove, or abstain for each artifact in the review before the artifact can move to the reviewed or the finalized state. The icon that corresponds with an approver's choice is shown in the status column in the **review editor** window.
Reviewer	Reviewers must either review an artifact or abstain from reviewing it before the review can move to the reviewed or finalized state.
Optional reviewer	Optional reviewers can review or abstain from reviewing an artifact; however, their progress is not calculated in the overall progress of the review. The review can move to the reviewed or finalized state regardless of what optional reviewers do.

Lifecycle review states

The state of the review changes based on its level of completeness. Typically, a review moves through this order in its lifecycle:

Draft > **In Progress** > **Reviewed** > **Finalized**

This table describes the lifecycle states for a review.

Table 26. Lifecycle review states

Review state	Description
Draft	This state is the initial state of a review. The creator of the review assigns a due date, adds review instructions, adds participants, assigns roles to participants, and adds artifacts to the review. Participants are not notified when the review is in the draft state.

Table 26. Lifecycle review states (continued)	
Review state	**Description**
In progress	When the creator of the review clicks **Start Review**, the review moves to the in-progress state. Participants join the review by clicking the review title, which is shown on their dashboards. When all participants are finished reviewing the artifacts, the review moves to the reviewed state.
Paused	Paused is an interim state in which the review is paused. This state is useful when the creator of the review needs to change the participants, their roles, or the artifacts in the review. In a formal review, the creator can also get the latest version of the artifacts. In that case, all the artifacts that were initially captured in the review are replaced with the latest versions of the artifacts. When a review is paused, participants cannot add review comments or mark artifacts as reviewed. The creator of the review must click **Continue Review** to resume the review.
Reviewed	In this state of the review, the reviewers have added comments to the artifacts and clicked **Done** for their reviews. To continue the review, the creator of the review or a project administrator can change the review and then click **Continue Review**.
Overdue	A review request is overdue after 11:59 p.m. on its due date. At 12:00 a.m., the review is marked as overdue. This default setting cannot be modified.
Finalized	To reach this state, all the necessary reviewers must complete the review and the creator must click **Finalize Review**. The review is saved and can no longer be modified.

Review editor

When you open a review, the Review editor opens with two collapsible sections: Participant Review and Overall Review. You can switch between the two sections by clicking either section header.

In the **Overall Review** section, you can view the number of review comments for an artifact.

Reports and email notifications

To generate a document-style report about the details of the review, click the **Generate a document-style report for this view** icon  in the header, and follow the prompts in the wizard.

You can manually add comments to a review in the Review editor sidebar. However, most events automatically send email notifications to review participants. If email was not configured when the product was first installed, you must first configure email settings on the server to enable automatic email notifications. For instructions, see Configuring email settings.

This table describes the events that cause email notifications to be sent.

Table 27. Email notification events	
Notification recipient	**Events that cause email notifications to be sent**
All participants	A review that was in the Draft state starts for the first time.
All participants	Artifacts are added to or removed from the review.
Specific participants	Participants are added to or removed from the review.
Specific participants	Changes occur that affect the participants, the status of the participants, or the status of an artifact. This event occurs when the creator of the review resets the participant status.

Table 27. Email notification events (continued)	
Notification recipient	**Events that cause email notifications to be sent**
Specific participant	The role of the participant changes.

Collection reviews

In addition to creating a review for individual artifacts, you can create a review for a collection. You create a review of a collection from within the collection editor or from the collection menu. When you create a review of a collection, remember this information:

- You cannot add a collection to a review in the Review editor.
- When you create a review of a collection, the review includes all the artifacts that are in the collection.
- The list of artifacts in the review is defined by the collection. You cannot add or remove artifacts in the Review editor.
- If the artifacts list in the collection is modified during the review, you can pause and then continue the review to get the latest list of artifacts.

Module reviews

You can add modules to a review. You cannot add artifacts in the module. However, you can add comments to the artifacts in the module. You can mark the module as approved or reviewed. You can use the **Review Comments** column for adding the review comments. You can view the **Review Comments** column and the associated review comments only when you are in a review.

If you want reviewers to review specific artifacts in the module (and not the entire module), you can define a view that identifies the artifacts to review. For example, you can show attributes or tags that identify what to review, or filter out artifacts that do not require review. To define this view, you must open the module from the review; otherwise, you cannot include the **Review Comments** column.

Related concepts

“Collections” on page 176
A collection is a set artifacts that you create for a specific purpose.

Modules
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

Signing a baseline electronically

If your project or organization requires validation of baselines you can add an electronic signature to validate and sign it.

Before you begin

Your project area must be configured to require electronic signatures on baselines, see Enabling Electronic signatures for a baseline.

Restriction: If your Jazz Authorization Server is configured to use SCIM (System for Cross-domain Identity Management), you will be unable to use electronic signatures.

Procedure

1. On the **Administration** menu, click **Manage Baselines**.

   If your project area has been enabled for configuration management:

   a. On the **Administration** menu, click **Manage Components and Configurations**.

   b. Click the stream to open it and then click the **Baseline** tab.

2. Click the baseline to open it in the baseline editor.
3. In the **Electronic Signatures** tab, click **Add Electronic Signature**.
4. Depending on the project-level settings, on entering your user name and password, you can enter a comment and select a reason for signing the baseline.

   Note: If you have saved your username and password in the browser, the username and password fields may be automatically filled in.
5. Click **OK**.

Results

On signing a baseline, the electronic signature attaches to the baseline and displays in the baseline editor, on the **Electronic Signatures** tab. You can view the following information about the signature:

- Signed by
- Signed on
- Reason for signing
- Associated comment

IBM Engineering Requirements Management DOORS Next (DOORS Next) has a new Reportable REST API that enables users who create or modify templates with IBM Engineering Lifecycle Optimization - Publishing (PUB) to report on electronic signature information. The new API only displays electronic signatures if the report is run against artifacts in a baseline that has been signed. For details about the API, see DOORS Next REST API.

Creating reviews

You can create a review of artifacts so that other team members can review or optionally approve the artifact content.

About this task

You can create a review of individually selected artifacts or you can create a review of a collection of artifacts.

Tip: When you work in projects that are enabled for configuration management, you must be aware of the following information:

- Reviews are associated with configurations. When you open a review, it opens in a separate browser tab in the configuration context it was created in.
- Review comments for an artifact are only shown when you view the artifact in the context of the associated review.

Procedure

- To create a review of individual artifacts:

  1. Decide whether you want to create the review in the current stream or in a baseline. Artifacts in the current stream can still be modified by anyone who is working in the stream, while artifacts in a baseline are frozen and cannot be changed.

     Note: If your project or organization requires validation of baselines, you can configure a project to require electronic signatures on baselines. See Enabling Electronic signatures for a baseline for details on how to configure a baseline to require electronic signatures and Signing a baseline electronically for details on how to add an electronic signature to validate and sign a baseline.
  2. On the **Artifacts** page, open the **Reviews** section in the sidebar and click the **Create Review** icon  .

Tip: You can also start a review by selecting artifacts from the Artifacts page, clicking the **down arrow**, and clicking **Create Review**. This method can be a faster way to add artifacts to the New Review window.

3. In the **New Review** window, type a name and description for the review and then click **OK**. The Review page opens with the name in the window header. Notice that the state of the review is **Draft**.
4. Specify a review due date and any special instructions.
5. Add reviewers to the review:
   a. Click **Add Participants**.
   b. In the **Select Users** window, enter a partial username or wildcard to access a list of team members to participate in the review.
   c. In the Matching users section, select one or more users. Press **Ctrl** and click to select more than one name.
   d. Specify whether the members are reviewers, approvers, or optional reviewers. For more information, see the Reviews topic.
   e. To add the users as participants in the review, click **Add**.
   f. Search for other users, if necessary. When your selections are complete, click **Close**.
6. If the artifacts are not already there, add the artifacts to review.
   a. Click **Add Artifacts**.
   b. In the **Select Artifacts** window, search for artifacts by type, name, text, or folder.
   c. Select one or more artifacts and click **Add**. The artifacts that you selected are displayed in the Artifacts section.
   d. When your selections are complete, click **Close**.
7. Optional: To send a review request, select one or more participants and click **Send Email**. If the email service is not configured, click **Start email program** to open your default email application. The email addresses of the selected users are added to the recipients list of the new email message. Add text as needed in your email program and send the email.
8. Click **Save Review** or **Start Review**. When you start the review, the following actions occur:
   – If you configured email notification, all participants are notified by email.
   – The review is listed on the participants' dashboard in the **Reviews** widget.
   – The review is displayed in the **Reviews** section in the sidebar of the Artifacts page.
   – The state of the review changes from **Draft** to **Started**.
9. When participants join the review, they double-click the artifacts to view them, and then, depending on the role that is assigned to them, click Approve, Disapprove, Mark as Reviewed, or Abstain from reviewing the artifact.

- Creating a Review of a Collection. The steps for creating a review of a collection are similar to those for creating a review of individual artifacts. You can watch a video that shows how to create a review of a collection. To create a review of a collection, open the collection, and click the **Create Review from Collection** icon  in the toolbar.
- Deleting a Review. To delete a review, open the review and click the **Delete** icon  in the toolbar.
- Renaming a Review. To rename a review, open the review and click the **Rename** icon  in the toolbar.

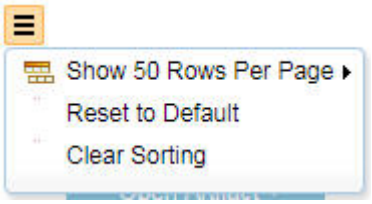
Participating in reviews

Team members can request that you Participate in a review of artifacts. The initiator of the review can designate you as an approver, reviewer, or optional reviewer. Optional reviewers have the full review capability, but their progress does not affect the status of the review.

Procedure

1. Click the name of a review on the Reviews page or in the Reviews widget on your dashboard.
2. In the Participant's Review window, select a check box for an artifact and use the adjacent push buttons and menus to select one of the following options. The available options depend on your role in the review (approver, reviewer, or optional reviewer).
   - **Approve**.
   - **Disapprove**.
   - **Reviewed**.
   - **Approve with Comments**. Enter your comments in the window and click **Approve**.
   - **Reviewed with Comments**. Enter your comments in the window and click **Reviewed**.
   - **Disapprove**.
   - **Disapprove with Comments**. Enter your comments in the Disapprove Artifact window and click **Disapprove**.
   - **Abstain**.
   - **Abstain with Comments**. Enter your comments in the Abstain from Reviewing Artifact window and click **Abstain**.

   Note: If you print an artifact in a review and include comments, the report prints only comments that are specific to the review.
3. Optional: To set a page size to view a specific number of artifacts on the page, click the **More Actions** icon. You can also sort or resize the columns on the Participant's Review and Overall Review pages of a review. The changes that you make are preserved across sessions so that the next time you start your browser and open a review, the same sort column, column widths, and page size are displayed.
4. Optional: To reset the page size, reset columns to their default widths, and remove any sort columns, click the **More Actions** icon and then click **Reset to Default**. If an artifact table is sorted, click the **More Actions** icon and then click **Clear Sorting**.



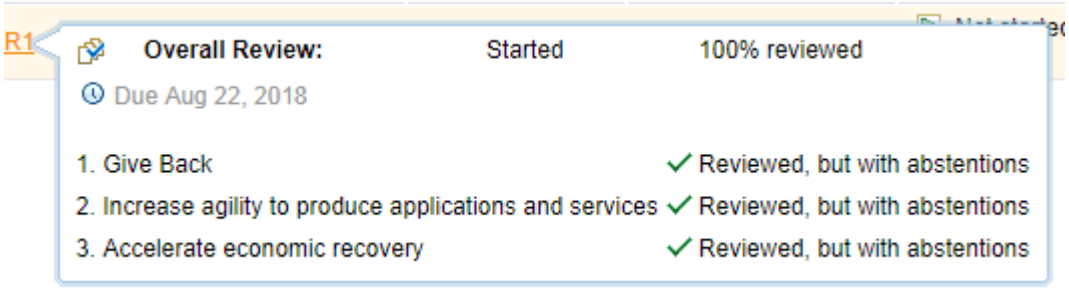
5. After you review all artifacts, click **Done**. After you click **Done**, you cannot change your review decisions; however, the review owner can reopen the review.

Results

The overall review status indicates the following:

- Approved: when at least one approver has approved and no approver has abstained.
- Disapproved: when at least one approver has disapproved.
- Reviewed: when there are no approvers and all reviewers have reviewed.
- Approved: but with abstentions when at least one approver has approved and at least one approver has abstained.
- Reviewed: but with abstentions when there are no approvers and at least one reviewer has abstained.
- Not approved: when there's at least one approver, but no approver has approved.

You can see the overall status of the review and any abstentions by hovering over the review name on the Reviews page. The following image shows the overall status of a review:



Editing artifacts while reviewing a requirement collection

In a Requirements Management (RM) project, when you review a requirement collection, you can edit the artifacts.

Before you begin

You must have reviewer permissions to review and edit the artifacts.

Procedure

1. On the **Artifacts** page, select a requirement collection.
2. Review the list of artifacts in the requirement collection.
3. Right-click an artifact and select how to open it for editing:
   - Open Link in New Tab
   - Open Link in New Window

   Note: You must right-click the artifact. If you click it instead, the artifact opens in review mode and you cannot edit it.
4. On the artifact page that opens, click **Edit**.
5. Make the required edits and click **Save**.

Related concepts

"Reviews" on page 181

"Collections" on page 176

A collection is a set artifacts that you create for a specific purpose.

Related tasks

"Creating artifacts" on page 91

In a requirements project, you can create rich-text and graphical artifacts.

Managing requirements

You can manage requirements by using traceability links, tags, attributes, filtering, workflows, and dashboards. With these capabilities, you can create relationships between requirements and other artifacts, categorize requirements, assign properties to requirements, and monitor relationships and status among team applications. To learn how to optimize requirements management, reduce rework and avoid delays by using AI from Watson, go to the IBM Engineering Requirements Management site.

About this task

Requirements management is a set of techniques (supported by tools) that a team uses to determine what a program, product, or project needs to deliver to accomplish these goals:

- Ensure that goals are successfully met
- Provide visibility into the completeness of the requirements development effort

- Control changes to requirements over time

Requirements definition is a subset of the requirements management process that focuses on elicitation and validation. In some industries, the term "requirements engineering" is used to refer to the full range of requirements definition and management activities. Application lifecycle management applies requirements methods and tools to the full lifecycle, including traceability to authorized project work activities and test results that prove requirements have been met.

Related tasks

“Administering requirements projects or components” on page 21

Managing artifacts with attributes

You can assign attribute values to requirements and other artifacts to manage properties such as status, priority, and owner. You can filter artifact lists by attribute values.

About this task

All artifacts have attributes, which are consistent for each artifact type. You can use attributes to track project status and organize artifacts by common properties such as owner, priority, and risk. Changes to attribute values can affect traceability relationships.

Attributes can include these elements:

- Lists of predefined values, such as Priority (Must, Should, Could, Won't)
- User-entered text fields, such as Business Value
- Selections from repository resources, such as Owner, which is selected from a search of team members

Artifact types can be customized with user-defined attributes and attribute values.

To set attribute values in the sidebar of an open artifact, expand the **Overview** section, set the attribute values, and click **Save**.

After setting attributes, you can filter a list of artifacts by attribute values. You can click the **Add filter** icon to add filters on the Artifacts, Collections, or Modules pages, and in a collection or module. You can filter based on the following criteria:

- **Name**
- **Artifact Type**
- **Modified by**: Filters on the user who last modified the artifact
- **Modified on**: Filters on the date of the last modification
- **Where Used (Modules)**: Filters on artifacts in specified modules
- **Lifecycle status**: Filters on linked lifecycle artifacts
  - Development work items, by using the Implemented By link type
  - Defects, by using the Affected By link type
  - Tasks, by using the Tracked By link type
  - Test cases, by using the Validated By link type
- **Link type** Filters on internal link types in the RM application

At the **More attributes** selection, you can also filter by attributes that are specific to an artifact type, such as difficulty, priority, and status.

Procedure

To filter a list of artifacts, collections, or modules based on attribute criteria:

1. Click the **Add Filter** icon  .

2. Select the attribute in the list and add values.
3. Click **Add and Close**.
4. Click **Apply** to apply the selected values to the filter.
5. Click the **Edit filter** icon  to modify the filter criteria.
6. Click the **Remove filter** icon  to delete the filter criteria.

Example

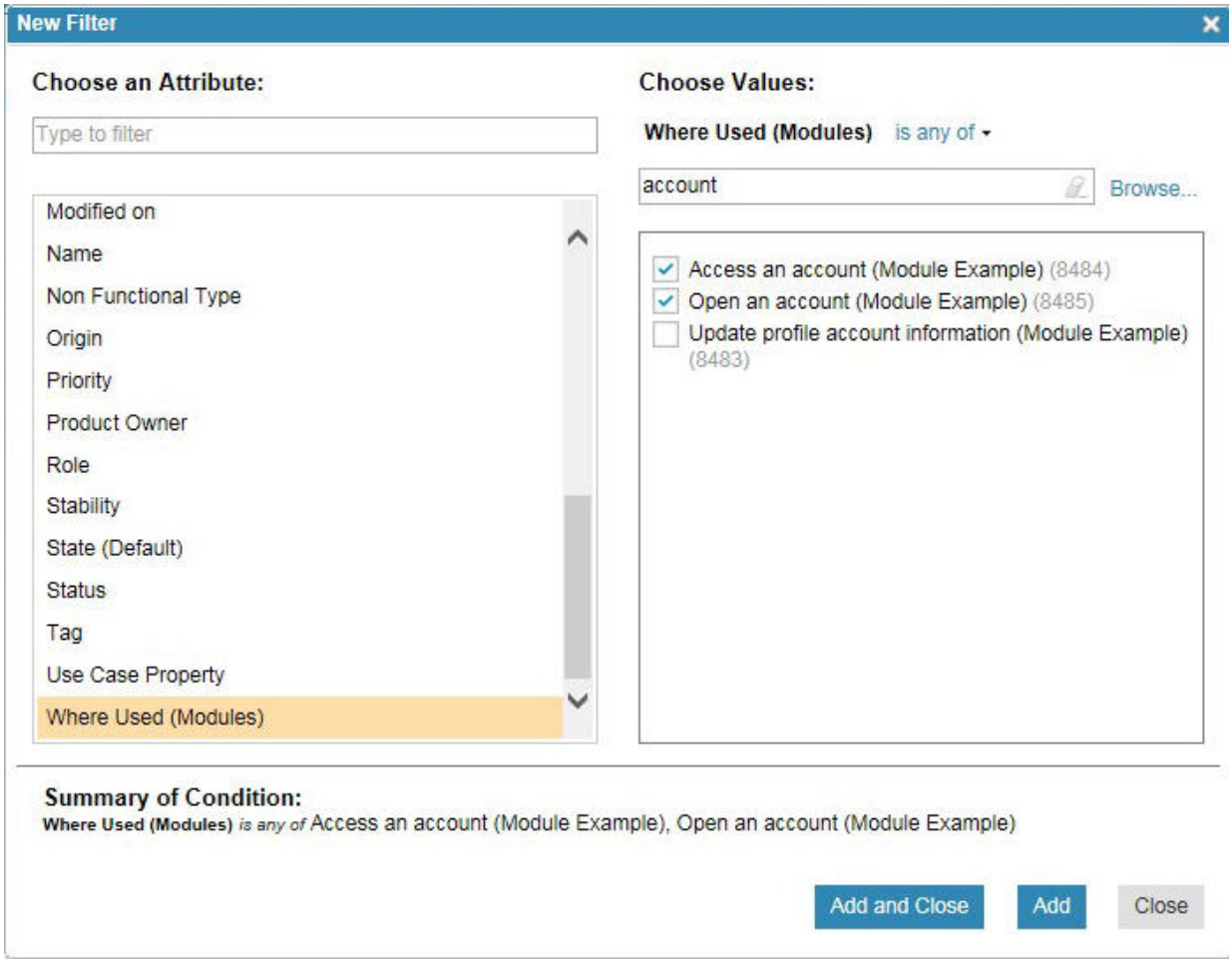
To view the artifacts that have high-priority features and that are linked to other artifacts by child of relationship:

1. Click the **Add filter** icon  .
2. Click the **Artifact Type** entry and select **Feature**. Click **Add**.
3. Select **Priority**, click **High** and then click **Add**.
4. Select **Link type**, click **Child Of** and then click **Add**.
5. Click **Apply**.

Example:

To display artifacts that are used in specified modules:

1. Click the **Add filter** icon  .
2. Click the **Where Used (Modules)** entry and select either the **is any of** or the **is all of** operator, and then select one or more modules. You can display a list of modules by typing a search keyword or by clicking the Browse button and manually selecting specific modules.



3. Click **Add and Close** and then click **Apply**. All the artifacts in the specified modules are displayed on the Artifact page.

Conversely, to display artifacts that are not used in modules, select the **is not any of** or the **is not all of** operators.

You can access the **Where Used (Modules)** filter in the **Filter by Attribute** section on the Artifacts page or in the artifact and link selection windows.

You can also view artifact attributes for cross-component links when you apply a format to a specific link type.

Related concepts

"Configuration management in the RM application" on page 6

Adding tags to artifacts and viewing tagged artifacts

You can add user-defined shared or personal tags to new and existing artifacts. Use tags to categorize artifacts in a project area. You can view all artifacts that have the same tag by creating a filter for that tag. If you save that view, you can use that view in your project dashboard. Shared tags are available to all users in the project. Personal tags are only available to the user who creates them.

Procedure

- To add a tag to a new artifact:
  1. Click **Create Artifact** on the Artifacts page.
  2. Type a name for the artifact, and then click **Add Tags**. The **Apply Tags** window opens.
  3. In the **Apply Tags** window, do one of these actions:

   - Select an existing tag, and then click **OK**.
   - Create a tag by clicking **New Tag**. Type a tag name and optionally, a description. Select the **Shared** or **Personal** tag type. Click **OK**.
4. Click **OK** in the Create an artifact with attributes window.

- To add a tag to an existing artifact:
  1. Open an artifact and in the Overview pane, click the **Select Tags** icon in the artifact toolbar. The Select Tag window opens.
  2. In the Select Tags window, do one of these actions:
     - Select an existing tag, and then click **OK**.
     - Create a tag by clicking **New Tag**. Type a tag name and optionally, a description. Select the **Shared** or **Personal** tag type. Click **OK**.
  3. Click **OK** to save the tag selection for the artifact.
- To remove a tag from an artifact, in the artifact editor, click **Select Tags**. In the **Apply Tags** dialog, click the selected tags to deselect them.
- To view all artifacts that have the same tag, from the Artifacts page, or the module editor, click **Add Filter** and select **Tag** as the filter attribute.
- To add tags to a project without adding a tag to an artifact, from the Artifacts page, or the module editor, click **More Actions** > **Manage Tags** > **New Tag**.
- To edit or delete a tag, from the Artifacts page, or the module editor, click **More Actions** > **Manage Tags** and select **Edit Tag** or **Delete Tag**.

Copying artifacts between projects

You can copy artifacts between projects in the Requirements Management (RM) application.

Before you begin

Before you copy artifacts between projects, verify the following items:

- You are logged in as a user with JazzAdmins or JazzProjectAdmins repository permissions. You are assigned the Administrator role.
- Both projects have the same setting for configuration management: either both are enabled or both are disabled.
- If you use global configurations, ensure that you are using a global configuration that has contributions from both projects.
- The target project contains the same artifact types, artifact attributes, and attribute data types as the artifacts in the source project.

  Important: To copy artifacts, the target project must contain the same artifact types as the source artifacts that are being copied, including URIs or artifact names. Otherwise, no artifacts are copied. If the target project does not contain the same artifact attributes or attribute data types, the source artifacts are copied, but the attribute values are not.

  Note: When copying and pasting modules or collections across components or projects, the shared and private views of the module or collection are copied. If the target component or project contains views that are shared across all modules or collections of the same type or shared across all modules or collections. And have the same name as the reused views in the copied module or collection, the copied views are not resolved. Instead, multiple views with the same name exist after the paste operation is run and must be resolved manually.

In projects that are enabled for configuration management, confirm whether you want to copy artifacts between components or clone them. To help you decide, see Cloning artifacts between components.

About this task

You can copy most artifacts between projects, including collections, modules, embedded artifacts, and diagrams. However, the copy function does not support copying the following items:

- Graphical artifacts that require a browser plug-in, such as sketches, storyboards, screen flows, and business and use case diagrams
- Tags
- Comments

Note: Copying and pasting of artifacts between streams in the same component is not allowed. A more appropriate way to move data from one stream to another is to deliver the change set(s) that contain that data. This ensures you get the same concept in both places and that the version history is correct. At that point, if you want to copy the artifact somewhere else within the stream you may do so. Alternatively, you can also copy or paste within your current stream and then deliver the change set.

Procedure

1. Verify that the target project contains the same artifact types, artifact attributes, and attribute data types as the artifacts that you plan to copy. To view the project properties, complete these steps:
   a) Open the target project, click the drop-down menu for the **Administration** icon  and select **Manage Project Properties**.

      Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.

   b) Click the **Artifact Types** tab, the **Artifact Attributes** tab, and the **Attribute Data Types** tab.

      Tip: If your target project does not contain the necessary project properties, you can import the artifact type system from the source project. For information about importing the type system from another project, see Importing project properties.

      Important: To copy artifacts between projects, the value in the **URI** field for artifact types or the artifact names in both the source and target projects must match. The URI value or name must also match between source and target artifact attributes and between artifact data types.

      The value in the **URI** fields must be in this format:

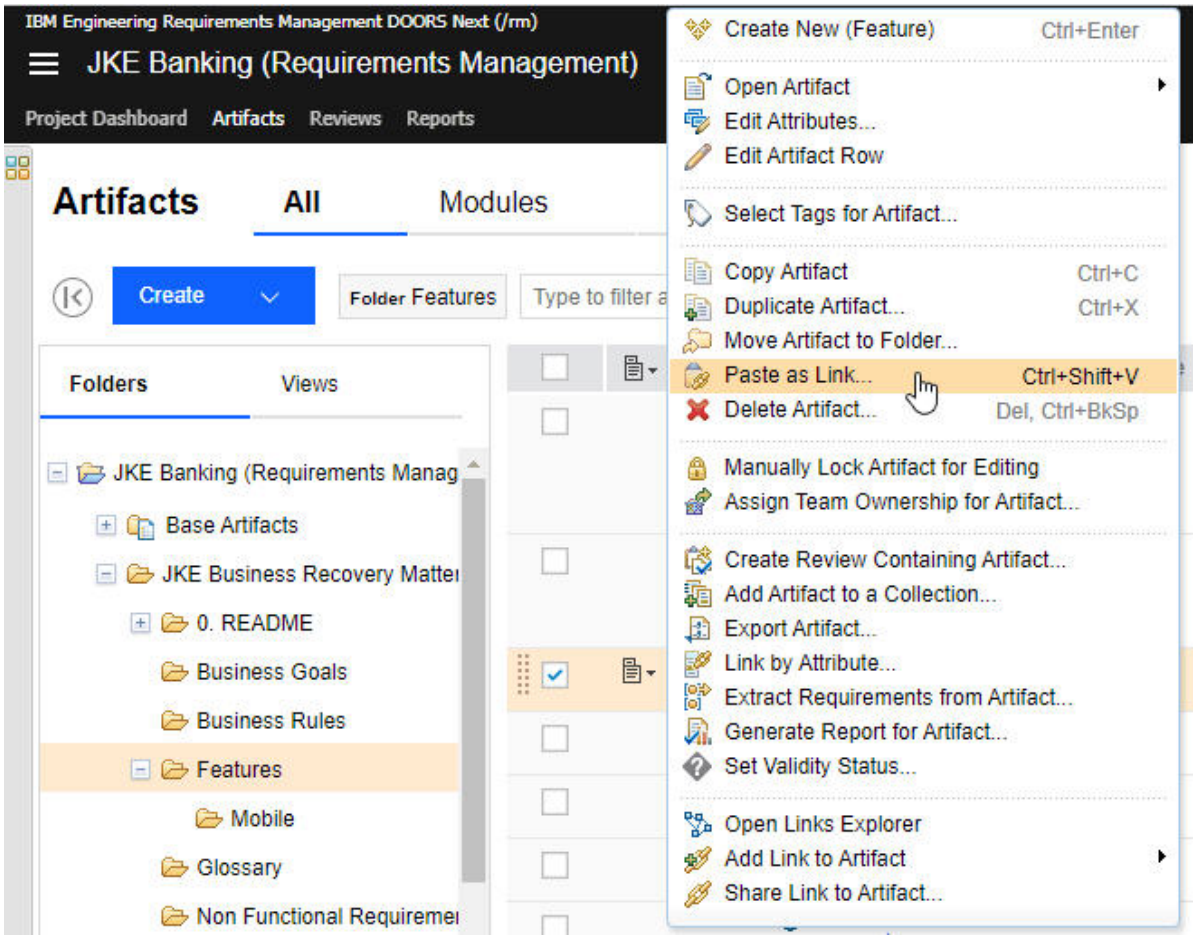
      ```
      https://hostname/word1/word2
      ```

      For example, if you work for a company that is called Big-Bank, and you want to copy artifacts of type `Actor` from a source project, you might put the following value in the Actor artifact type **URI** field:

      ```
      https://www.big-bank.com/types/actor
      ```

      If you copy the type system from the source project to the target project, you ensure that the value in the source **URI** field gets propagated to the target **URI** field in the target project.
2. In the target project, right-click the folder into which to copy the artifacts and click **Copy from a project**.
3. In the wizard that opens, follow the prompts to select the project, and the artifacts or modules to copy. When you select modules, all the views from those modules will be copied from the source to the target.

   Tip: You can also view the collections that need to be copied or cloned to the target project by clicking the **Add Collection** button.
4. If the servers are hosted by the same domain server or different domain servers, you can also use the **Paste as Link** option between components on different servers.
   a) Copy the source artifact.
   b) Select the target artifact and click **Paste as Link**.



c) In the **Create Link** window, select the link type.

d) Click **OK** and a **Link has been created** message will be displayed.

Related concepts

"Linking artifacts in different projects or components" on page 206

A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

Related tasks

"Importing properties from another Requirements Management (RM) project or component" on page 61

You can import the properties from one Requirements Management (RM) project or component into another project or component. When configuration management is not enabled, you import properties from project to project. When configuration management is enabled, you import properties from component to component. The properties that are imported by default include all the artifact types, attribute data types, link types, and link constraints that are defined in the project or component.

"Creating link types for requirements projects" on page 36

"Creating attributes for requirement artifacts" on page 31

When you create requirements in a project, you can create custom artifact attributes to use in custom artifact types. Custom attributes are based on predefined and custom artifact data types, which define the properties of the attribute, such as textual entries, integers, date, time, or team member names.

Related reference

"Link types in requirements projects" on page 37

Related information

Cloning artifacts between components

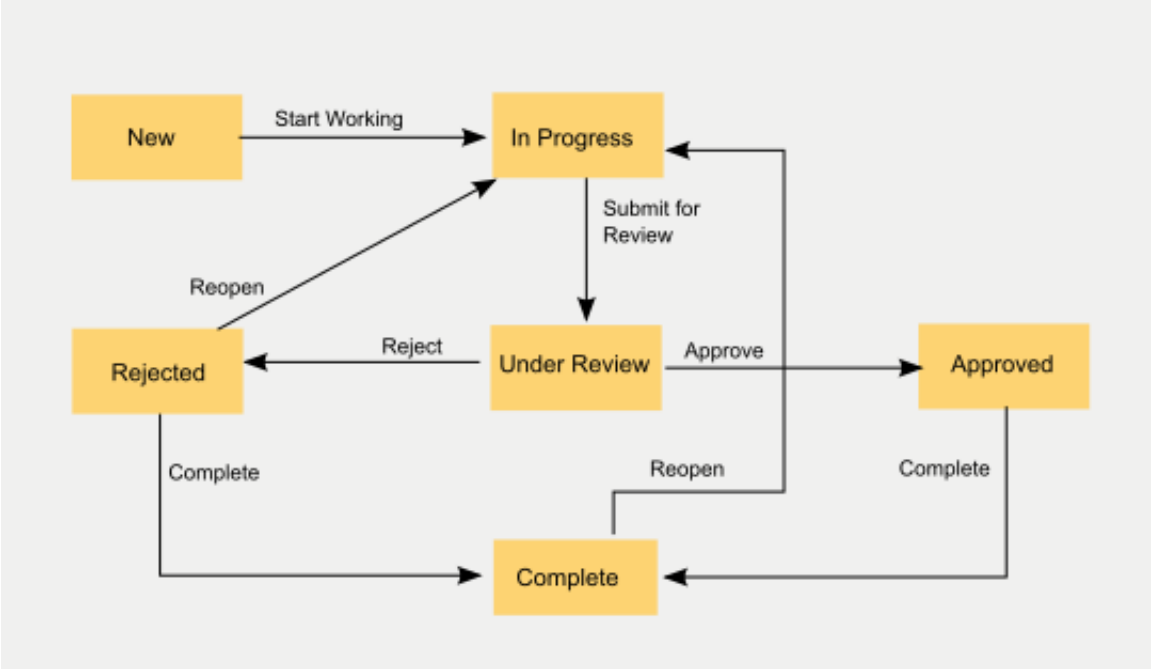
Requirement workflows

A Requirements workflow is a state transition model in which you define the state that artifacts of a specified type can be in and the actions that users can select to move these artifacts from one state to another. You can find topics that are in a specific state by creating a filter.

You can use the default workflow that comes with the Requirements Management (RM) application or you can create your own custom workflows.

Note: The default workflow is available only in new projects in new installations of IBM Engineering Requirements Management DOORS Next (DOORS Next). Workflows are not currently available if you upgrade the RM application from previous versions.

In the default workflow, an artifact begins its life cycle in the **New** state, but users can select actions that move the artifact to **In Progress**, **Under Review**, **Approved**, **Rejected**, and **Complete**. The following diagram shows all the actions and states in the default workflow:



You can use the default workflow as is, or you can modify it for your particular needs.

Associating a workflow with an artifact type

Before you can use the default workflow or a custom workflow, you must first associate the workflow with an artifact type. To make this association:

1. Click **Administration** > **Manage Project Properties**.
2. In the **Artifact Type** tab, click an artifact type.
3. Select a workflow in the **Workflow** field.

After a workflow is associated with an artifact type, users with the proper permission can select actions that move artifacts through the states that are defined in the workflow.

Creating or modifying workflows

You can create or modify a workflow in the workflow editor. To open the workflow editor, click **Administration** > **Manage This Project Area** > **Requirements** > **Workflows**. The **Requirements - Workflows** window appears with on-screen instructions on how to create a workflow.

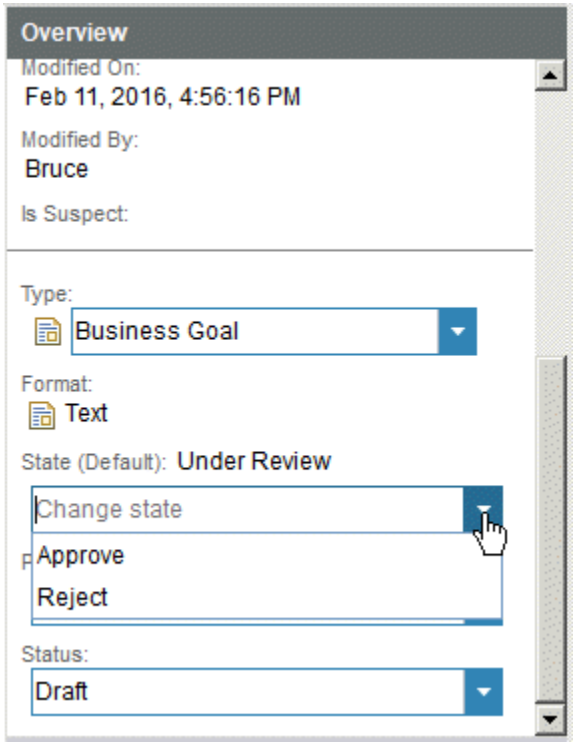
Tip: Keeping actions and transitions separate provides flexibility for how you define permissions. For example, you can set a permission to control every way to get into a particular state by using a single action for every transition to that state. Then you only have to define the permission once. You can also

have different permissions for different ways to get to a given state by using different actions for the different transitions into that state.

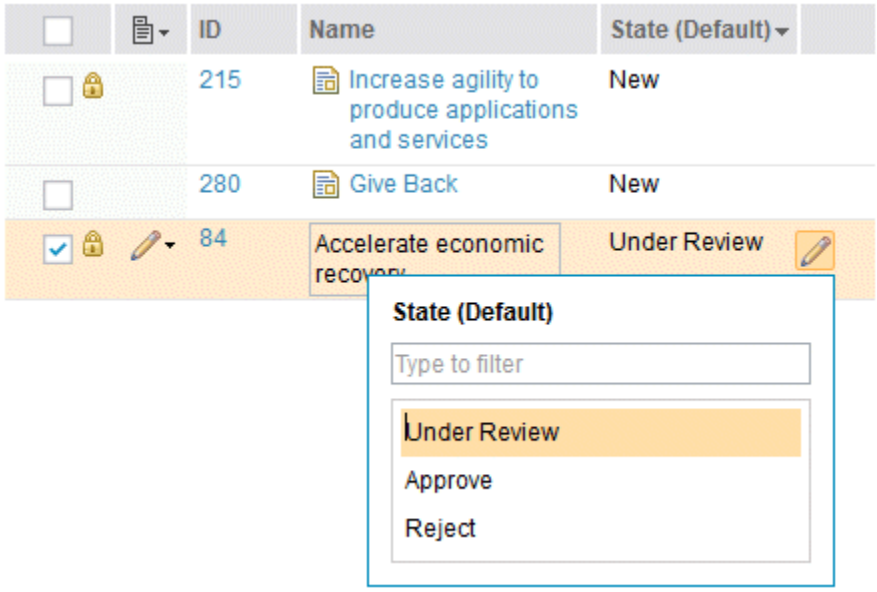
Using Workflows

After a work flow is created and is associated with an artifact type, users with the proper permission can use workflows by changing the state of artifacts in the artifact editor and in the Artifacts window.

To change an artifact state in the artifact editor, open the artifact in the artifact editor, click **Edit**, and in the Overview section of the sidebar, select a state in the **State** field, as shown in this example:

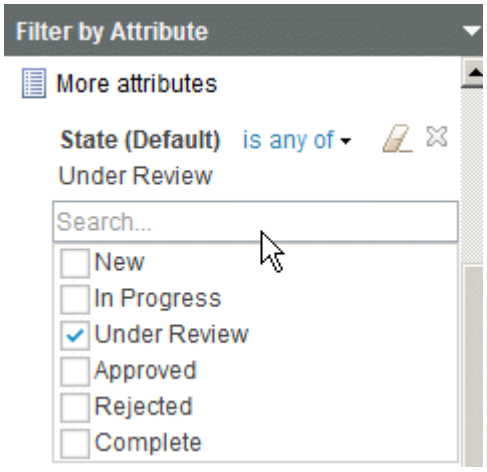


To change the artifact state in the Artifacts window, first configure the Artifacts window to display the **State** column, and then select a state from the **State** drop down menu, as shown in this example:



Note: The states that appear for selection in the State field and in the State drop down menu are determined by the user's role and the permissions that have been granted to that role.

Tip: You can create a filter that displays artifacts that are in a specific state, as shown in this example:



Workflow Permissions

By setting permissions on workflow actions, you can control which user roles can move or transition an artifact to a particular state. To set permissions for workflow actions:

1. From the **Administration** menu, click **Manage this project area**.
2. Click the project name.
3. Click **Permissions**.
4. Select a role.
5. Expand **Modify Requirements Resources** > **Save artifact** > **Modify artifact** > **Trigger a workflow action** and under the work flow name, click either the **Grant access** button or the **Revoke access** buttons for a particular action.

Note: You can also set permissions that define which roles can modify artifact content, attributes, and tags in each state of a workflow.

Related concepts

"Filters and views for artifacts in requirements projects" on page 111
Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

Related tasks

"Creating requirement artifact types" on page 29
Artifact types classify requirements and related artifacts and provide a consistent set of attributes for each type. You can use the artifact types that come with the sample project templates, or you can create custom artifact types and assign predefined and custom attributes to them.

"Managing requirements" on page 188
You can manage requirements by using traceability links, tags, attributes, filtering, workflows, and dashboards. With these capabilities, you can create relationships between requirements and other artifacts, categorize requirements, assign properties to requirements, and monitor relationships and status among team applications. To learn how to optimize requirements management, reduce rework and avoid delays by using AI from Watson, go to the IBM Engineering Requirements Management site.

Comparison of artifact grouping methods in requirements management

There are several methods by which you can create and work with groups of artifacts in the Requirements Management application. The following table provides information about these methods, which can help you decide when to use a particular method.

For more information about a method, click on the method name.

Table 28. Comparison of grouping methods in the requirements management application	
Method	**Purpose and Use**
Collections	One primary use of collections to provide a group of artifacts with a unique name and URL. The collection can then be used to: • populate development plans in the Change and Configuration application • create an association with test plans in the Quality Management application. In both cases, the goal is to establish traceability between individual requirements and other project artifacts. In this context, you can use collections to create a set of requirements that you can deliver in a release or milestone. Collections are artifacts like any other artifact, and can thus have their own unique name, URL, attributes and tags.
Modules	Used in much the same way as collections, but with added capabilities. See modules and differences between collections and modules for more information.
Tags	You can use tags to categorize artifacts in a project and to view commonly tagged artifacts using filters in the Artifact page or displaying the results of a saved view in the project dashboard. You might want to use tags for informal or temporary designations.
Attributes	You can use attributes to track project status and to organize artifacts by common properties such as owner, priority and risk. Changes to attribute values can indicate an impact on traceability relationships. (See attributes for more information.) You might want to use attributes for formal and persisting designations. You must create a filter to view artifacts based on attributes.
Folders	You can use folders to quickly group and filter artifacts. Folders are convenient to use, but they can be more rigid than other grouping methods. For example, an artifact can only be added to one folder, but it can be added to multiple collections, can have multiple tags, and can optionally have multiple attribute values.

Questions to ask when deciding on a grouping method

When deciding whether to use collections, tags, attributes or folders to organize data, it can be helpful to ask specific use questions. For example,

Is it easy to make mistakes when organizing data?
If so, it might be best to select an organizational system that helps people do the correct thing or that makes mistakes visually apparent.

Which kinds of queries does the tool make it easy for me to ask?
Filters make it easy to include or exclude tags, attribute values, and folders, though they are a little less flexible than collections.

Is it a big or small effort to maintain the organizational system?
If your information categories are stable year-to-year, maintenance should be minimal; otherwise maintenance could be very time consuming.

Traceability

Traceability is used to trace a project element to related project elements, especially those related to requirements. Traceability helps determine that a requirement is satisfied from inception through implementation and testing. Create traceability relationships by linking requirements to other requirements and to development and test artifacts.

Traceability supports these activities:

- Derivation, elaboration, and coverage analysis. Trace between requirements to specify the source, derivation, or dependencies between the requirements; for example, detailed requirements can trace to high-level, more general feature requirements or stakeholder needs. Detailed requirements elaborate high-level requirements. Use traceability to verify that all requirements have the required elaboration to fully describe the objectives.
- Impact analysis. Assess the impact of change (or proposed change) by using traceability. When requirements change mid-project based on input from stakeholders, traceability helps assess the impact (and cost) of change. When suspect artifact profiles are implemented, changes that occur in linked artifacts can produce suspect indicators on the artifacts. Suspect indicators alert team members of potential impact of change. Traceability can be the basis for negotiating the change. This helps expose dependencies and "hidden" costs of change.
- Lifecycle coverage analysis. Verify that all the necessary development and test items are in place for implementing and validating requirements.
- Progress analysis. Track progress and completion status of linked requirements, development items, and test cases.
- Reporting. Track the above mentioned activities plus other activities, such as sign-off, audit records, etc.

Use link types to specify types of traceability relationships. See Linking artifacts.

Use the Links Explorer to view linked artifact information, to create, delete, and explore linked artifacts, and to remove and modify links.

To link to development and test artifacts, see Linking to artifacts in Jazz-based products. To view traceability to development and test artifacts on your dashboard, add a **Requirements Tracing** widget to your user dashboard. See adding a widget .

Related concepts

“Reporting in the Requirements Management (RM) application” on page 254
You can run and view reports that are based on a data warehouse and create document-style reports that are about requirement and other lifecycle data.

Link validity in ELM applications

Link validity is a status on a link between artifacts to indicate whether the contents of two artifacts meet the intended meaning of their link. Learn about using this information to achieve consistency across, and propagate changes through, linked data.

For IBM Engineering Test Management (ETM or QM) applications only: Before you can view link validity status information, you must have configuration management enabled for the project. If your project does not use configuration management, you can enable suspect link traceability for the project. For more information, see Suspect traceability in ETM application.

Note: If you enabled configuration management in all your ELM applications, enable link validity in both IBM Engineering Requirements Management DOORS Next (DOORS Next or RM) and or (or or QM) applications. Starting from 7.0.0 release suspicion profiles are no longer supported for DOORS Next projects that do not use configuration management. You must enable link validity in the DOORS Next application. In ETM, use suspect traceability in test artifacts for projects that do not use configuration management and enable link validity for projects that use configuration management.

Related concepts

Link validity

Related tasks

Enabling link validity in AM, QM, and RM project areas

Related information

YouTube video: Achieving consistency across linked data by using link validity (Software Education channel)

Engineering Test Management application - suspect traceability

Managing requirements status and other properties

Use artifact attributes and tags to record the status and other properties of requirements and related artifacts. Use attributes that are provided by the project template or create custom attributes and tags for managing project artifacts. You can track the status and properties of requirements and related artifacts by customizing and filtering the Artifacts page.

Procedure

1. Use attributes to set properties for each artifact, including status.
2. Add tags to artifacts to classify and retrieve related artifacts.
3. To customize and filter the Artifacts page for monitoring requirements properties:
   - Add columns to the list of artifacts to display attributes, such as status, approval, milestone.
   - Filter the list of artifacts by tag or attribute to display related artifacts or specific attribute settings.

Analyzing the impact of change

To analyze changes in the project, you can create baselines after reviews, iterations, and other project milestones are completed. You can filter artifact views to track the status of artifacts. Use link validity to watch for the impact of changes in links between requirements and other artifacts.

About this task

Changes can come in various forms and from various sources. Some teams use change-management systems to record and submit stakeholder needs, enhancement requests, and defects on approved requirements. The IBM Engineering Lifecycle Management (ELM) helps teams record these types of requests as work items and link them to related requirements. When accepted, these requests can drive not only changes to the requirements, but also changes to linked plan items and test cases. Teams must implement processes to be aware of changes to requirements and linked artifacts and respond to those changes as they affect related artifacts.

Typically, your team defines processes for establishing baselines and artifact approvals. Your project lead can create a project baseline when requirement reviews, formal approvals, iterations, and other milestones have been completed. Baselines can provide a basis for analyzing change in the project. You can filter project artifacts lists for artifacts that have changed since a baseline date. You can also filter artifact views to show artifact status and other attributes.

You can use to monitor the potential impact of changes to linked artifacts.

Important: Starting from the 7.0.0 release, suspicion profiles are no longer supported for RM projects.

Procedure

1. Complete reviews of significant requirements and their related artifacts.
2. Create project baselines to record milestones in the project development.
3. Filter your Artifacts page to display artifacts that have changed since a particular milestone date. Create views for tracking artifact linking, tags, status, and other attributes. Add requirements views to the project dashboard.

4. Configure and use to watch for the impact of changes in linked requirements and other artifacts. For information on cross-application linking in ELM, see “Linking to development, design, test, and requirement artifacts” on page 201.

Related information

Using link validity in ELM applications

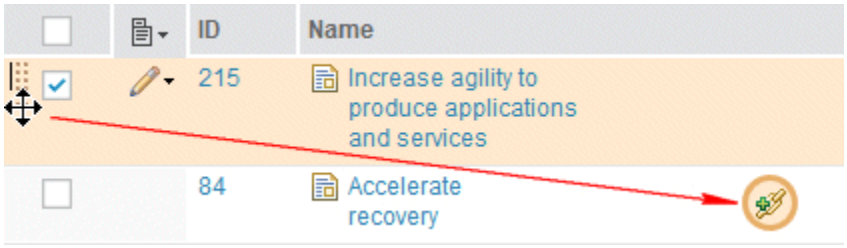
Linking to development, design, test, and requirement artifacts

You can use the IBM Engineering Lifecycle Management (ELM) product integration and other OSLC lifecycle integrations to create traceability links to new and existing artifacts in other products.

You can link from collections, modules, saved module views, and other individual requirements artifacts to development, models and designs, and test artifacts.

You can link requirements artifacts to requirements in IBM Engineering Requirements Management DOORS (DOORS) modules and in other Requirements Management (RM) applications. After creating links, you can display a summary of the linked artifact or navigate to the artifact. You can also add a widget to your dashboard to monitor the status of linked artifacts.

Tip: You can also create links by dragging an artifact and dropping it on the link icon of another artifact, as shown here:



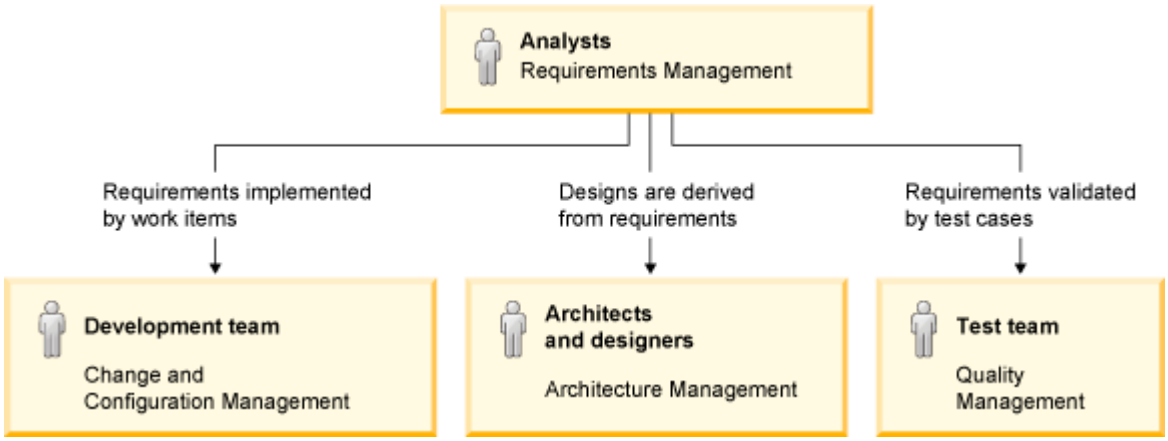
Before you begin

The product integration must be configured before you can perform this task.

- For more information about integrating with ELM applications on the same Jazz Team Server, see Registering applications with the Jazz Team Server and Administering lifecycle projects.
- To integrate with applications on other Jazz Team Servers, see Integrating products on separate Jazz Team Servers.
- To integrate with DOORS, see this topic.
- As of version 7.0.0, Design Management (DM) is no longer part of ELM. You can use the extension for Change and Configuration Management (CCM) application. For more details, see Overview of Rhapsody Model Manager.

About this task

As you link collections, modules, and individual artifacts to development and test artifacts, the link types define the traceability relationships. In ELM, requirement artifacts are located in the RM application, development artifacts are located in the Change and Configuration Management (CCM) application, and test artifacts are located in the Quality Management (QM) application. The traceability relationships between RM and the other applications are described in the following graphic.



Typically, groups of requirements are organized in collections or modules for review, approval, and management purposes. For example, the high-level requirements that constitute the project vision are often grouped in a single collection or module. The requirements analyst, project manager, or development manager links the collection or module to a development plan in the CCM application. The development manager can generate plan items from the each of the requirements in this collection or module. The test manager links the same collection or module to the test plan for the project. The test manager can generate high-level test cases from the each of the requirements in this collection or module.

High-level requirements are then elaborated by detailed requirements and associated artifacts, such as business process diagrams, use cases, user interface sketches. Detailed requirements can be grouped in collections or modules, and linked to the development plan and test plan. Plan items and test cases can be generated for each artifact in the linked collection or module. Individual requirements and artifacts can also be linked directly to work items, test cases, software and systems models and designs.

You can also create links between RM application artifacts and objects in external RM applications, such as DOORS or other installations of RM applications in ELM, to reference related requirement artifacts in both tools.

For a chart of all cross-application linking types for the RM application, see “Links across OSLC domains ” on page 85.

What to do next

To add a widget to your project dashboard to monitor the status of the ELM links, see “Project dashboards” on page 88.

Related concepts

“Filters and views in modules” on page 148
In modules, you can modify the column settings, filter the artifacts that are shown, and then save the column and filter settings as a view. You can modify columns to show specific attributes or link types, and you can filter by artifact type, artifact tags, attribute values, and link types.

Related reference

Extending the RM application by using OSLC services
Open Services for Lifecycle Collaboration (OSLC) is a community that is standardizing the way that lifecycle tools work together. IBM Engineering Requirements Management DOORS Next (DOORS Next) supports the OSLC data sharing specification as a provider for the Requirements Management (RM) domain and as a consumer of other domains in the IBM Engineering Lifecycle Management (ELM). Data sharing is also supported by other RM tools that support OSLC integration, such as IBM Engineering Requirements Management DOORS (DOORS).

Related information

Engineering Lifecycle Management scenario

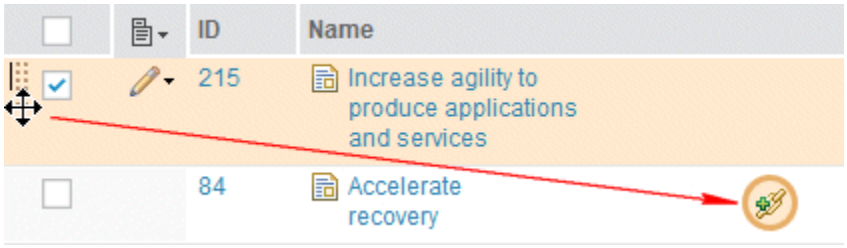
Links between artifacts

A link represents a relationship between artifacts. Links are mechanisms for referring to related information. You create some links manually. Other links are created automatically when you complete certain tasks. There are different properties for trace links, content links, links to base artifacts, and links in modules.

Trace links and content links

You can create links from an artifact or from content within the artifact to another artifact or to a URL. All links must indicate whether they are stored locally or externally. Links are created automatically when you embed one artifact within another. For example, links are created when you embed an artifact in a text document, add a part to a sketch, or embed a sketch in a storyboard.

Tip: You can also create links by dragging an artifact and dropping it on the link icon of another artifact, as shown here:



Content links are simple hyperlinks between content within an artifact or to another artifact. You can create a content link from a text string in a textual artifact to an artifact in the repository or to a URL. You can create multiple content links from a graphical element in a diagram, sketch, part, or storyboard to other artifacts or to URLs. You do not designate a traceability type for content links and the link is included in the content only.

When you create a link from content within an artifact, such as a range of text or a diagram element, you can assign a link type that defines a traceability relationship for the link. In addition to basic hyperlink behavior, the *trace link* type can convey relationships such as dependency, origin, derivation, implementation, or validation. Each trace link has a label that defines its traceability relationship type. Trace link types are based on the Open Services for Lifecycle Collaboration (OSLC) specification. Project administrators can also create custom link types to meet the needs of a particular project and organization.

Restriction:

- You cannot create a link if another link to the same target with the same link type exists. However, you can create multiple content-based links. For example, you can create a link from a document to a term multiple times or embed an image in a document multiple times.
- You cannot create links to external lifecycle applications from elements in graphical artifacts, such as business process diagrams, use case diagrams, and sketches. For example, when you create Implemented By links to work items that are in a Change and Configuration Management (CCM) project, you can link from the graphical artifact, which contains the entire diagram, but not from elements in the diagram.

  This restriction also applies to links from Requirement Management (RM) graphical elements to artifacts in the Quality Management (QM) and in requirements management applications that are not part of the IBM Engineering Lifecycle Management (ELM).

  To create traceability for elements in graphical artifacts, link an element to an artifact in your project that describes the activity for that element, and then link that artifact to a work item, test case, design object, or requirement in an external lifecycle application.

If you designate a traceability relationship for a link, a matching trace link is displayed in the Links section of the artifact sidebar. You can also display and filter artifacts that contain trace links on the **Artifacts** page and in dashboard widgets. Trace links and the relationships that they represent are also visible in

the artifact summary when you hover over a link that includes traceability. 7.0.2 iFix008 When you click the **Show More** link, you can see the link information.

Trace links help to manage and monitor the status of requirements and their related artifacts, such as parent and child requirements, development work items, or test cases.

You can use Link types to define and customize the linking relationships between artifacts. Link relationships are directional. When link types are displayed in the user interface, icons indicate the direction of the link type. For more information, see "Creating link types for requirements projects" on page 36.

Content links have no matching trace link in the artifact sidebar or on the **Artifacts** page or dashboard. They provide simple hyperlinks within an artifact without adding nonessential link information in the sidebar and project pages.

You can add a matching trace link to an existing content link, or remove it. When you delete a matching trace link, the content link remains in the artifact content. If you delete a rich-text content link that has a matching trace link, the trace link is deleted when you save the artifact. If you delete a content link from a graphical element in a diagram, the trace link is not affected.

If you create a link in the Links section of an artifact sidebar, you are creating a trace link for the artifact and must designate a traceability link type. These trace links are independent of any specific content in the artifact editor; they represent the entire artifact.

Trace links that are associated with a content link are displayed in the **Links** section with the **Content link**  icon. When you view the artifact that contains the content link and you click the icon, the content link is highlighted in the artifact editor.

You can track changes to linked artifacts by using link validity.

Links to base artifacts and artifacts in modules

Artifacts can be created and managed in a project independently from a module. They are called base artifacts. Base artifacts can also be used in one or more modules. You can link base artifacts with other base artifacts or with artifacts in the context of a module. Links to and from base artifacts are available in all modules in which those artifacts are used. A blue icon over the artifact type icon indicates linking with a base artifact  . Links that are created in the context of modules are only available in those modules. If you create links to or from base artifacts, those links are available in every module that the base artifacts are used in. For more information about how to create links, see Linking between artifacts in modules.

Linking between projects after enabling configuration management

To work with links across project areas, team members must work in the context of a global configuration. For an overview of cross project linking, see Cross-project links to versioned artifacts.

Deleting artifacts that have links

How a link between two artifacts is impacted when one artifact is deleted? When you delete an artifact that contains links:

- If the artifacts are in the same project or component area, the deleted artifact is automatically removed as a link from the artifact it is linked to or linked from. In other words, incoming and outgoing links are updated to reflect the deletion.
- If the artifacts are in different project or component areas, it is deleted only if it is an outgoing link for the artifact that is being deleted. If the link is an incoming link, it appears as an outgoing link for the artifact, but the link's target artifact do not work as the artifact is deleted.

Example 1: A and B are two artifacts that are created within the same project or component area. A and B are linked to each other.

- If Artifact A is deleted, the link is deleted and it no longer appears as an incoming link for Artifact B.
- If Artifact B is deleted, the link is deleted and it no longer appears as an outgoing link for Artifact A.

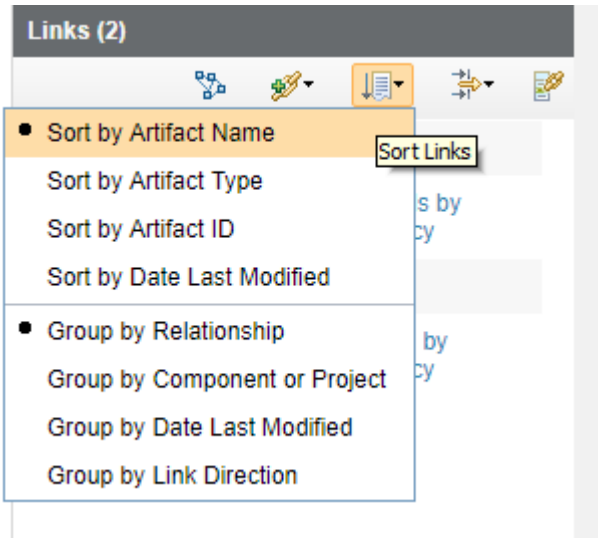
Example 2: A and B are two artifacts that are created in different project or component areas. A and B are linked to each other.

- If Artifact A is deleted, the link is deleted, since it is an outgoing link, and it no longer appears as an incoming link for Artifact B.
- If Artifact B is deleted, the link is not deleted, since it is an incoming link, and the link still appears as an outgoing link for Artifact A. But the link's target is not accessible, since Artifact B is deleted.

Sorting and filtering links

You can sort, group, or filter links by using the Links section of the artifact sidebar.

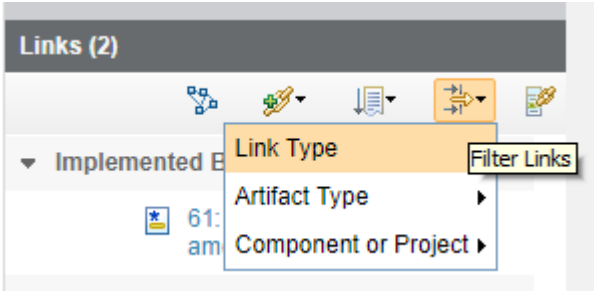
You can sort the artifacts by name, type, ID, or last modified date by clicking the **Sort Links** icon. You can also group the artifact links by relationship, component or project, last modification date, or link direction. The following image shows the sort and group options for artifact links:



Note: The Requirements Management (RM) application does not manage artifacts that are associated with Open Services for Lifecycle Collaboration (OSLC) and external. When you sort these types of links, the following rules apply to each sorting option:

- **Sort by Artifact Name**: The full OSLC or external link label is used, which might or might not start with an artifact name.
- **Sort by Artifact Type**: An external link is used as the artifact type name.
- **Sort by Artifact ID**: The full OSLC or external link label is used, which might or might not start with an ID.
- **Sort by Date Last Modified**: The last modified date of the link is used instead of the modified date of the linked artifact.

Additionally, you can filter artifacts by link type, artifact type, or project or component, by clicking the **Filter Links** icon. You can filter artifact links by link type, artifact type, or component or project. The following image shows the filter options for artifact links:



Related concepts

“Linking artifacts in different projects or components” on page 206
A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

“Configuration management in the RM application” on page 6

“Link direction” on page 41
Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role.

Related tasks

“Creating link types for requirements projects” on page 36

“Linking between artifacts in modules” on page 136
You can link artifacts that are in the same module or artifacts that are in different modules.

“Reusing artifacts in modules” on page 146
Artifacts can be reused in multiple contexts in a project, including collections and modules. You can edit artifact content in a module or by opening the artifact outside the module. Content changes are reflected in all contexts. Links, tags, and comments are specific to the context in which they are created. If you want links, tags, and comments to reflect in all contexts, edit the artifact outside the module as a base artifact.

Related reference

Link Types

Linking artifacts in different projects or components

A link represents a relationship between artifacts. Link relationships are directional and indicated by an icon. Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role. You can create links between artifacts in different projects on the same server or on different servers. If you enable configuration management, you can create links between artifacts in different components.

Cross-project or cross-component linking is automatically enabled for system-defined link types. However, if link constraints are set the cross-project and cross-component linking is governed by the link constraint rules.

To enable cross-project or cross-component linking for a custom link type, a URI must be defined for the link type. For example, `https://hostname.com/domain/myLabel`. Define the same link type with the same URI for the projects or components that you want to link. To create link from both ends, see Creating RDF vocabulary documents and assigning URIs. If you enable cross-project or cross-component linking in only one project or component, but not in others, you can still create the link but only from the project or component where the link is defined. This is because the link direction for a cross-project or cross-component link determines where the link is stored. Cross-project or cross-component links are stored in the source artifact's project or component area. The outgoing role represents the source of the link. If you use link constraints, you must define equivalent URIs for the requirement types.

When viewed in the context of a local baseline, rich hovers for links to artifacts outside that baseline say that the artifact cannot be found in configuration. The Links sidebar section shows the links' information.

To create links across projects that reside on different servers:

- The Link Index Provider (LDX) application must be installed and registered with the Jazz Team Server.
- If you are using a topology with multiple Jazz Team Server (JTS) instances, you must set up bidirectional friend relationships between the Requirements Management (RM) servers, and between LDX and any RM servers that are running on a different Jazz Team Server than LDX.
- The data source for all RM servers must be added to LDX.
- All participating project areas must be enabled for configuration management.
- The user must be working in a global configuration context.
- Project areas that link to each other must be associated with the Related Requirements association on the **Overview** page for project area administration.

Note: If the projects on remote servers are not displayed in the linking dialog box, you might need to create a URL allowlist entry for the common JTS server, which handles the authentication of ELM application servers.

When you enable cross-server linking between projects:

- You can view, create, modify, and delete cross-server links in both grid columns and the Links pane in the sidebar.
- When you hover over a cross-server link, information is displayed about the artifact at the other end of the link.
- You can use a drag-and-drop operation to create cross-server links.
- The reports that are generated when you export comma-separated value (CSV) files and spreadsheet files contain the cross-server links.
- Link validity is fully supported for cross-server links.

Note: When creating links between two different RM servers, drag and drop supports only the creation of outgoing cross-server links.

For a cross-project or cross-component link, the link direction determines where the link is stored. Cross-project or cross-component links are stored in the source artifact's project or component area. The Outgoing role represents the source of the link.

For the following operations, when you create cross-project or cross-component links for artifacts, both Outgoing and Incoming roles are available. The links are stored according to the role selected:

- **Import CSV**
- **Link By Attribute**
- **Duplicate Artifact**

In the following cases, when you create a cross-project or cross-component links for artifacts, links are always stored in the source or component, so only Outgoing roles are available:

- When you create a cross-component link to an artifact in a baseline component, the new link cannot be stored in the baseline component.
- When you create a link to the web, the new link is stored in IBM Engineering Requirements Management DOORS Next (DOORS Next).
- When you create a cross-component or cross-project link by using a link type that is only defined in one of the projects or components that are involved in the link, the new link must be stored in the project or component that defines the link type.
- When you **Clone from Component** only Outgoing links are cloned and stored in the source artifact.
- When you **Copy from Component** only Outgoing links are copied and stored in the source artifact.

Link direction and change sets

Links are always stored on the outgoing side of the link. When you create a cross-project or cross-component, depending on where the link is stored, messages that are related to change sets might be

displayed and the available link types might be filtered to show only the outgoing link types. The following conditions apply:

- If the other component that is involved in the link requires that all changes occur in changes sets, but a change set does not exist, the list of available link types is filtered to show only outgoing link types.
- If the other component that is involved in the link is using a change set, a warning message is displayed that explains that you must deliver the other component's change set after the link is created.
- If the specified link type is incoming, and you switch the component to one for which a change set is required but does not exist, an error is displayed and the list of available link types is filtered to show only the outgoing link types.

Editing existing cross-project or cross-component links

If you are editing existing cross-project or cross-component links and change the direction of the link type from outgoing to incoming or vice versa, the storage location of the link changes since cross-project and cross-component links are stored in the project or component of the source, or outgoing, artifact. When the direction of a link is changed, it is deleted from the project or component where it is stored and it is created in the project or component of the source, or outgoing, artifact. Since editing a link can change where the link is stored, the following conditions apply when editing a cross-component or a cross-project link if change sets are active:

- If the link is incoming from an artifact in a component for which change sets are required, and no change sets exist, an error message is displayed that explains why you cannot edit that link.
- If the link is outgoing to an artifact in a component from which change sets are required, and no change sets exist, the list of available link types is filtered to show only outgoing links. A warning message is displayed that explains why you cannot specify an incoming link type.
- If you change an outgoing link to an incoming link, and the link originates in a component that is in a change set, a warning message is displayed that explains that you must deliver the change set to see the changes to the link.
- If you edit an incoming link, and the link originates in a component that is in a change set, a warning message is displayed that explains that you must deliver that change set to see the changes to the link.

Related concepts

“Links between artifacts” on page 203
A link represents a relationship between artifacts. Links are mechanisms for referring to related information. You create some links manually. Other links are created automatically when you complete certain tasks. There are different properties for trace links, content links, links to base artifacts, and links in modules.

Link directions
Link types help you define and customize the linking relationships between artifacts. Each link type has an Outgoing and an Incoming role.

Link constraints
Link constraints are rules that an administrator can set up to specify which kinds of links are allowed in a project or across projects. If no rules are created, all links are allowed. However, if you create rules, only the links in the rules are allowed.

“Configuration management in the RM application” on page 6

Related tasks

“Linking between artifacts in modules” on page 136
You can link artifacts that are in the same module or artifacts that are in different modules.

“Reusing artifacts in modules” on page 146
Artifacts can be reused in multiple contexts in a project, including collections and modules. You can edit artifact content in a module or by opening the artifact outside the module. Content changes are reflected in all contexts. Links, tags, and comments are specific to the context in which they are created. If you want links, tags, and comments to reflect in all contexts, edit the artifact outside the module as a base artifact.

Related reference

Link types

Related information

Using link validity in ELM applications

Linking by attribute

You can quickly and automatically create links between multiple artifacts by artifact attribute.

Before you begin

You can use the **Link by Attribute** function to automatically create, update, and delete links between artifacts based on an attribute value. To use this feature, type the artifact IDs of the target artifacts (separated by commas) in a custom string attribute type, select **Link by Attribute** and then follow the prompts. You can use this function in a module, a collection, or in any artifact view.

Note: This feature can also be used in conjunction with the CSV round-trip support to handle creating and changing links when you import data.

The following example provides a more thorough explanation of how the **Link by Attribute** function works. The examples show how to create links between multiple artifacts in a single module and between artifacts in different modules. First, the example shows how to complete these tasks:

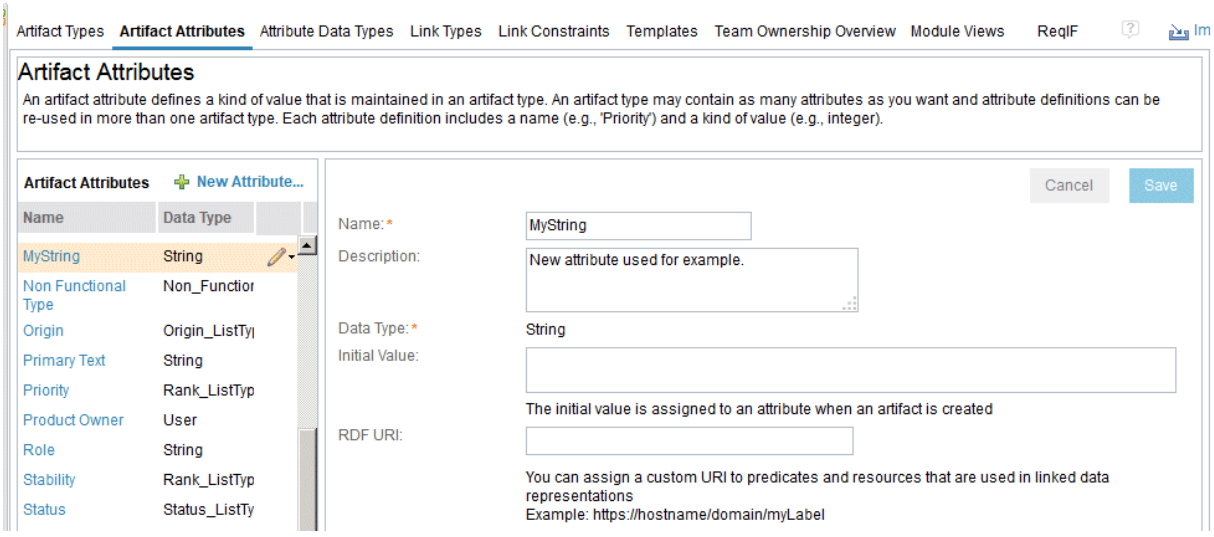
- Create a custom attribute called `MyString`.
- Add the `MyString` attribute to a Feature artifact type.
- Change the column headings in a sample module to display the `MyString` attribute.

Then, the example shows how to add artifact IDs of the artifacts to link to in the `MyString` attribute, and how to run the **Link by Attribute** function to automatically create the links.

Procedure

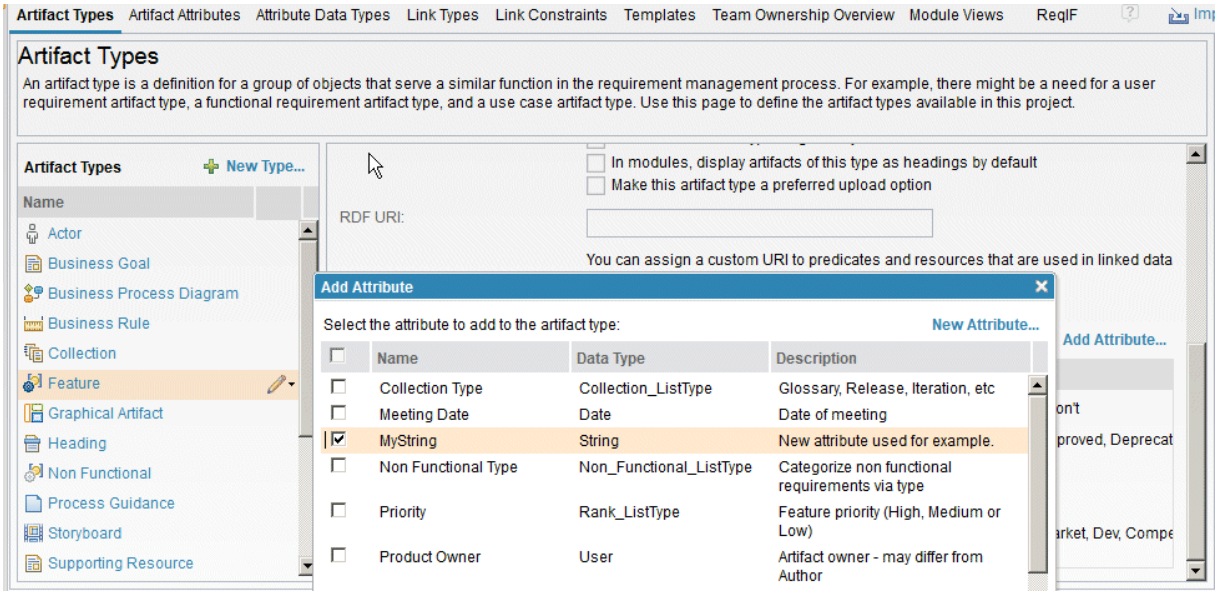
1. Click the drop-down menu for the **Administration** icon  and select **Manage Project Properties**.

   Note: If configuration management is enabled for your project, on the **Administration** menu, click **Manage Component Properties**.
2. On the Artifact Attributes page, click **New Attribute** and create a custom attribute that is called `MyString` with a data type of `string`, as shown in the following image:

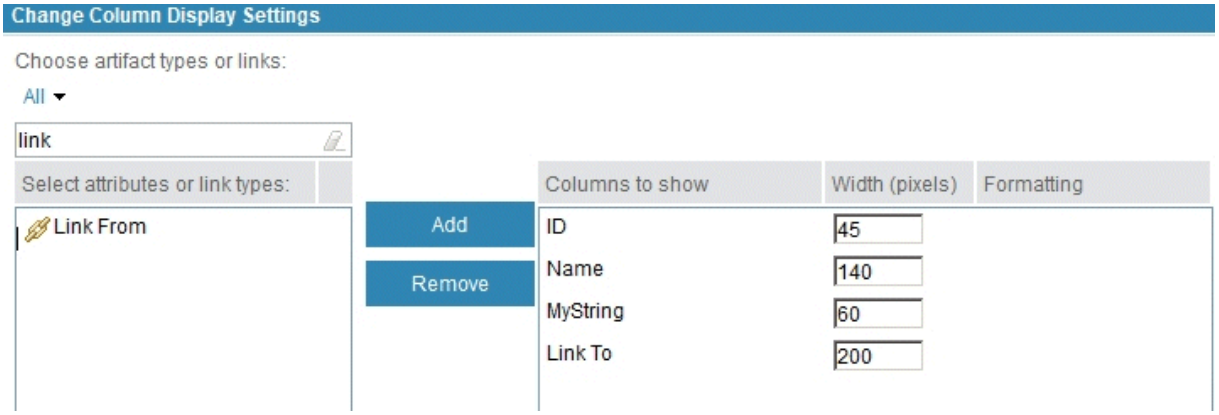


   Note: You can use any custom attribute type as long as the type is `string` and is not a predefined system attribute.

3. Add the newly created `MyString` attribute to a Feature artifact type, as shown in the following image:



4. Create a sample module that contains several Feature artifacts.
5. Change the column headings in the module to show the new `MyString` attribute column and the `Linked To` column, as shown in the following image:

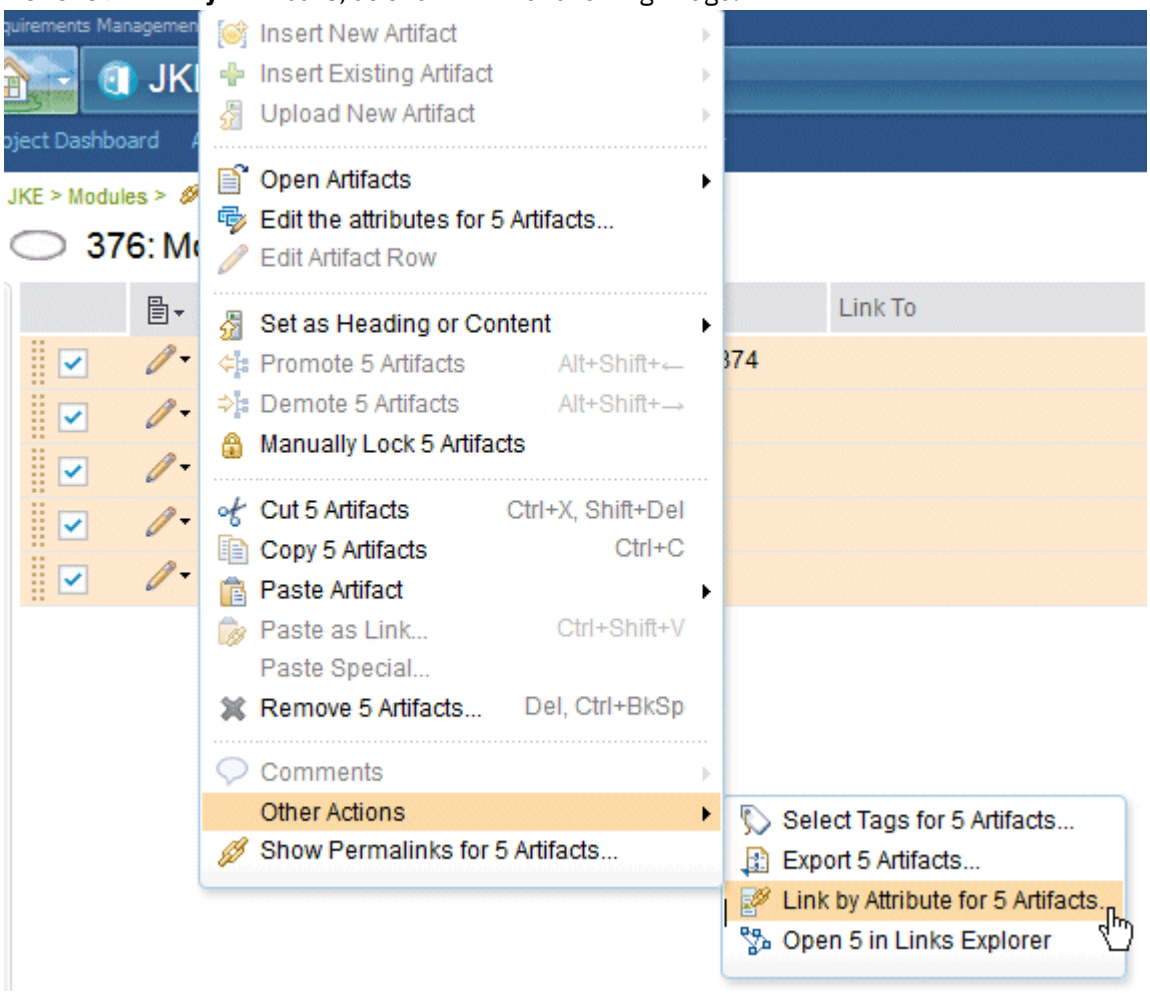


The sample module is displayed with the new columns:

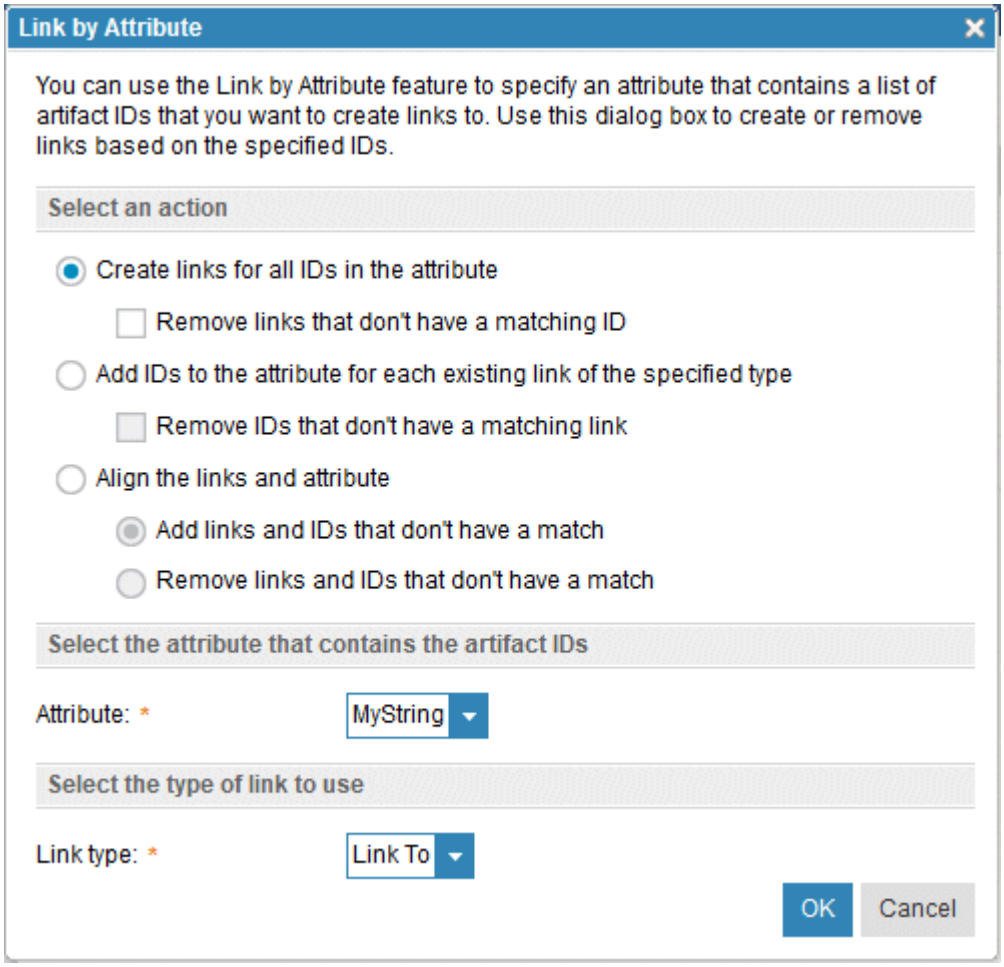
6. To create links from Feature One to Feature Two, Feature Three, Feature Four, and Feature Five. To create these links, type the ID of each target artifact (separated by commas) in the `MyString` column, as shown in the following image:

	ID	Contents	MyString	Link To
☐	364	Feature One	371,372, 373,374	
☐	371	Feature Two		
☐	372	Feature Three		
☐	373	Feature Four		
☐	374	Feature Five		

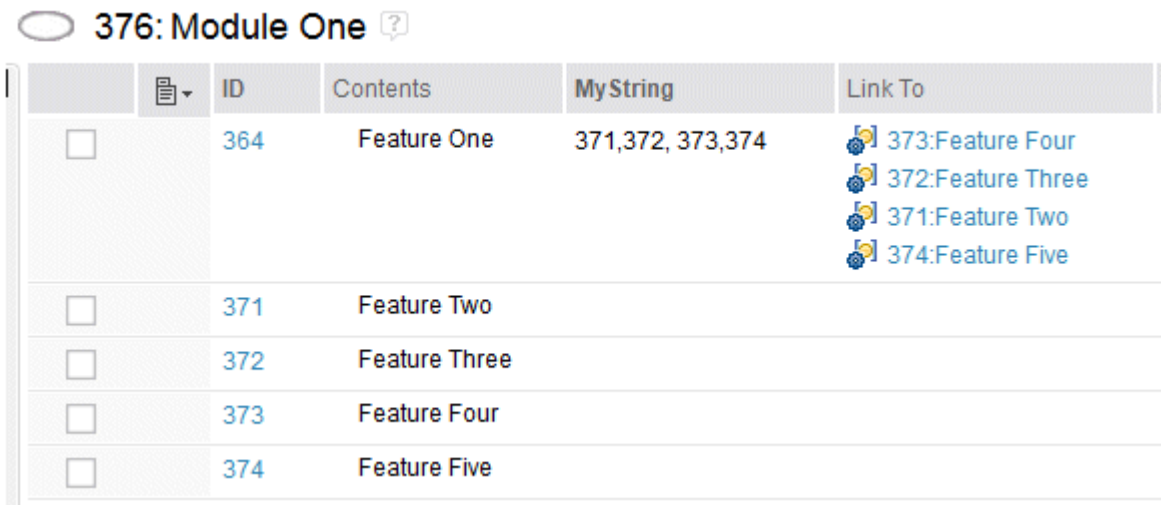
7. Then, to automatically create the links, select the check boxes for the artifacts and click **Other Actions** > **Link By Attribute**, as shown in the following image:



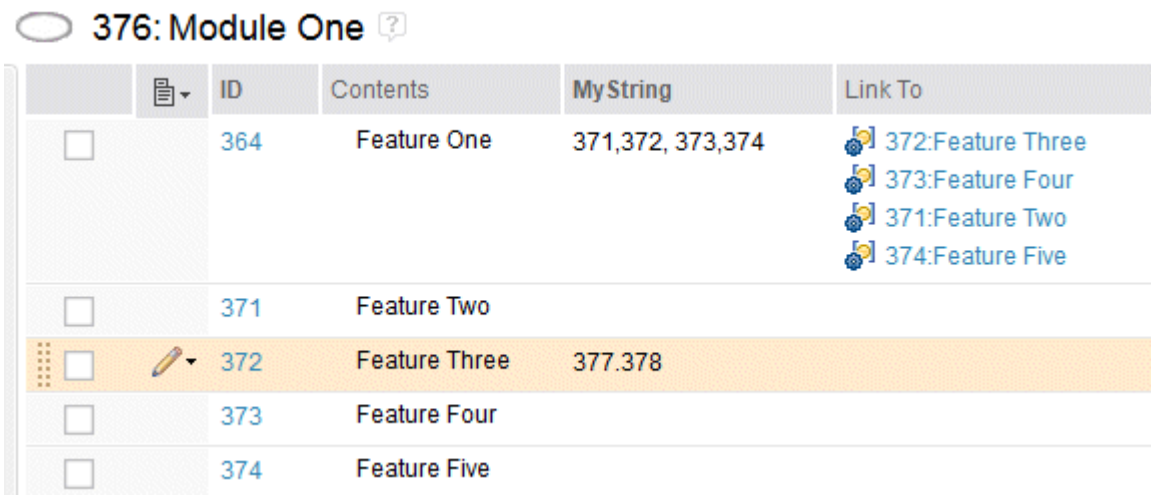
8. In the **Link by Attribute** window, in the **Attribute** field, select **MyString** and, in the **Link type** field, select **Link To**. Click **OK**.



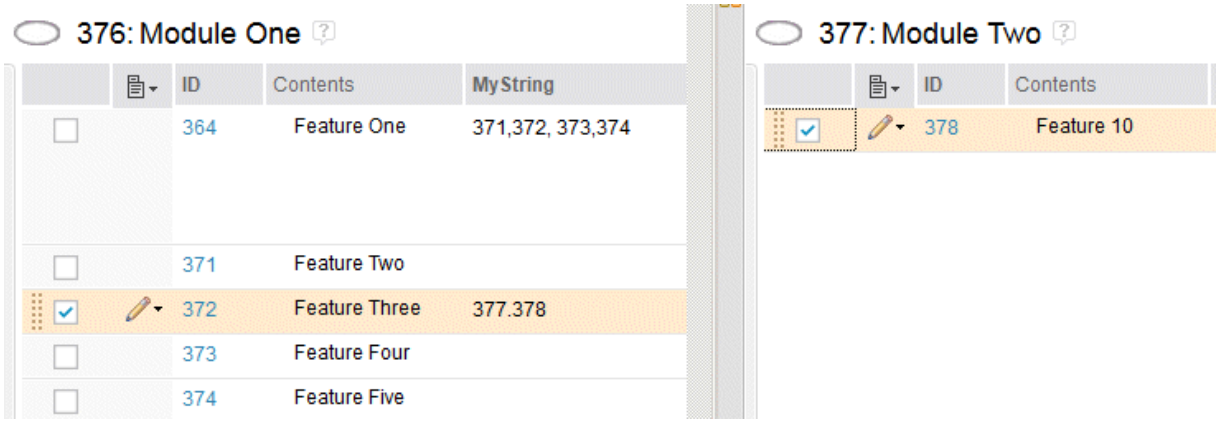
The links that you specified are automatically created, as shown in the **Link To** column in the following image:



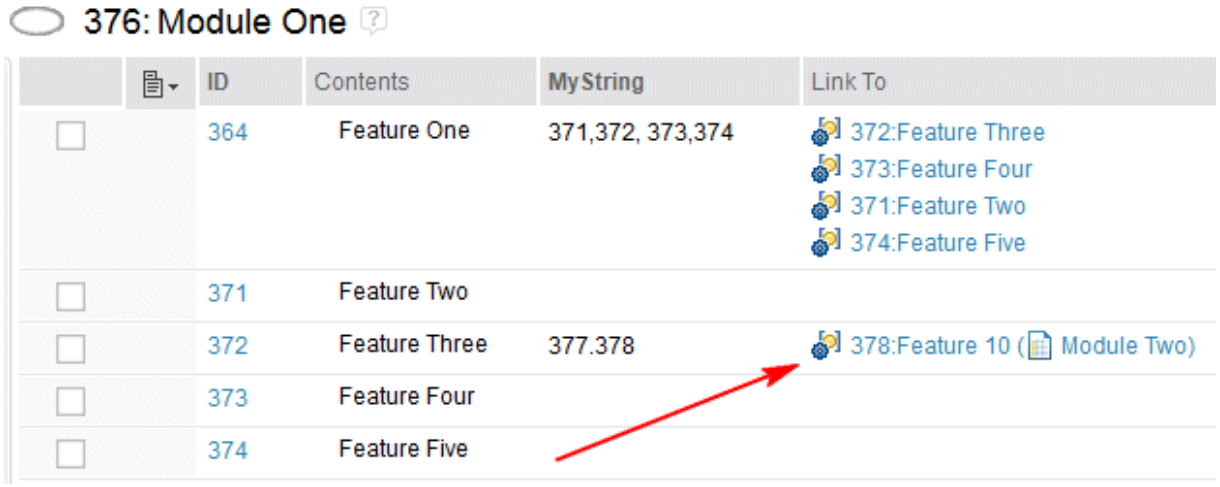
9.
10. To create a link from Feature 3 to an artifact in another module, such as to Feature 10 in Module Two, enter the artifact ID of Module Two (377) and the ID of Feature 10 (378), separated by a period, as shown in the following image:



11. Then, select Feature Three (in Module One) and Feature 10 (in Module Two) as shown in the following side-by-side view of both modules:



12. Then, run **Link By Attribute** and enter the **Attribute** and **Link To** data in the **Link by Attribute** window. When you click **OK**, the link is automatically created in the **Link To** column in Module One, as shown in the following image:



Related concepts

“Modules in the Requirements Management application” on page 129

A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules

are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

"Importing requirements artifacts from CSV and spreadsheet files" on page 159
You can import data from comma-separated values (CSV) and spreadsheet files into folders and modules in an RM project.

Linking to requirements artifacts in lifecycle applications

By integrating the applications of the IBM Engineering Lifecycle Management (ELM) and other lifecycle applications, you can create links to artifacts in Change and Configuration Management (CCM), Quality Management (QM), Rhapsody Model Manager (RMM), and Requirements Management (RM) applications. You can link requirements artifacts, collections, modules, or module views to artifacts in other ELM lifecycle applications.
When you link from module views, you have more control over which artifacts in a module are available for test case development and execution.

You can also sort, group, or filter artifact links in the **Links** section for an artifact.

Before you begin

The ELM integration must be configured before you can do this task. For more information, see Engineering Lifecycle Management and Running the setup wizard.

Important:

- If you are linking a module view to artifacts in other ELM applications, the module view must be Shared and the view must not be used in other modules. For more information, see Filters and views.
- If link results exceed the maximum allowed value and all the links are not displayed, a warning message is displayed. In Link Index Provider, you can set a maximum links result restriction to display more links, if necessary.

Procedure

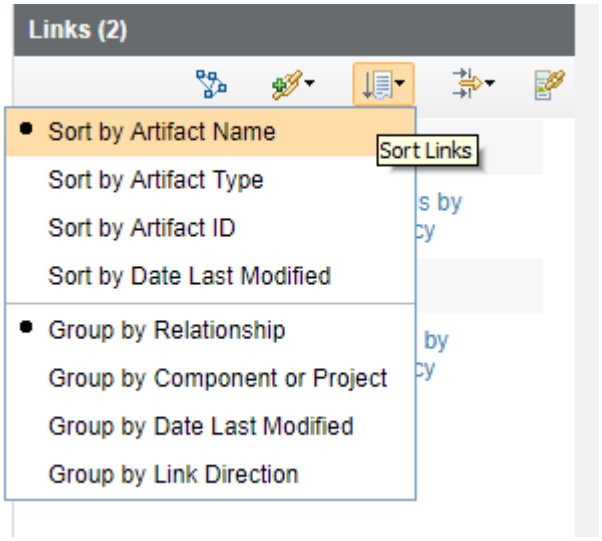
1. Open a requirement or other RM artifact and expand the **Links** section in the sidebar and click the **down arrow** by the **Add Link to Artifact** icon  .
2. Select the link type that corresponds to the integrated lifecycle application. For more information, see Link Types.
   - **Implemented By**, **Tracked By**, or **Affected By** to link to development plan items, work items, and defects in CCM.
   - **Validated By** to link to QM test cases.
   - **Derives Architecture From Element**, **Refined By Architecture Element**, **Satisfied By Architecture Element**, and **Traced By Architecture Element** to link to RMM models and design resources.
   - **References** to link to RM objects in another RM instance or in another RM project area.

   If you are linking from a module view, from the view menu, select **Add a Link**.
3. In the **Create Link** window, select an **Artifact Container** (project area).
   a) Click **Choose Existing** to select an existing artifact to link to.
   b) Click **Create New** to create a new artifact to link to.
      - If you are linking to the Change and Configuration Management (CCM) application, you can choose a work item or create a new one.
      - If you are linking to the Quality Management (QM) application, you can choose a test case or create a new one.
   c) Click **OK**.

   Restriction: For modules and collections:

- *Implemented By* link type is only available to plan items in the CCM application.
- *Affected By* and *Tracked By* link types are not available.

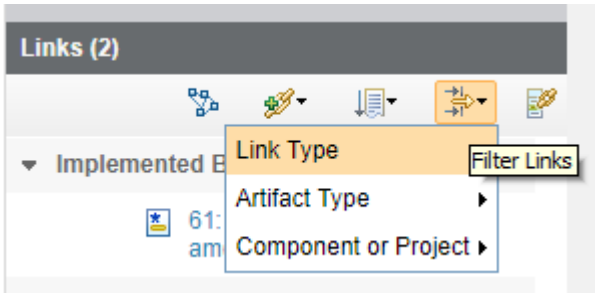
4. To sort the artifacts by name, type, ID, or last modified date, click the **Sort Links** icon.



Note: The Requirements Management (RM) application does not manage artifacts that are associated with Open Services for Lifecycle Collaboration (OSLC) and external. When you sort these types of links, the following rules apply to each sorting option:

- **Sort by Artifact Name**: The full OSLC or external link label is used, which might or might not start with an artifact name.
- **Sort by Artifact Type**: An external link is used as the artifact type name.
- **Sort by Artifact ID**: The full OSLC or external link label is used, which might or might not start with an ID.
- **Sort by Date Last Modified**: The last modified date of the link is used instead of the modified date of the linked artifact.

5. To filter artifacts by link type, artifact type, or project or component, click the **Filter Links** icon.



What to do next

To view a summary of the linked plan, hover over the link in the Links section of the sidebar. To open the plan in the related product, click the link. In development projects, you can generate plan items that correspond to each artifact in the collection, module, or module view. In test projects, you can generate test cases that correspond to each artifact in the collection, module, or module view.

Linking artifacts by using the drag-and-drop method

You can link requirement artifacts with other artifacts across ELM applications by using the drag-and-drop and copy-and-paste methods.

Before you begin

When you link requirement artifacts, OSLC link types are created between the applications. For more information, see “Link types in requirements projects” on page 37. Make sure that the project areas in the ELM applications are registered with each other for link creation.

About this task

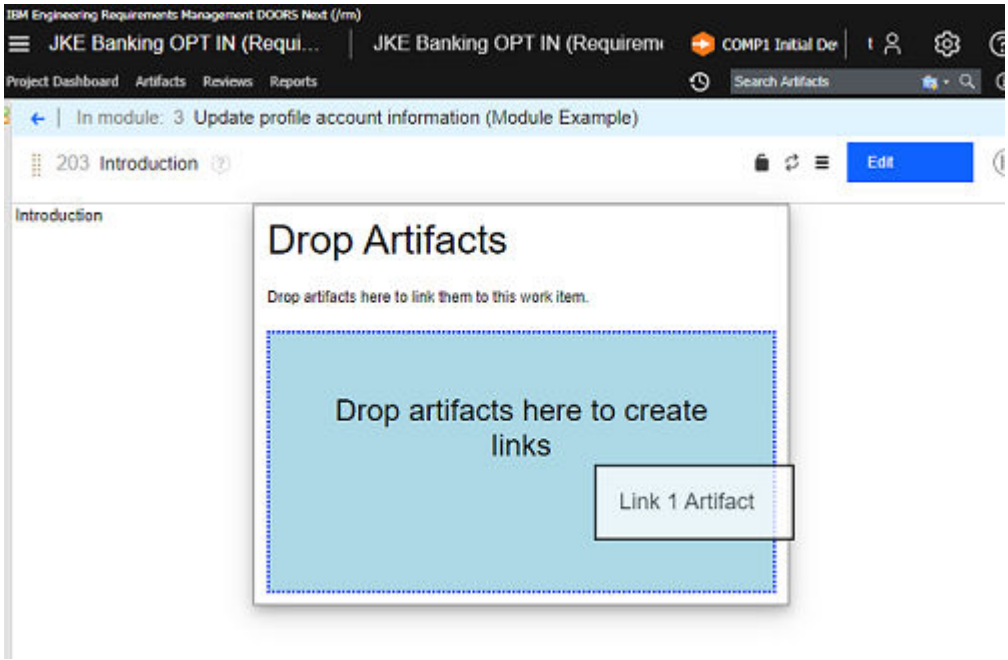
You can link requirements artifacts within a single artifact editor, dashboard list, module, or links explorer by using the drag-and-drop method. You can also use these methods to link requirement artifacts to work items in IBM Engineering Workflow Management (EWM) or test artifacts in IBM Engineering Test Management (ETM).

Note: You cannot link artifacts between different global configurations. If you select a configuration in the EWM application, you cannot create a link to another artifact in a different global configuration.

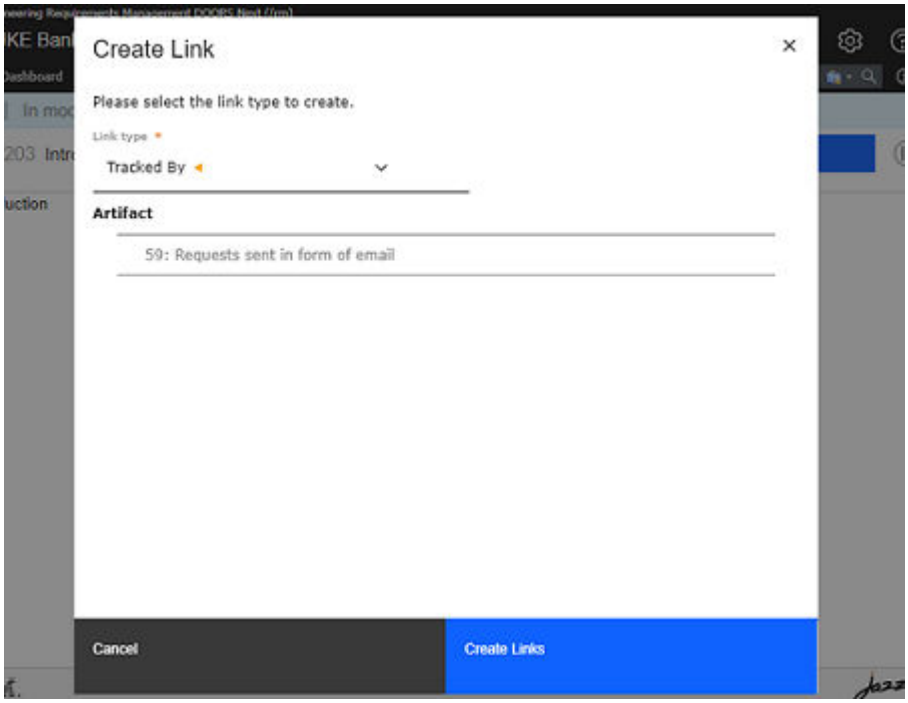
Procedure

1. Open a requirement artifact in the editor mode.
2. Hover the mouse over the left side of an artifact ID until the cursor becomes a four-sided arrow.
3. Use the drag handle to drag the artifact into another tab or window that uses the same browser instance.

4. Drop the artifact into the **Drop Artifacts** window of an editor or grid view.



5. In the **Select the link type** list, select the link type.
6. Click **Create Links**.



7. In the **Links** sidebar section, you can view the linked artifact and the link type.
8. Optional: To link single or multiple requirement artifacts to work items in EWM, drag the requirement artifacts into another tab or window and drop the requirement artifact in the work item editor. Specify the link type and save the work item. Similarly, you can drag work items and drop them into an artifact editor to create OSLC links.
9. Optional: To link single or multiple requirement artifacts to test artifacts in ETM, drag the requirement artifacts into another tab, or window and drop the requirement artifact in the test artifact editor. Only requirement collections or modules can be dropped into the test plan editor, while only requirements can be dropped into the test case editor or test script editor. For the test script editor, drop the requirement artifacts into the specific manual script step directly to create the **Validates Requirement** links, provided that the Test Script Preferences project property has the option enabled to **Allow linking between test script steps and requirements**. Similarly, you can drag test plans or test cases and drop them into an artifact editor to create OSLC links.

Using copy-and-paste method

About this task

You can use the existing **Copy Artifact** option in a module or artifact list, and the existing **Paste As Link** option on another artifact to create a new link. You can use the new menu options of **Copy Artifact** and **Paste As Link** in a single artifact editor to carry out the same operations.

You can use the following keyboard shortcuts for the copy-and-paste feature everywhere drag and drop is available:

- Copy Link: Ctrl+C (Windows) or Command+C (Mac)
- Paste as link: Ctrl+Shift+V (Windows) or Command+Shift+V (Mac)

Procedure

1. Select the artifact to link from and then click **Copy Artifact**.
2. Select an artifact in another artifact and click **Paste As Link**.
3. Click **Create Links**.

Filtering artifacts for links to other applications

When viewing artifacts, collections, and modules in the Artifacts, Collections, or Modules pages, you can filter artifacts that are linked to other applications integrated in the IBM Engineering Lifecycle Management (ELM).

Before you begin

Your project must be configured for ELM integration and you must have links to artifacts in other applications.

About this task

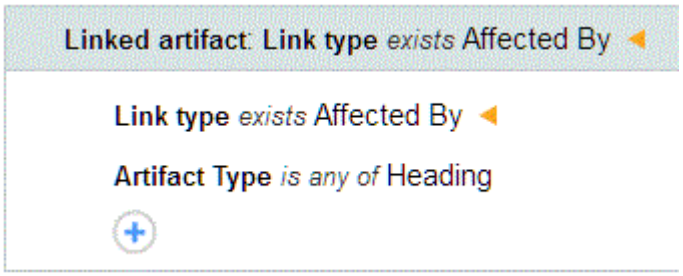
You can filter and display columns for the following link types:

- *Implemented By*, *Tracked By*, or *Affected By* links to development artifacts in the Change and Configuration Management application.
- *Validated By* links to test artifacts in the Quality Management application.
- *References* and *Referenced by* links to requirement artifacts in any other Requirements Management application.

You can display columns, but you cannot filter by the link types for the Rhapsody Model Manager application.

Procedure

1. Open the Artifacts, Collections, or Modules page.
2. Click the **Add filter** icon  .
   - To filter artifacts based on their links to other ELM applications, in the **New Filter** window, select **Link type** from the **Choose an attribute** column.
     a. In the **Choose values** column select the value that corresponds to the lifecycle application that you want to filter by and click **Add**. See Link Types for the list of all the link types associated to ELM applications.
     b. To specify additional filters to the **Link type** attribute, click the **Edit** icon and add conditions.

     In this example, the filter will return all artifacts that have an **Affected by** link to an artifact of type **Heading** .
   - To filter artifacts based on the status of the linked test and development items. In the **New Filter** window, select **Limit by lifecycle status** attribute. From the **Choose an attribute** column, select:
     – None to display artifacts with no linked work items.
     – Open or Resolved to display linked work items with those statuses.
     – All Resolved to display requirement artifacts where all associated work items are resolved.
     – Passed, Failed, Unattempted to display all test items with those statuses.
     – All Passed to display requirement artifacts where all associated test items have passed.

– All to display all development or test items

3. To display artifacts based on their links to ELM applications, click  **Configure page settings** > **Configure columns to display**. Select the link type that corresponds to the lifecycle application that you want to filter by and click **Add**. For example, select any one of the following link type options:
   - **Implemented By**, **Tracked By**, or **Affected By** to display associations with development artifacts.
   - **Validated By** to display associations with test artifacts.
   - **References** and **Referenced by** to display associations with requirement artifacts.
   - **Derives Architecture From Element**, **Refined By Architecture Element**, **Satisfied By Architecture Element**, and **Traced By Architecture Element** to display associations with design artifacts.

   a) To organize the column display use the **Move Up** and **Move Down** options.

   b) Use the **Format** option to customize the column display. You can select attributes of the artifacts and wrap or trim the link text display.

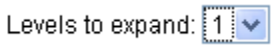
4. To remove the filters applied, click the **Clear all filters** icon  .

Links explorer

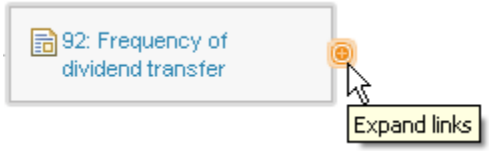
The links explorer displays linked artifacts in a graphical diagram. Use the links explorer to view linked artifact information, to create, delete, and explore linked artifacts, and to remove and modify links.

When you open the links explorer, the artifacts you selected are displayed at a display level of 1.

To dynamically change the link level of the entire diagram, click the relations menu  and from the **Levels to expand** list, select a different link level.

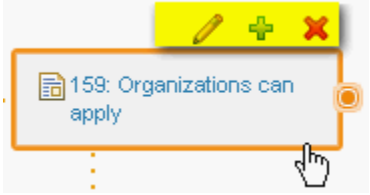


To dynamically expand the link level of a specific artifact, click the **Expand links** icon of the artifact:



To dynamically collapse the link level of a specific artifact, click the **Collapse links** icon:

To view the details of a specific artifact, hover over the artifact; information is displayed in hover text. To edit an artifact, add a link, or delete an artifact, highlight the artifact and click the respective artifact icon:



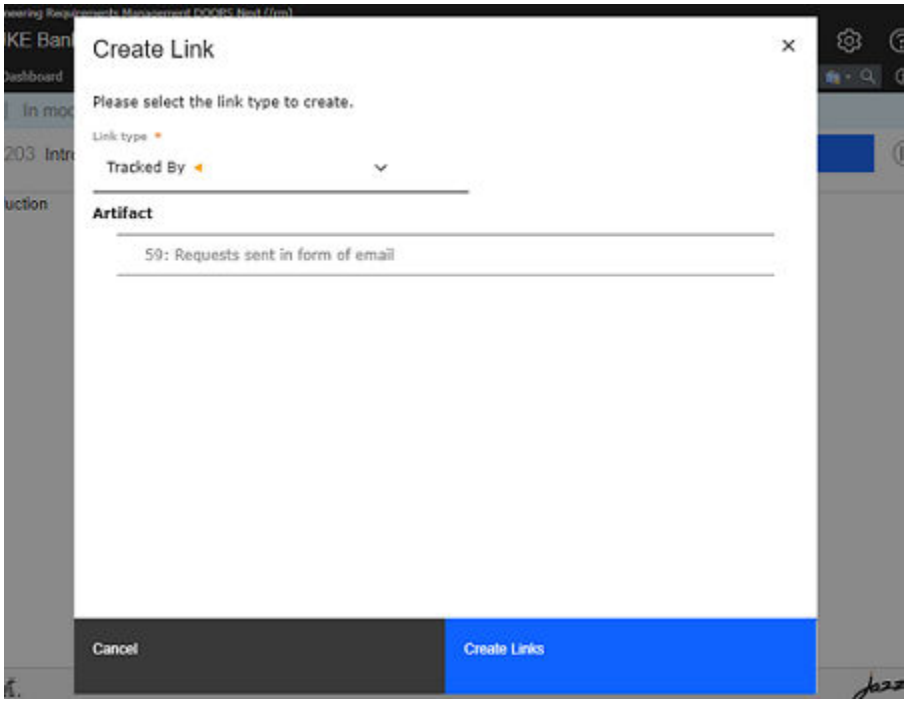
Linking requirement artifacts

You can create link between requirement artifacts with other artifacts across ELM applications by using the drag-and-drop and copy-and-paste methods. When you link requirement artifacts, OSLC link types are created between the applications.

You can drag the requirement artifact from the link explorer using the drag handle that appears when you hover the artifact.

You can also use these methods to link requirement artifacts to work items in IBM Engineering Workflow Management (EWM) or test artifacts in IBM Engineering Test Management (ETM).

You can drag the artifact into another tab or window that uses the same browser instance and drop the artifact into an editor or grid view. When you drop an artifact on the drop target, you can create links between the artifacts. You can select the link types from the Create Link dialog box and then click **Create Links**.



Similarly, you can drag work items from EWM and test artifacts from ETM onto the Link explorer to link the artifacts with requirements artifacts.

You can use the following keyboard shortcuts for the copy-and-paste feature everywhere drag and drop is available:

- **Copy Link**: Ctrl+C (Windows) or Command+C (Mac)

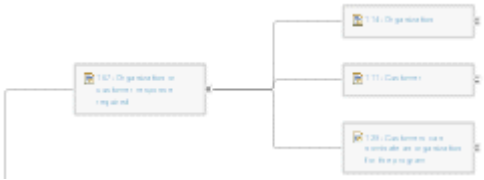
- **Paste as link**: Ctrl+Shift+V (Windows) or Command+Shift+V (Mac)

Other information display options

You can further change the information that is shown in the links explorer by clicking the following icons in the toolbar.

- To change the layout type, click the **Layout Type** menu  . You can choose from the layout types that are shown in the following table.

Table 29. Links explorer layout types and examples

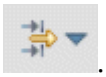
Layout Type	Example
Basic	
Walker	
Radial	

- To change the artifact arrangement, click the **Appearance** menu  . You can choose from the appearance choices that are shown in the following table.

Table 30. Links explorer appearance choices

Appearance choice	Description
Portrait	Display graphical artifacts in portrait style.
Landscape	Display graphical artifacts in landscape style.
Paris Skyline	Displays link lines as angular connections.
Curvy Wires	Displays link lines as curved connections.
Enable Compact View	Reduces the space that is used by artifacts.

Table 30. Links explorer appearance choices (continued)	
Appearance choice	**Description**
Enable Quick Create Mode	Enables the quick creation of artifacts. When you enable this mode, you are prompted to select a default link type, artifact type, and directory. After making these selections, click the **add link** icon on the toolbar of the tree nodes to create a new blank artifact, which is represented through a tree node that is in edit mode.

- To filter the diagram by link type, adjust the primary link levels that are displayed, or specify the link level for the entire diagram, click the **Configure Link Display** menu  .

For more information, see Shortcuts for the Requirements Management application.

Linking requirements to Rational ClearQuest records

You can link requirements with defects, tasks, requests for enhancements, and other record types in IBM Rational ClearQuest. You can link to a new or existing record or artifact.

Before you begin

The Requirements Management (RM) application must be configured for integration with Rational ClearQuest, as described in Integrating the RM application and Rational ClearQuest.

About this task

The capabilities of the RM application in IBM Engineering Lifecycle Management (ELM) are provided by the IBM Engineering Requirements Management DOORS Next (DOORS Next) product.

You can link any artifact type in the RM application, except collections and modules, with any record type in Rational ClearQuest that has a required package applied. There are two link types available for the integration: "Implemented By" and "Tracked By". A "Tracked By" link can only be created from within the RM application.

Typically, teams use "Implemented By" links to associate requirements with development team activities, represented by tasks records in Rational ClearQuest. You can also use "Implemented By" when linking requirements and requests for enhancements. It is typical for teams to use the "Tracked By" link type to track changes in requirements by linking them to defects or Requirements ChangeRequest records. You can vary your team's use of RM artifact types and Rational ClearQuest record types to support your team's process.

Procedure

1. Using the web client, open a requirement or other artifact and expand the **Links** section in the sidebar.
2. Click the **Add Link to Artifact** icon  and select a link type:
   - **Implemented By**
   - **Tracked By**
3. In the login window for Rational ClearQuest, enter your ID, password, and the schema repository that is integrated with your Requirements Management application.
4. In the **Create Link** window, change the link type and artifact container (Rational ClearQuest database), if necessary.
5. Do one of the following:
   - Click **Choose Existing**. Use the **Search Key** field the **Full Text** or **By Unique Key** buttons to search for a record using a text string or a record ID. Select a record in the results list and click **OK**.

- Click **Create New**. Enter the required information for the new record and click **Save**.

To create an "Implemented By" link to an RM artifact from within a Rational ClearQuest record, click the **Links** tab. Click **Add** > **Implements Requirement**. In the **Add Link** window, link to a new or existing artifact.

What to do next

After you create links, you can view and navigate to associated requirements and records from within either tool. Hover over a link to view a summary of the linked artifact or record.

Viewing artifact history

You can view the history of most requirements artifacts. A revision is created each time that you save an artifact. Read-only revisions are organized by time period, such as today, yesterday, past week, past month, or earlier.

About this task

You can restore a previous revision of an artifact so that it becomes the current revision of the artifact, and view the details of the changes that were made to the artifact over time.

Procedure

- To view the history of an artifact:
  a) Open an artifact.
  b) In the editor toolbar, click the **Open History** icon. A history view of the artifact opens on the **Revisions** tab. Each revision is represented by a revision icon.
  c) To see details about a revision, hover over a revision icon in one of the time groups.

  Note: The revision history only shows changes that are relevant to the current configuration.
  d) To open a revision and view its contents, click a revision icon.
  e) After you finish, return to the artifact editor by clicking the **Open Current Version** icon.
- To restore a previous revision of an artifact:
  a) Open the history of the artifact and click the **Revisions** tab.

  Note: You can only restore an artifact version while you are working in a stream.
  b) Click the revision icon that corresponds to the revision to restore.
  c) Click the **Restore** icon .
  d) At the confirmation prompt, click **Yes**.

  The history closes, and the artifact editor opens to show the revision that you selected. This revision is now the latest, or current, revision of the artifact.
- To see a more detailed history of the changes that were made to the artifact, click the **Audit History** tab. This tab shows a complete history of changes that goes back to the creation of the artifact. Scroll to the date you are interested in, and click it to see the details of the change. To return to the artifact, click **Close History**.

Related concepts

“Configuration management in the RM application” on page 6

Troubleshooting the Requirements Management application

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

For details about the log messages, see the Error messages documentation. Read the General troubleshooting and support section to understand the general process for problem determination, troubleshooting, and how to get support from IBM Software Support.

Note: The capabilities that the RM application provides in the IBM Engineering Lifecycle Management (ELM) are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

In some cases, you or an administrator can use the application log files to diagnose problems. If you cannot resolve a problem without help from IBM Software Support, the support representative can use the application log files to find more information about the problem.

If you file a defect or another type of work item about the RM application and want your request addressed quickly, you must provide certain information. For details about what information to provide, see "Guidelines for filing defects and other work items" at https://jazz.net/wiki/bin/view/Main/FilingDefects.

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Related information

Error messages overview

Managing artifacts by using configurations in the RM application

You can manage changes to artifacts and work in a parallel, multi-stream environment by using configuration management capabilities. These capabilities include creating baselines of projects at specific points in time, reviewing and approving changes to artifacts, and making changes visible to other teams or individuals.

After an application administrator enables configuration management for a project area, teams can work in a parallel, multi-stream environment.

If an application administrator also installs the Global Configuration Management application, team members that are assigned as configuration leads can create global configurations and add local configurations (streams and baselines) to them.

After a configuration lead creates global configurations, when you switch to a global configuration, you can create and view links to artifacts in other RM project areas and other IBM Engineering Lifecycle Management (ELM) project areas that support configuration management. You can also view all the artifacts that make up a version of a product or system. To work in the context of a global configuration, select the configuration that you want from the **Current Configuration** menu.

You can use following configuration management functions to manage the artifacts:

Select a configuration: The name of the configuration that you are working in is shown on the toolbar, as part of the **Current Configuration** menu. Use this menu to switch configurations and to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other ELM applications, select a global configuration. For more information, see Selecting a configuration to work in.

Manage configuration details: You can open a configuration to see related configurations, manage details, compare configurations, and create local configurations. For more information, see Managing configuration details.

Create streams: A stream is modifiable set of versioned artifacts. You can add, edit, and delete versions of artifacts in a stream. All team members who have access to the project area can access its streams. For more information, see Creating streams.

Create baselines from streams: A baseline is a read-only set of artifacts and their versions. Create baselines to capture the state of a stream at a specific point in time, and to define a starting point for new

work. For example, create a baseline of a stream and use it as the basis of a new stream for new work. You can create a baseline of a stream at any point during the project lifecycle, such as before or after a project milestone is reached. For more information, see Creating baselines from streams.

Compare configurations: You can compare configurations in the same project area to determine whether they contain different artifacts (identified by the URI or the name of an artifact), or different versions of the same artifacts. For example, partway through a project, you might compare a stream with its flow target to see which artifact versions are different. You can also compare collections of requirements. At the end of a project milestone, you might compare a stream with its baseline. For more information, see Comparing configurations.

Manage changes to artifacts: Create change sets to group related changes, and control where changes are delivered to. You can link change sets to work items to help identify the changes that are related to a specific purpose or problem. When you finish making changes, deliver your change set to its destination stream. If you do not use change sets, your changes to artifacts or links in a stream are available to everyone who shares the stream as soon as you save your changes. For more information, see Managing changes to artifacts.

Deliver changes to other streams: You can either deliver all the change sets or only selected change sets from one stream to another. For more information, see Delivering changes to other streams.

Accept changes from other configurations: In a collaborative development environment, you might import changes from another stream or baseline so that you can use them in the stream you work in. To import changes into a stream, you use the **Accept Changes** operation. For more information, see Accepting changes from other configurations.

Show and set link validity and validity summary information: Link validity is the status of links between artifacts to indicate whether the contents of two artifacts meet the intended meaning of the link between them. You can use the link validity status to achieve consistency across artifacts and links as you make changes that propagate through the linked data. For more information, see Showing and setting link validity and validity summary information.

Clone artifacts between RM components: Reorganize how artifacts are grouped in your project by cloning them from one component into another. When you clone an artifact, a new version is added to the component that you clone into. For more information, see .

Troubleshoot configurations: If you encounter errors or exceptions that are related to configuration management or local configurations, review the log file for your ELM application. Other problems can be solved by working in a global configuration context. For more information, see Troubleshooting configurations.

For more information, see the video Effectively manage changes, baselines and engineering streams with Global Configurations.

Related information

Cloning RM artifacts between components

Best practices for configuration management in ELM and the IBM Internet of Things Continuous Engineering Solution

Selecting a component and configuration to work in

The name of the component that you are working in is shown on the toolbar, as part of the **Current Project Component** menu. The name of the configuration that you are working in is shown as part of the **Current Configuration** menu. Use these menus to switch components and configurations, and to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other IBM Engineering Lifecycle Management (ELM) applications, select a global configuration from the **Current Configuration** menu.

Before you begin

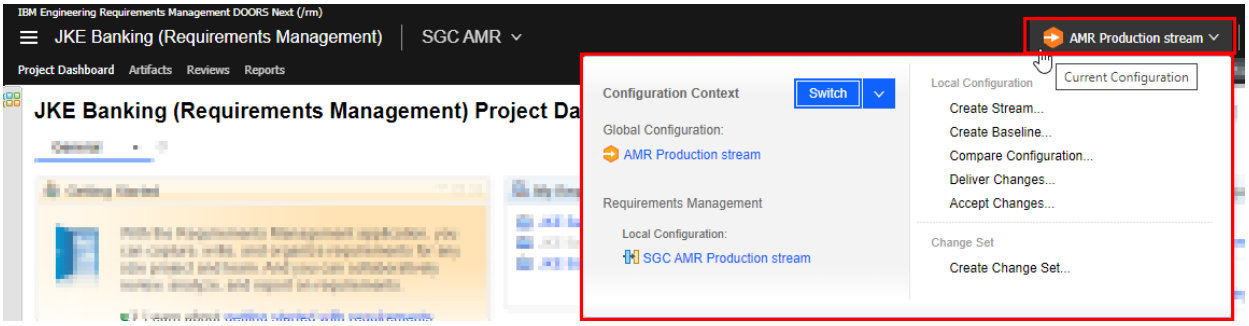
You must be a member of the project that contains the configuration you want to work in. For example, to work in a Requirements Management (RM) stream, you must be a member of the project that contains that stream. To work in a global configuration or a personal stream, you must be a member of that Global Configuration Management (GCM) project.

About this task

In project areas that are enabled for configurations, use the menus on the toolbar to switch between collections of artifacts:

- The **Current Project Component** menu shows the name of the component that you are working with. A component is a like a building block that represents a physical or logical part of your project.

- The **Current Configuration** menu shows which collection of versioned artifacts you are working with from the selected component, and whether you are working in a global configuration or a local configuration. When you set the **Current Configuration** to a global configuration, you can create or see links to artifacts in related configurations in other ELM applications. Consider this example:



  Note: In IBM Engineering Lifecycle Optimization - Engineering Insights (ENI), to see all data, regardless of configuration, select **Current Configuration** > **None (All Configurations)**. Selecting this option shows data from projects that are not configuration-enabled, and all configurations from project areas that are enabled.

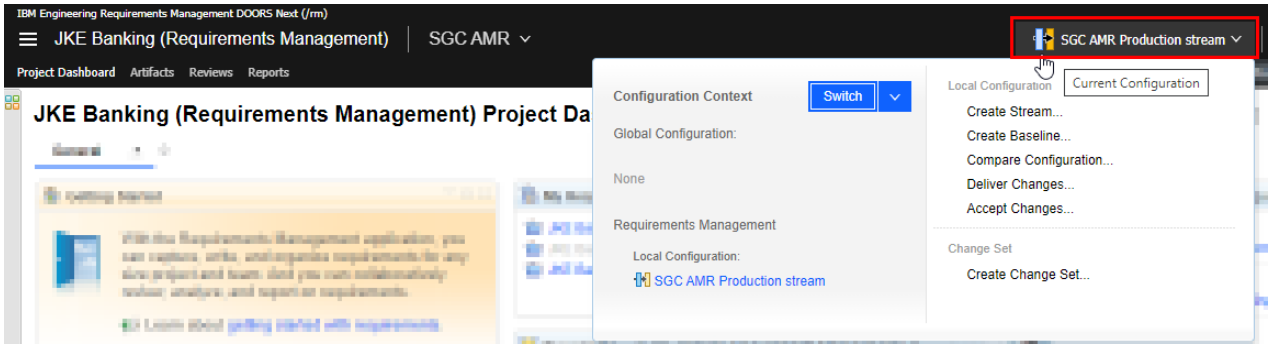
When you set the **Current Configuration** menu to a global configuration, you have a view of the entire collection of requirements, tests, designs, and development artifacts that make up a version of a product. You can create cross-application links to artifacts in the configurations that are part of this global configuration. For example, if you create a test case and you want to link to a requirement, you see only the requirements artifacts that are part of the version of the product or system that you are working on. Working in a global configuration ensures that links resolve to the correct artifact version in another configuration, which is important when teams develop multiple products or systems in parallel. If your organization does development this way, you will likely do most of your work in the context of a global configuration. If you do not work in a global configuration context, you cannot see or link to versioned artifacts in other ELM applications.

Remember: Multiple components can contribute to a global configuration, so you might have to select the component you want: Click **Current Project Component**, and if the component name isn't the in the recently-viewed list, click **Choose Another Component** and follow the instructions. After you choose a component, the Current Configuration menu changes to the configuration that this component contributes to the global configuration. The configuration context is now set. In both the RM and QM applications, explore these menus to see how changing one menu affects the other.

The **Local Configuration** section tells you which collection of artifacts you are working with from a Requirements Management (RM) or Quality Management (QM) application. If the **Global Configuration** section shows a global configuration, the **Local Configuration** section shows the configuration that you are working in as part of that global configuration. When this section specifies a stream, you can edit the

artifact versions in that configuration. When it specifies a baseline, you cannot edit the artifact versions in that configuration.

When the **Current Configuration** menu specifies a local configuration, you are working only in the context of a local configuration, as in this example:



Notice that the **Global Configuration** section does not indicate a global configuration: You can see only the artifacts in the stream or baseline that you are working in. You cannot create or see links to artifact versions in other ELM applications.

The tasks that are available on the menu depend on the configuration management permissions that a configuration lead or team lead has assigned to you. If you think that you are missing permissions, see your configuration lead, team lead, or application administrator.

Procedure

1. On the toolbar, click the **Current Configuration** menu, which shows the name of the configuration that you are working in.
2. On the menu that is shown, beside **Configuration Context**, click **Switch**.
3. Select the type of configuration to switch to:
   - Global Configuration: a configuration that contains other configurations, possibly from other ELM applications. If you choose this option, you can refine your search by selecting a project area from the **Project Area** menu.
   - Local configuration: a configuration that contains artifacts from a configuration-enabled ELM application such as RM or Quality Management (QM).
   - All Data: Available only in ENI. Select to show all data: all configurations from configuration-enabled project areas, and data from projects that are not enabled.
4. From the menu beside the search field, select a modifiable or frozen type of configuration to switch to: for example, a stream or a baseline.
5. Search for a configuration by typing part of its name. If you chose **Global Configuration** in step “3” on page 227 and then chose a project area, you can run a query to search for global configurations.
6. Select a configuration from the list.
7. Click **OK**.

Results

The toolbar shows the name of the configuration that you selected, and the context is now set to that configuration.

Your selection applies across browser sessions.

Managing configuration details

You can open a local configuration to see related configurations, manage details, compare configurations, and create local configurations.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are logged in to a project.

Procedure

1. On the toolbar, click **Administration**  > **Manage Components and Configurations**.
2. Complete the steps depending on the IBM Engineering Lifecycle Management (ELM) application that you use:
   - Requirements Management (RM) application: Click a stream name.

     Tip: To go to another component, click the **Browse Components** breadcrumb link and click a stream name.
   - Quality Management (QM) application: In the left navigation pane, click **Streams** or **Baselines**.

Results

The configuration editor opens. There are several things that you can do from this editor, depending on the ELM application that you use.

In the RM application:

- To change the configuration name, click its name at the top of the page, type the new name, and then click **Save**.
- To list the change sets, child streams, and baselines of this stream, click the corresponding tab name.
- To change the description, click the **Details** tab, provide text that uniquely identifies the configuration, and then click **Save**.
- See the icons near the upper right of the page for tasks that you can complete depending on the type of configuration you are viewing.
- Where it exists, see the **Actions** menu  beside the configuration name for the tasks that you can complete.
- For streams:
  - To view or edit artifacts for a stream, click **Explore Stream**.
  - To see which streams are derived from this stream, click the **Streams** tab. For each stream on the page, see the menu in the **Actions** column for actions that you can take.
  - To see which baselines were created from this stream, click the **Baselines** tab. Then, to view the baseline artifacts, click **Actions** > **Explore Baseline**.

In the QM application:

- To view the details of a configuration, hover over its name in the table.
- To change the configuration name or description, click its name in the table. Then, in the properties window, provide text that uniquely identifies the configuration, and click **OK**.
- See the **Actions** menu  beside the configuration name for the tasks that you can complete.

- To work with the artifacts in a configuration, click its name or click **Actions** > **Switch to This *configuration type***.
- See the controls above the table to change how the page is shown.

What to do next

To return to an ELM project area, click **Home Menu**  , and select the application and project area to return to. On the toolbar, verify that you are in the configuration that you want to work in. To switch configurations, click the configuration name.

Creating streams in configuration-enabled projects

A stream is modifiable set of versioned artifacts. You can add, edit, and delete versions of artifacts in a stream. All team members who have access to the project area can access its streams.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Log in to a project area in an IBM Engineering Lifecycle Management (ELM) application.
- In configuration-enabled projects, you must have permission to create streams.
- For Quality Management (QM) application to exclude test results and test execution records when you create streams, set the corresponding configuration management preference. You might exclude them if the test results or test execution records from one project do not matter to another project.
- When you create a new stream, the test suite or test case results that are part of an in-progress test suite or test case execution record are archived for the new stream. Complete or cancel the test in the original stream.
- Understand how your organization uses streams and baselines that are based on how many teams need to work in parallel on different versions of the same artifacts. To learn more, see Patterns for stream usage on Jazz.net.

About this task

Multiple streams in a project area can contain a copy of the same artifact. Changing an artifact in your stream does not affect the same version of that artifact in other streams until other team members choose to bring your changes into their stream by using the **Accept Incoming Changes** operation in the Requirements Management (RM) application or the **Merge Configuration** operation in the QM application.

Procedure

1. On the toolbar, click the current configuration name, and then click **Create Stream**.
2. Follow the prompts.

   If your current configuration is a stream, a baseline of the stream is created automatically before creating the new stream. The new baseline has the same name as the new stream, with "Initial Baseline" appended. Then, the new stream is created from that baseline.

Results

The new stream is populated with the artifacts of the baseline that it was created from.

What to do next

- **RM application only:**

  - Child streams inherit the change management constraints set on the **Details** tab of the stream editor. For details, see https://www.ibm.com/docs/en/elms/elm/7.0.2?topic=SSYMRC_7.0.2/com.ibm.jazz.vvc.doc/topics/t_admin_chgset_cntrl.html.
  - If you do not use change sets, your changes are visible in the stream when you save your changes to the artifacts. Use change sets to group your changes, which isolates your changes from other team members who might use this stream.
- **QM application only:** To receive an email when artifacts are changed in specific streams, on the product banner click **User Profile**; then, in the **My Preferences for Quality Management** dialog box, click **Change Notifications** > **Send an email notification** and select the streams.

To find and switch to the new stream later, click **Current Configuration** on the toolbar and click **Switch**; then, in the search field of the **Select the Configuration Context** dialog box, enter an asterisk (*) to show all the streams.

If you have permission, you or a configuration lead for the Global Configuration Management (GCM) application might also add the stream to a global configuration, to provide a view of all the artifacts that are used in a version of your product or system.

Related concepts

QM: Comparing and merging test artifacts

GCM application: Creating the global configuration hierarchy

Related tasks

RM: Managing changes to requirements artifacts

Creating baselines in configuration-enabled applications

A baseline is a read-only set of versioned artifacts. Create baselines to capture the state of a stream at a specific point in time, and to define a starting point for new work. For example, create a baseline of a stream and use it as the basis of a new stream for new work. You can create a baseline of a stream at any point during the project lifecycle, such as before or after a project milestone is reached.

Before you begin

- Ensure that you are logged in to a project.
- Your current configuration must be a stream.
- You must have the Configuration Lead role or have permission to create baselines.
- Understand how your organization uses streams and baselines that are based on how many teams need to work in parallel on different versions of the same artifacts. To learn more, see Patterns for stream usage on Jazz.net.

About this task

A baseline captures the current versions of artifacts in a stream. A baseline is a repository object that you can use to return your stream to an earlier configuration; for example, you can preserve the state of a stream when you released a project for testing.

Tip: If your team uses global configurations, you can create a baseline of a stream from the configuration tree view in the Global Configuration Management (GCM) application. See Creating baselines of streams contributed by other IBM Engineering Lifecycle Management (ELM) applications.

Procedure

1. On the toolbar, click the current configuration name; then, click **Create Baseline**.
2. Follow the prompts that you see.

Results

The current state of the stream that you are working in is captured.

What to do next

To navigate to the baseline later, you must switch to it: see "Selecting a component and configuration to work in" on page 225.

At this point, you might create a stream for new work, using the versions of the artifacts in this baseline. If you have permission, you or a configuration lead for the GCM application might also add the baseline to a global configuration, to provide a view of all the artifacts that are used in a version of your product or system.

At any time during the project lifecycle, you can compare the baseline to a stream to see whether they contain different versions of artifacts. See the topic about comparing artifacts or configurations that corresponds to your ELM application.

Related concepts

Workflow for global configurations

Related tasks

Creating streams in projects enabled for configuration management

Comparing configurations in the RM application

You can compare configurations in the same project area to determine whether they contain different artifacts (identified by the URI or the name of an artifact), or different versions of the same artifacts. For example, partway through a project, you might compare a stream with its flow target to see which artifact versions are different. You can also compare collections of requirements. At the end of a project milestone, you might compare a stream with its baseline.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are logged in to a project.

About this task

For details about comparing configurations in the Quality Management (QM) application, see the related topic.

Procedure

1. Select a starting location and complete the associated steps:

Option	Description
Toolbar **Compare the current local configuration (shown in the Configuration Context section of the Current Configuration menu) to another local configuration.** **Note: If configuration management is not enabled, you can still compare baselines with each other or with the current state of the artifacts in your project by using this option.**	a. On the toolbar, click the current configuration name, and then click **Compare Configuration**. b. Select the configuration to compare with, and complete the steps in the wizard. **Note:** This is the only way to compare two baselines. Set the current configuration to a baseline; then, select another baseline to compare to.

Option	Description
Configuration editor **Compare the configuration that is open in the editor to another related configuration. Use this option to easily compare the current stream with other configurations in the project.**	a. From the **Administration** menu  , select **Manage Components and Configurations** and click a stream name. b. Select an icon near the upper right to compare the current stream to the baseline that it was created from, or to its flow target (destination stream). Open other configurations in the editor by clicking their names. If you open other streams in the editor, you can compare them to other configurations by using the **Actions** menu on the **Streams** and **Baselines** tabs. If the configuration is an initial stream: a. Complete step a above. b. On the **Streams** or **Baselines** tab, select the configuration to compare to the initial stream. c. In the **Actions** column, select the compare operation.
Component overview page **Use this page to compare only streams from the same component.**	a. From the **Administration** menu  , select **Manage Components and Configurations**. b. In the **Actions** column, select the check boxes for the two streams to compare. c. Near the upper right, click **Compare the selected configurations**  . d. Complete the steps in the **Compare Configurations** wizard. Use the navigation icons in the upper right of the wizard pages to explore the differences in the configurations.

2. Complete the steps in the **Compare Configurations** wizard. Use the navigation icons in the upper right of the wizard pages to explore the differences in the configurations.

What to do next

The comparison is specific to your session, and can't be shared. If other team members want to see the comparison, they must complete the preceding steps in their browser.

Related information

QM application: comparing configurations

Managing changes to artifacts

Create change sets to group related changes and to control where changes are delivered. You can link change sets to work items to help identify the changes that are related to a specific purpose or problem. When you finish making changes, deliver your change set to its destination stream. If you do not use change sets, your changes to artifacts or links in a stream are available to everyone who shares the stream as soon as you save your changes.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are familiar with *global configurations* and *personal streams* (if your organization uses them).

- Ensure that you are logged in to a project.
- Ensure that you have permission to manage change sets.
- Understand how your organization uses streams, baselines, and change sets based on how many teams need to work in parallel on different versions of the same artifacts. To learn more, see Patterns for stream usage on Jazz.net.

About this task

A change set is a collection of related modifications to shared artifacts that is delivered to a stream, and can later be delivered to another stream. For example, you can manually create change sets to group changes that resolve a specific problem. By grouping related changes and then delivering them as a unit to a stream, you ensure that such groups of changes are made together or not at all.

Some teams might require you to manually create change sets as part of the organization's development process. To prevent unauthorized changes, some teams might also require that change sets be linked to a work item are approved before you can deliver your changes.

To minimize conflicts with other team members' changes, you can do the following actions:

- Use many small change sets and deliver them quickly.
- Modify in a separate stream, and then deliver all changes at once to the original stream.
- Assign one person to make edits to each module.

If you do not create change sets, each time that you save your changes to an artifact or link in a stream, the application automatically creates and delivers a change set. Then, your changes are available immediately to other team members who share the stream. Even though working this way is simple, it can be harder to identify and deliver specific change sets to other streams. Ask your team lead or configuration lead for guidance about whether to manually create change sets to manage your changes.

When your current configuration is a change set, you can see any changes made in the stream immediately, unless the changes in the stream conflict with changes that you have made in your change set. If you have not made any changes in a change set, you can see the same contents as the stream even if the stream changes after you created your change set. If there is a conflict, resolve it before you can deliver your change set to the stream. Some examples of conflicts include changes to the same artifact, changing the order or contents of the same module, changing the contents of the same collection, and modifying the same attribute definition or artifact type.

If you are working in a global configuration, see the **Current Configuration** menu on the toolbar. The configuration context switches when you complete some change set operations:

- When you create a change set, it is added to your personal stream automatically, and the current configuration is set to your personal stream. You can create or view links to artifacts in other project areas while you work in your change set.

  Note: Your personal stream can contain only one change set from a component (if supported) or project area (if components aren't supported). Typically, you should have only one change set at a time in your personal stream. To add a different change set to your personal stream, you must manually replace the change set that is already there. See the related topic about working with multiple change sets.
- After you deliver the change set, it is removed from your personal stream.

For more information, see the related task links.

Procedure

You can work with change sets from the following locations:

- **Current Configuration** menu on the toolbar. In the Change Set section of the menu, see the change set tasks.
- Change Sets editor:

a. From the **Current Configuration** menu, click the link to the stream shown in the **Change Set** section.
b. See the change set tasks near the upper right.

- Change Sets tab of the configuration editor, when you open a stream in the editor:
  a. From the **Current Configuration** menu, click the link to the stream shown in the **Local Configuration** section.
  b. In the configuration editor, click the **Change Sets** tab.
  c. Use the available icons to create change sets and show different views of the change sets in the stream.
  d. In the **Actions** column, click **Actions** > ***action name*** to complete change set tasks:
     – **Deliver Change Set**: Deliver the changes to the stream the change set was created from. You can deliver only one change set at a time. You must deliver changes to this stream before you can deliver those changes to other streams by using the **Deliver Changes** operation.
     – **Discard Change Set**: You can discard only an entire change set; you cannot discard changes to individual artifacts in a change set.
     – **Compare with Stream**: Review the contents of a change set by comparing the versions of artifacts in the change set with the versions of artifacts in the stream that the change set was created from.

Related tasks

Selecting a component and configuration to work in
The name of the component that you are working in is shown on the toolbar, as part of the **Current Project Component** menu. The name of the configuration that you are working in is shown as part of the **Current Configuration** menu. Use these menus to switch components and configurations, and to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other IBM Engineering Lifecycle Management (ELM) applications, select a global configuration from the **Current Configuration** menu.

Controlling changes by enforcing change sets and links to work items in the RM application

Related information

Working with multiple change sets
Opening a local configuration from a global configuration
Working with multiple change sets

Creating change sets in the RM application

A change set is a collection of related modifications to artifacts. You can create change sets to create convenient groupings of changes; for example, a group of changes that resolves a problem. Other team members can load your change set to review your changes before you deliver them.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are familiar with *global configurations* and *personal streams* (if your organization uses them).
- Ensure that you are logged in to a project.
- Ensure that the current configuration is a stream.
- You must have permission to create change sets.
- Understand how your organization uses streams, baselines, and change sets based on how many teams need to work in parallel on different versions of the same artifacts. To learn more, see Patterns for stream usage on Jazz.net.

About this task

When you change artifacts in the context of a change set, all the changes that you make are grouped into one logical unit. This grouping facilitates the review process and makes it easy to share changes with other teams or team members that use different streams.

If you do not create change sets, each time that you save your changes to an artifact or link in a stream, the application automatically creates and delivers a change set. Then, your changes are available immediately to other team members who share the stream. Even though working this way is simple, it can be harder to identify and deliver specific change sets to other streams. Ask your team lead or configuration lead for guidance about whether to manually create change sets to manage your changes.

Procedure

On the toolbar, click **Current Configuration** > **Create Change Set**, and follow the prompts.

Results

The artifacts that you change or create are now grouped in this change set. When you finish changing artifacts, deliver your changes to the stream.

If you are working in a global configuration, the change set is automatically added to your personal stream, and the current configuration is set to your personal stream. You can create or view links to artifacts in other project areas while you work in the change set. After you deliver the change set, it is removed from your personal stream.

Note: Your personal stream can contain only one change set from a component (if supported) or project area (if components aren't supported). Typically, you should have only one change set at a time in your personal stream. To add a different change set to your personal stream, you must manually replace the change set that is already there. See the related topic about working with multiple change sets.

To increase traceability in the development lifecycle and prevent the delivery of unauthorized changes, you can link the change set to a work item.

Related tasks

Selecting a configuration

The name of the component that you are working in is shown on the toolbar, as part of the **Current Project Component** menu. The name of the configuration that you are working in is shown as part of the **Current Configuration** menu. Use these menus to switch components and configurations, and to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other IBM Engineering Lifecycle Management (ELM) applications, select a global configuration from the **Current Configuration** menu.

Linking change sets to work items

“Delivering change sets in the DOORS Next application” on page 239

After you finish adding or changing artifacts in a change set, you can deliver that change set to its stream. The changes are then available to anyone who uses the stream. You can deliver only one change set at a time.

Related information

Working with personal streams

Working with multiple change sets

Opening a local configuration from a global configuration

Linking change sets in the DOORS Next application to work items

To increase traceability in the development lifecycle and prevent the delivery of unauthorized changes, you can track your work in change sets and create links between change sets in the IBM Engineering Requirements Management DOORS Next (DOORS Next) application and work items in the IBM Engineering Workflow Management (EWM) application.

- “Linking change sets to work items” on page 236

- “Viewing links between change sets and work items” on page 237

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are logged in to a project.
- You must have permission to manage change sets.
- A change set must exist.

About this task

You can link a change set to one or more work items.

An administrator can further control changes to artifacts by requiring team members to link change sets to work items or change requests that have at least one approval. The governance of your project or organization determines when this option is enabled. Suppose, at the start of a project or release, this option might not be enabled so that team members might easily deliver many changes. Towards the end of a milestone or release, linking change sets to work items can be enforced so that only authorized changes are delivered. If this option is enabled, review the work item to ensure that it is approved (as defined by the application that manages work items) before you deliver your change set. Dependent change sets must also be linked to approved work items.

Linking change sets to work items

About this task

Links to work items are shown on the **Current Configuration** menu, and in the DOORS Next change set editor. So, you can link your change sets to work items through one of the following ways:

- If a change set exists in the global configuration, or the configuration context is set to the change set itself, click **Current Configuration** > **Link to a Work Item**. Then, follow the instructions in the dialog box.
- If the configuration context is set to a global configuration or a stream that contains the change set, go to the change set editor page to assign links to work items. Follow the procedure.

Procedure

1. On the banner, choose one of the following actions:
   - Click **Administration** > **Manage Components and Configurations**. Then, click the stream name.
   - Click **Current Configuration**. In the **Local Configuration** section, click the stream name.

     Note: If the configuration context is set to another configuration, click **Current Configuration** > **Switch** to switch to a configuration of your choice.
2. In the stream editor, select the **Change Sets** tab. Click the change set name.
3. Click **Add link to work item**  .
4. Follow the instructions in the **Link to a Work Item** dialog box. Click **OK**.

Results

Your change set is linked to the work item.

Tip: You can remove the link from either the work item in the EWM application, or from the change set editor in the DOORS Next application.

About this task

You can see the links between DOORS Next change sets and EWM work items in the following places:

- **DOORS Next application:** Click the **Current Configuration** menu on the banner when you're working in a change set, or open the change set editor.
- **EWM application:** Go to the **Links** tab of the work item. People can follow the link to the change set to see its contents and compare it to the stream it originated from.

What to do next

After your change set is linked to the work item, you can resume your work or choose to deliver your changes.

Related tasks

Selecting a configuration

The name of the component that you are working in is shown on the toolbar, as part of the **Current Project Component** menu. The name of the configuration that you are working in is shown as part of the **Current Configuration** menu. Use these menus to switch components and configurations, and to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other IBM Engineering Lifecycle Management (ELM) applications, select a global configuration from the **Current Configuration** menu.

"Delivering change sets in the DOORS Next application" on page 239

After you finish adding or changing artifacts in a change set, you can deliver that change set to its stream. The changes are then available to anyone who uses the stream. You can deliver only one change set at a time.

Related information

Opening a local configuration from a global configuration

Showing change set contents

View the list of changed resources for a change set on the **Changed Resources** tab of the change set editor.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are logged in to a project.

Procedure

1. Open the change set in the change set editor.
   - If the change set is your current context, on the toolbar, click **Current Configuration** > **Change Set** > ***change_set_name***.
   - If your context is not a change set, or to open another change set, complete these steps.
     a. Click **Administration**  > **Manage Components and Configurations**.
     b. Click the stream that contains the change set to view.
     c. Click **Change Sets** > ***change_set_name***.
2. In the change set editor, click the **Changed Resources** tab.

   The resource changes are grouped into these categories: Types, Links, Folders, Artifacts, Tags, and Comments.

What to do next

To resume working with resources, click a heading on the toolbar (Artifacts, Reviews, and so on).

To complete tasks that are related to the change set, use the icons near the upper right above the table.

Related tasks

"Discarding change sets in the RM application" on page 238
When you discard a change set, the changes that you made to the artifacts are discarded. You can discard only an entire change set; you cannot discard changes to individual artifacts in a change set.

"Delivering change sets in the DOORS Next application" on page 239
After you finish adding or changing artifacts in a change set, you can deliver that change set to its stream. The changes are then available to anyone who uses the stream. You can deliver only one change set at a time.

Related information

Working with multiple change sets

Discarding change sets in the RM application

When you discard a change set, the changes that you made to the artifacts are discarded. You can discard only an entire change set; you cannot discard changes to individual artifacts in a change set.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are familiar with *global configurations* and *personal streams* (if your organization uses them).
- Ensure that you are logged in to a project, and that the configuration is set to the change set to discard.
- You must have permission to manage change sets.

Procedure

On the toolbar:

- If the configuration is set to the change set to discard, click **Current Configuration** > **Discard Change Set**.
- If the configuration is set to the stream that contains the change set to discard:

  Note: To switch to the stream that contains the change set, click **Current Configuration** > **Switch**, and search for the stream.

  a. Click **Current Configuration** > ***configuration name***.

  b. In the stream editor, click the **Change Sets** tab.

  c. In the Actions column beside the change set, click **Discard change set** .

Results

All your changes in this change set are permanently lost.

If you are working in the context of a personal stream, after you discard your change set, it is also removed from your personal stream.

Related tasks

Selecting a configuration
The name of the component that you are working in is shown on the toolbar, as part of the **Current Project Component** menu. The name of the configuration that you are working in is shown as part of the **Current Configuration** menu. Use these menus to switch components and configurations, and

to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other IBM Engineering Lifecycle Management (ELM) applications, select a global configuration from the **Current Configuration** menu.

"Showing change set contents" on page 237
View the list of changed resources for a change set on the **Changed Resources** tab of the change set editor.

Related information

Working with multiple change sets

Working with personal streams

Opening a local configuration from a global configuration

Delivering change sets in the DOORS Next application

After you finish adding or changing artifacts in a change set, you can deliver that change set to its stream. The changes are then available to anyone who uses the stream. You can deliver only one change set at a time.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are familiar with *global configurations* and *personal streams* (if your organization uses them).
- Ensure that you are logged in to a project.
- You must have permission to deliver change sets.
- In some projects, an administrator might require you to link change sets to work items that are approved (as defined by the application that manages work items). If this option is enabled, review the work item to ensure that this condition is met before you deliver the change set.

About this task

An administrator can prevent unauthorized changes to artifacts by requiring you to link change sets to work items or change requests that have at least one approval. The governance of your project or organization determines when this option is enabled. For example, at the start of a project or release, the option might not be enabled so that team members can easily deliver many changes. Toward the end of a milestone or release, the option might be enforced so that only authorized changes are delivered. Dependent change sets must also be linked to approved work items.

Procedure

1. You can deliver a change set to its stream in different ways:
   - If the configuration context is set to the *change set* to deliver, on the toolbar, click **Current Configuration** > **Deliver Change Set**.
   - If the configuration context is set to the *stream that contains the change set* to deliver:

     Note: To switch to the stream that contains the change set, on the toolbar, click **Current Configuration** > **Switch**, and search for the stream.

     a. Click **Current Configuration** > **Local Configuration:** > ***stream name***.

     b. In the configuration editor, click the **Change Sets** tab.

     c. In the Actions column on the left of the change set, click **Deliver change set**.
   - If your team uses global configurations, you can deliver a change set from your personal stream in the Global Configuration Management (GCM) application. Remember, personal streams contain only one change set at a time. See the related topic about working with personal streams. For more information about working with multiple change sets, see the related topic.

2. Follow the prompts and complete the steps in the wizard.

   You can review all changes using the **Standard** delivery of change sets. Additionally, you can speed up or customize the delivery process with the **Express** or **Custom** delivery options.

   - **Express**: You have many changes to deliver and don't need to review them. Automatically deliver all the changes without reviewing them; you are notified for any conflicts.

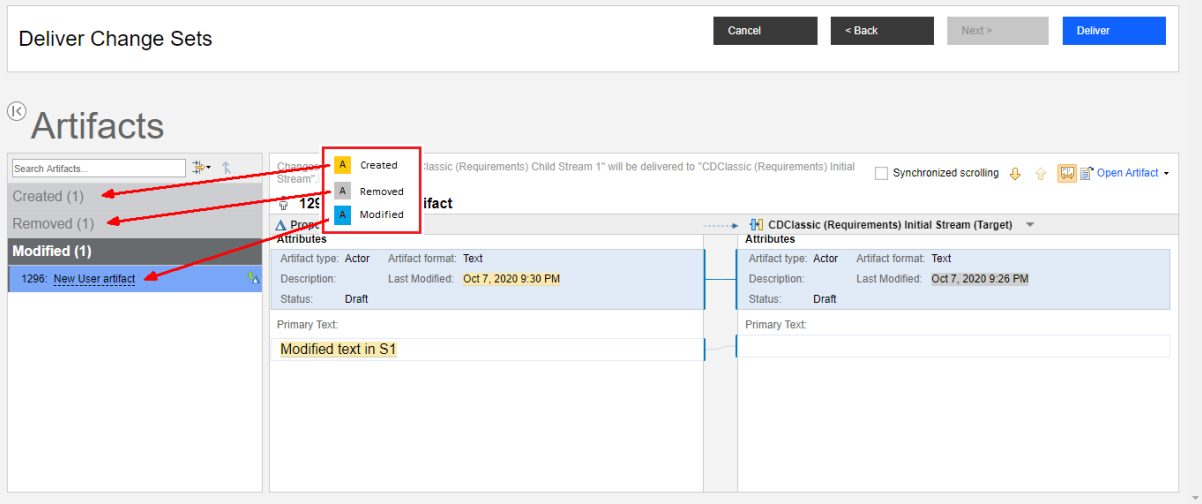
     Automatically resolve conflicts where possible: Select to resolve conflicts that occur when different attributes of an artifact are modified in each configuration. For instance, the primary text modified in the source and the description modified in the target. If the same attribute is modified in both configurations, delivery stops and you resolve the differences.
   - **Custom**: You might have many changes or you want to control which ones are delivered. Select all or a subset of them; choose to review them or not; and specify how the system handles conflicts.

     Select **Preview changes and manually resolve any conflicts** to manually review the changes, or choose from the following options:

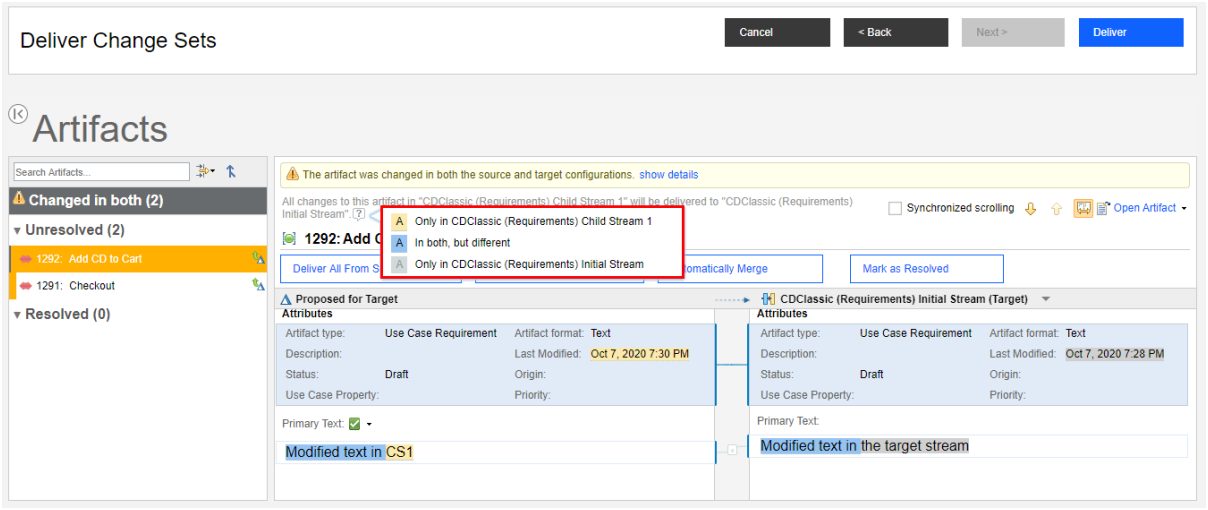
     – **Notify me**: When a conflict occurs between artifacts, the delivery stops and you resolve the conflict.
     – **Automatically merge where possible**: Select to resolve conflicts that occur when different attributes of an artifact are modified in each configuration. For instance, the primary text modified in the source and the description modified in the target. If the same attribute is modified in both configurations, delivery stops and you resolve the differences.
     – **Always overwrite with source**: When a conflict occurs between artifacts, the version in the change set automatically overwrites the version in the target stream.
     – **Specify dominant source attributes**: When a conflict occurs between artifacts, the conflict is resolved by automatically delivering the values of attributes that you selected. When you deliver your changes, if the system detects a conflict between the artifact versions in the source and target configurations, it delivers only the selected attribute values for that artifact version to the target stream.

   If you choose to review your changes, use the controls on the **Deliver Change Sets** page.

   - **View the artifacts in the change set:** Expand and collapse the sections on the left side of the page.



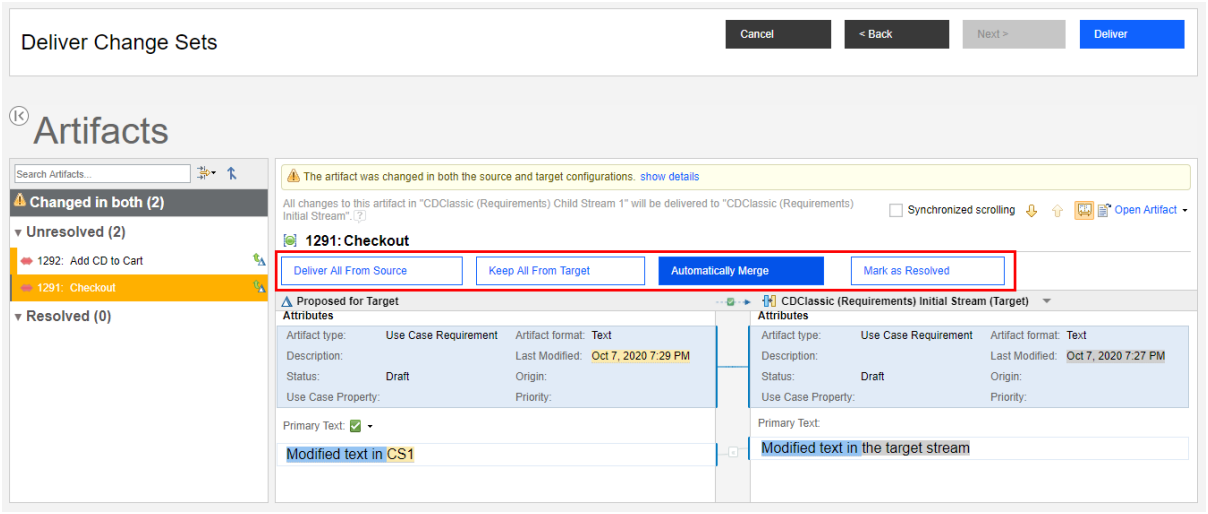
   - **See differences when artifacts changed in both the change set and the target stream:** Expand the **Changed in both** section, and click an artifact. Changes are color-coded in the changes section.

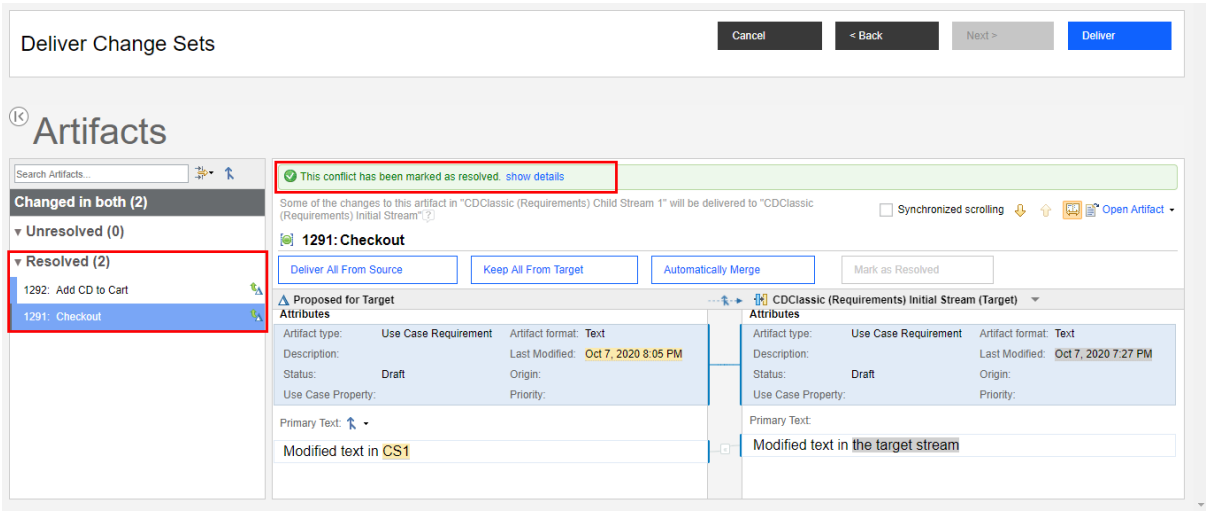


To toggle between a side-by-side comparison and single-pane view of the changed artifacts, click

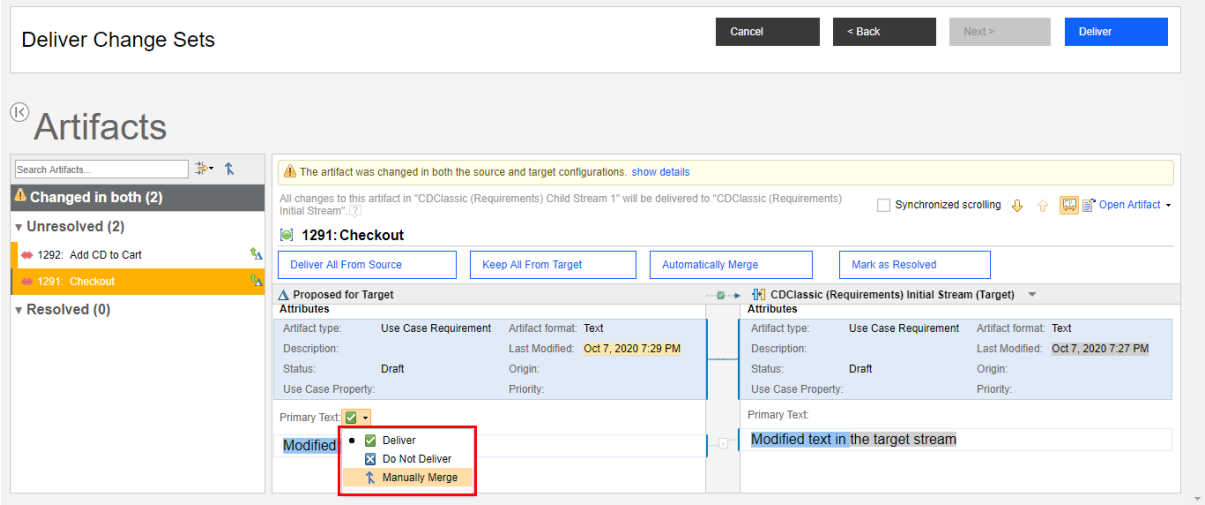
Side-by-side comparison on the toolbar

- **Deliver the changes for an artifact:** Use the **Changed in both** section and the options that are available on the page for delivering the changes.



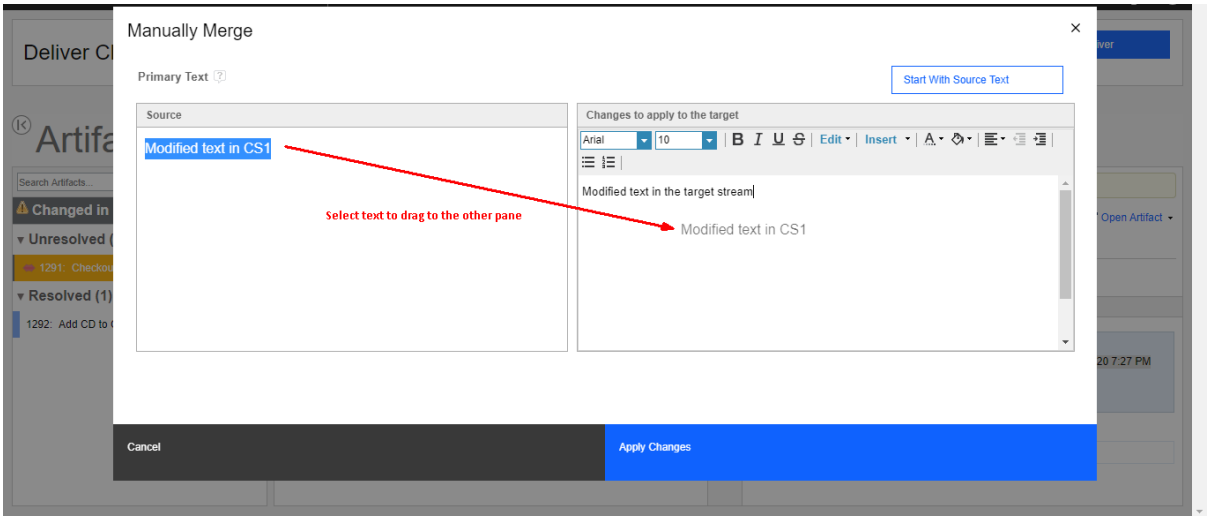


- **Select or exclude individual changes for delivery:** For each changed attribute, select an option.



- **Manually merge changes using the Primary Text field:** When you select the **Manually Merge** menu option for the **Primary Text** field, a dialog box opens with an editable **Primary Text** field. The field is populated with the target value, since that is what you can edit. The dialog box also shows the read-only source value for comparison:
  - You can use either the source or target text as the base to edit and make changes as needed. To use the text of the source artifact as a starting point for your changes, click **Start With Source Text**. The text of the target artifact moves to the other pane so that you can compare them.
  - You can include existing embedded artifacts, links, and terms from both the source and the target by using copy and paste or drag-and-drop.
  - You can copy a link or an image to the clipboard without selecting the entire link text or image. In the read-only primary text content on the left side of the dialog box, right-click a link or an image and click **Copy**.
  - You can also click and drag a link or an image from the left side and drop it into the editable **Primary Text** field on the right.

  Click **Apply Changes** when you finish.



3. Click **Deliver** near the upper right of the page.

Results

The changes are now available in the stream and are visible to team members who use the stream.

If you are working in a personal stream, after you deliver the change set, it is automatically removed from your personal stream.

What to do next

You can now deliver those changes to other streams in the DOORS Next application. You can either deliver all the change sets or only selected ones from one stream to another. For more information, see the related topic.

Related tasks

Delivering change sets to other streams in DOORS Next
You can either deliver all the change sets or only selected change sets from one stream to another.

Selecting a configuration
The name of the component that you are working in is shown on the toolbar, as part of the **Current Project Component** menu. The name of the configuration that you are working in is shown as part of the **Current Configuration** menu. Use these menus to switch components and configurations, and to complete configuration-related tasks, based on your permissions or role. To see and create links to artifacts in related project areas in other IBM Engineering Lifecycle Management (ELM) applications, select a global configuration from the **Current Configuration** menu.

"Linking change sets in the DOORS Next application to work items" on page 235

"Showing change set contents" on page 237
View the list of changed resources for a change set on the **Changed Resources** tab of the change set editor.

"Showing where change sets were delivered" on page 243
View the list of streams that contain a specific change set on the **Changes Contained In** tab of the change set editor.

Opening a local configuration from a global configuration

Related information

Working with personal streams

Working with multiple change sets

Showing where change sets were delivered

View the list of streams that contain a specific change set on the **Changes Contained In** tab of the change set editor.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are logged in to a project.

Procedure

1. Open the change set in the change set editor.
   a) Click **Administration**  > **Manage Components and Configurations**.
   b) Optional: To view change sets in another component, click **Browse Components** > ***component_name***.
   c) Click the stream that contains the change set to view.
   d) In the stream editor, click **Change Sets**.

e) Use the icons above the table to filter how change sets are shown. Change sets can only be delivered to other streams after they were delivered to their own stream: click **Include delivered change sets**  .

f) Click a delivered change set ().

2. In the change set editor, click the **Changes Contained In** tab.

   You see the all streams the change set was delivered to. Hover over a stream name to see more details.

Results

If a change set is delivered to other streams, even as part of a stream-to-stream delivery, those streams are also shown.

What to do next

To complete tasks that are related to the change set, use the icons near the upper right above the table.

To resume working with resources, click a heading on the toolbar (Artifacts, Reviews, and so on).

Related tasks

"Delivering change sets in the DOORS Next application" on page 239
After you finish adding or changing artifacts in a change set, you can deliver that change set to its stream. The changes are then available to anyone who uses the stream. You can deliver only one change set at a time.

"Delivering change sets to other streams in the DOORS Next application" on page 244
You can either deliver all the change sets or only selected change sets from one stream to another.

Related information

Working with multiple change sets

Delivering change sets to other streams in the DOORS Next application

You can either deliver all the change sets or only selected change sets from one stream to another.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are familiar with *global configurations* and *personal streams* (if your organization uses them).
- Ensure that you are logged in to a project.
- If your team requires you to manually create the change sets to group changes, you must first deliver the changes to the flow target (the stream that the change set was created in).
- You must have permission to deliver change sets.
- Understand how your organization uses streams, baselines, and change sets based on how many teams need to work in parallel on different versions of the same artifacts. To learn more, see Patterns for stream usage on Jazz.net.

Procedure

1. On the toolbar:
   a) Ensure that the **Current Configuration** menu is set to the stream that contains the change sets to deliver.
   b) Click **Current Configuration** > **Deliver Changes**.

A dialog box opens.

2. Select the stream to deliver the changes to, click **OK**.
3. Follow the prompts and complete the steps in the wizard.

   You can review all changes using the **Standard** delivery of change sets. Additionally, you can speed up or customize the delivery process with the **Express** or **Custom** delivery options.

   - **Express**: You have many changes to deliver and don't need to review them. Automatically deliver all the changes without reviewing them; you are notified for any conflicts.

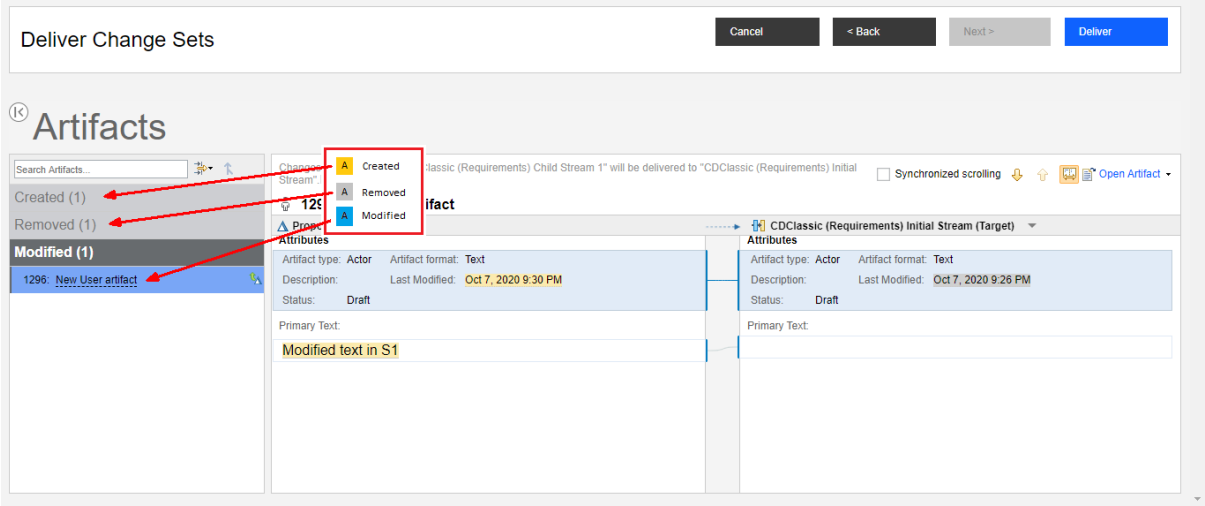
     Automatically resolve conflicts where possible: Select to resolve conflicts that occur when different attributes of an artifact are modified in each configuration. For instance, the primary text modified in the source and the description modified in the target. If the same attribute is modified in both configurations, delivery stops and you resolve the differences.
   - **Custom**: You might have many changes or you want to control which ones are delivered. Select all or a subset of them; choose to review them or not; and specify how the system handles conflicts.
     – Select **Preview changes and manually resolve any conflicts** to manually review the changes, or choose from the following options:
       - **Notify me**: When a conflict occurs between artifacts, the delivery stops and you resolve the conflict.
       - **Automatically merge where possible**: Select to resolve conflicts that occur when different attributes of an artifact are modified in each configuration. For instance, the primary text modified in the source and the description modified in the target. If the same attribute is modified in both configurations, delivery stops and you resolve the differences.
       - **Always overwrite with source**: When a conflict occurs between artifacts, the version in the change set automatically overwrites the version in the target stream.
       - **Specify dominant source attributes**: When a conflict occurs between artifacts, the conflict is resolved by automatically delivering the values of attributes that you selected. When you deliver your changes, if the system detects a conflict between the artifact versions in the source and target configurations, it delivers only the selected attribute values for that artifact version to the target stream.
     – **Choose change sets to deliver**: Select and then click **Add**, and choose the change sets to deliver to the target stream. To remove a change set from the list, from the menu on the left of the name, click **Don't Deliver**.

       Depends on Change Sets: If your changes depend on other change sets (including the change sets from other team members), you must deliver them as well. Inspect the dependencies as shown or by hovering over the link in the **Dependents** column to see which change sets would also be delivered. The dependent change sets are delivered at the same time as yours. However, you can choose to ignore a dependent change set by selecting the corresponding checkbox in the **Ignored** column before delivering the changes.

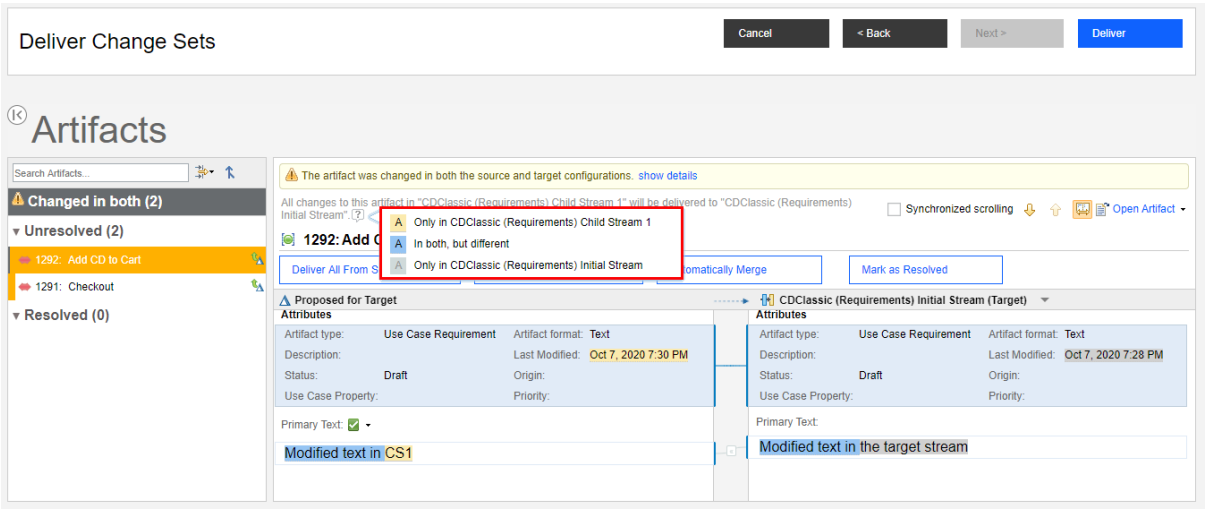
     If you don't choose specific change sets, the system delivers all the ones that were already delivered to the source configuration.
4. Optional: If you choose to review your changes, click **Next**.

   If you choose to review your changes, use the controls on the **Deliver Change Sets** page.

   - **View the artifacts in the change set:** Expand and collapse the sections on the left side of the page.



- **See differences when artifacts changed in both the change set and the target stream:** Expand the **Changed in both** section, and click an artifact. Changes are color-coded in the changes section.

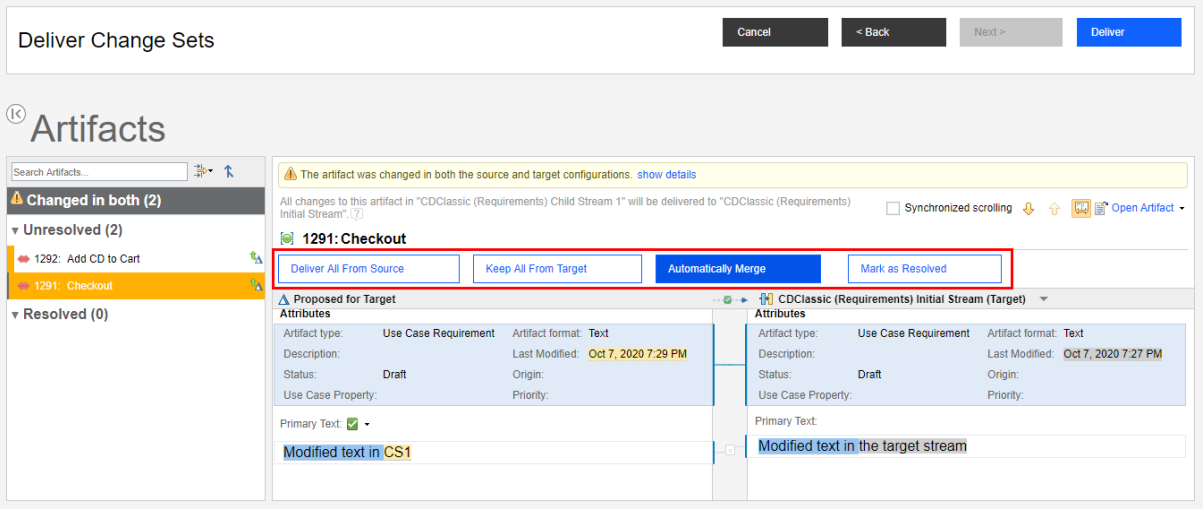


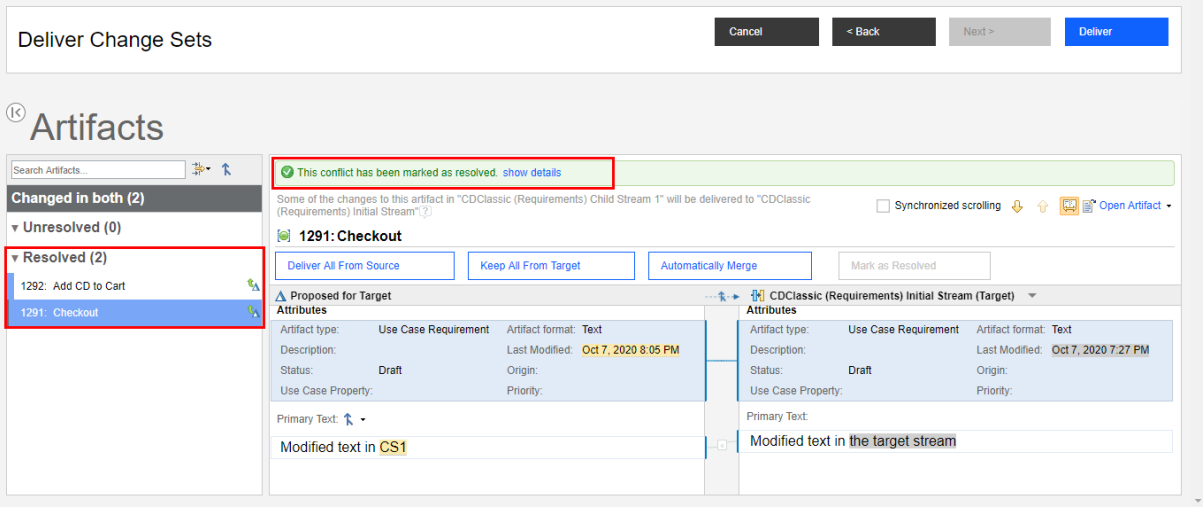
To toggle between a side-by-side comparison and single-pane view of the changed artifacts, click

Side-by-side comparison 

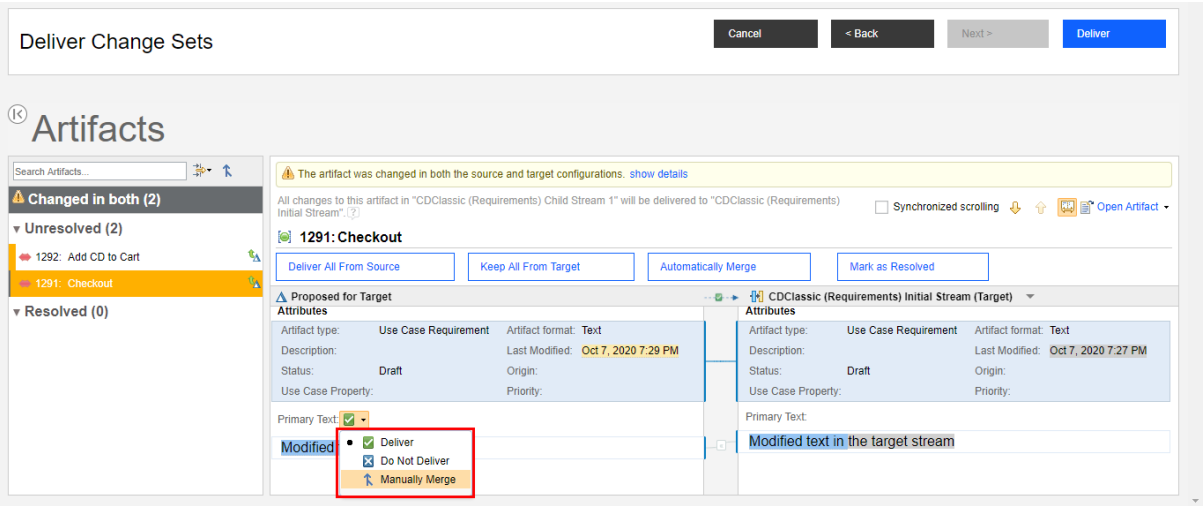
on the toolbar

- **Deliver the changes for an artifact:** Use the **Changed in both** section and the options that are available on the page for delivering the changes.





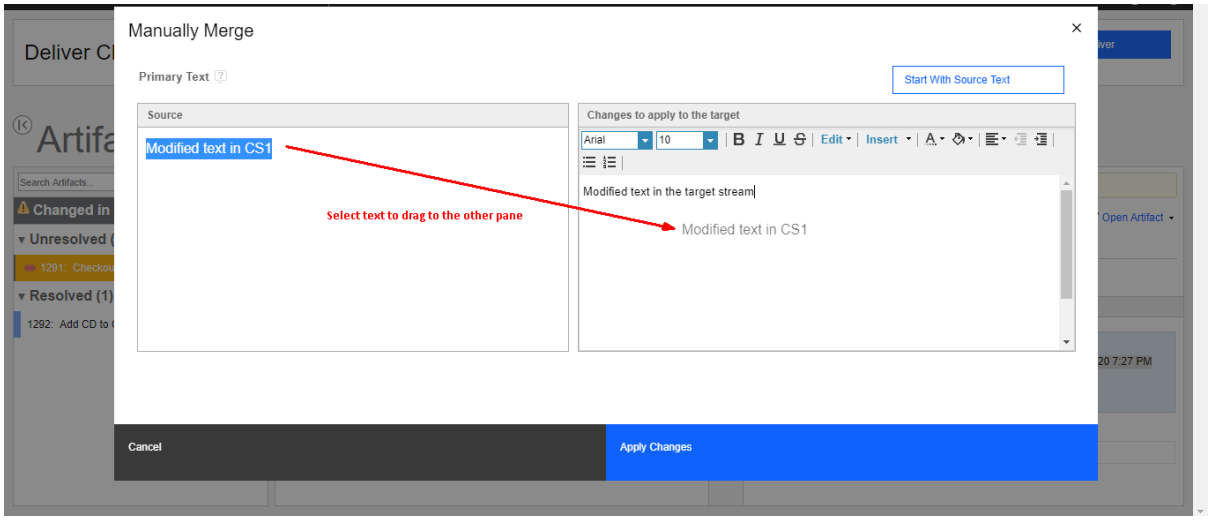
- **Select or exclude individual changes for delivery:** For each changed attribute, select an option.



- **Manually merge changes using the Primary Text field:** When you select the **Manually Merge** menu option for the **Primary Text** field, a dialog box opens with an editable **Primary Text** field. The field is populated with the target value, since that is what you can edit. The dialog box also shows the read-only source value for comparison:

- You can use either the source or target text as the base to edit and make changes as needed. To use the text of the source artifact as a starting point for your changes, click **Start With Source Text**. The text of the target artifact moves to the other pane so that you can compare them.
- You can include existing embedded artifacts, links, and terms from both the source and the target by using copy and paste or drag-and-drop.
- You can copy a link or an image to the clipboard without selecting the entire link text or image. In the read-only primary text content on the left side of the dialog box, right-click a link or an image and click **Copy**.
- You can also click and drag a link or an image from the left side and drop it into the editable **Primary Text** field on the right.

Click **Apply Changes** when you finish.



5. Click **Deliver** near the upper right of the page.

Results

The changes are now available in the stream that you selected to deliver them to. If you work in a personal stream and deliver the change set, it is removed from the personal stream.

What to do next

To view the changes, switch to that stream. For more information, see "Selecting a component and configuration to work in" on page 225.

To see which streams contain a specific change set, see "Showing where change sets were delivered" on page 243.

Related information

Working with personal streams
Working with multiple change sets
Opening a local configuration from a global configuration

Accepting changes from other configurations in the RM application

In a collaborative development environment, you might import changes from another stream or baseline so that you can use them in the stream you work in. To import changes into a stream, use the **Accept Changes** operation.

Before you begin

- Ensure that you are familiar with *project areas*, *components* (if supported), *baselines*, *streams*, and *change sets* (if supported).
- Ensure that you are logged in to a project.
- The changes sets to accept were delivered to the flow target (the destination stream for the change sets). You cannot accept open or active change sets from other streams.
- You must be working in a stream.

Procedure

Select an option:

- To accept changes from another stream or baseline into the current local configuration (shown on the **Current Configuration** menu in the **Configuration Context** section):
  a. On the toolbar, click ***configuration_name*** > **Accept Changes**.
  b. Select the configuration to accept the changes from, and complete the steps in the wizard.
- To accept changes from a stream into a child stream:
  a. On the toolbar, click **Administration**  > **Manage Components and Configurations**.
  b. Click a stream name.
  c. Click the **Streams** tab.
  d. In the Actions column, beside the stream to update, click **Actions** > **Accept changes**. This operation accepts the changes from stream that is open in the stream editor.
  e. Complete the steps in the wizard.

Results

The stream now contains the changes that you accepted.

What to do next

To resume working on artifacts in your project, ensure that the **Current Configuration** menu on the toolbar is set to the configuration that you want to work in. To see links to artifacts in other projects or applications, be sure to select a global configuration. If you do not see the links that you expect to see, contact your configuration lead.

Showing and setting link validity and validity summary information in ELM applications

Link validity is the status of links between artifacts to indicate whether the contents of two artifacts meet the intended meaning of the link between them. You can use the link validity status to achieve consistency across artifacts and links as you make changes that propagate through the linked data.

About this task

See “Link validity in ELM applications” on page 199 to read about link validity concepts and terminology, setting link validity, and about using validity summary information in your project.

For IBM Engineering Test Management (ETM or QM) applications only: If your project is not enabled for configuration management, you cannot see link validity information. Instead, your project would use suspect link traceability. See the related topic to learn about the differences between these features.

Related information

ETM application: suspect traceability

Cloning requirement artifacts

Reorganize how artifacts are grouped in your project area by cloning them from one component into another. When you clone an artifact, a new version is added to the stream of the component that you work in.

Before you begin

- A Requirements Management (RM) project administrator must set up the project area:
  - Enable configuration management for the project area.
  - Import the component properties so that both components define the same properties, such as artifact types, artifact attributes, and link types.
- To clone artifacts into a component's folder within the same project area that contains the component:
  - If the folder is owned by a project area, then you must be a project area administrator. If the folder is owned by a team area, then you must be a team area administrator.
  - You must have permission to create and deliver change sets.
- To clone artifacts from a component in another project area:
  - You must be a member of that project area.
  - The project area must be enabled for configuration management.

About this task

Each configuration-enabled project area that you create contains an initial component. You can create other components to represent smaller logical or physical pieces of your project. Then, you can reorganize the artifacts across the components by either cloning or copying them. Starting in version 6.0.3 when you enable the project area for configuration management, you can create components and reorganize the artifacts from an earlier project version so that you don't have all the artifacts in one configuration.

For example, you have an Airplane project area in a previous version of IBM Engineering Lifecycle Management (ELM). After you upgrade to a version later than 6.0.3, you might reorganize that project area into components such as Engine, Fuselage, Wing, Cockpit, and other components. Then, you can use the clone task to reorganize the artifacts into the new components.

When you clone an RM artifact, a new version is added to the stream that you work in, and that artifact now exists in two different configurations. You cannot add those configurations to the same global configuration.

Use the following table to help you decide whether to clone artifacts or copy them. For details about copying artifacts, see “Copying artifacts between projects” on page 62, which also describes copying between components in RM configuration-enabled project areas.

Table 31. Comparing cloning and copying operations

Decision points	Cloning	Copying
Create a new version of the artifact (artifact URL stays the same)	✔	A new artifact is created with a new URL.

Table 31. Comparing cloning and copying operations (continued)		
Decision points	**Cloning**	**Copying**
Preserve artifact history	✔ The cloned artifact shows only the history that is related to its new configuration context. While that history includes a text entry (not a link) indicating the original component and configuration, you must manually go to that source version to access the history.	A new artifact is created; no history to preserve.
Preserve outgoing links (RM owns only the links to other RM artifacts)	✔ If link validity is enabled, the link validity status of links from the cloned artifacts is set to **Unknown**. You must reset the link validity status; see the related topic.	✔ If link validity is enabled, the link validity status of links from the copied artifacts is set to **Unknown**. You must reset the link validity status; see the related topic.
Ability to view incoming links (links from downstream artifacts in other ELM applications such as Quality Management (QM) and Change and Configuration Management (CCM)	✔ Incoming links to RM artifacts are not cloned because the downstream artifact (the one that originates the link) owns that link. However, because the artifact URL doesn't change when you clone the artifact, you can still see incoming links. They are visible when you work in a global configuration that contains both sides of the link - the configuration with the cloned artifacts and the configurations from other applications that link to them. If link validity is enabled, the status of the link to requirement artifacts is set to **Unknown**. The system detects that the cloned artifact is a different version (even though the URL is the same) from the original artifact in the source component. You must reset the link validity status; see the related topic.	Copied artifacts have a different URL. You must re-create links (and choose to reset the link validity status) to related artifacts in other ELM applications.

Table 31. Comparing cloning and copying operations (continued)		
Decision points	**Cloning**	**Copying**
Ability to work with artifacts in other project areas	✔ You can clone only across components and project areas that are enabled for configuration management.	Both project areas must have the same setting: either both are enabled or both are disabled.

Procedure

1. Switch to the component and stream you want to clone artifacts into.
2. Optional: Consider taking a baseline of the stream so that you can create a new stream from the baseline and discard the stream showing unexpected results.
3. Create a change set and switch to it.

   Click **Current Configuration** > **Create Change Set** and complete the steps in the wizard. Your configuration switches to the new change set, or, if you are using global configurations, your personal stream. If you clone the wrong artifacts or the results are not what you expect, you can discard the change set and not affect the stream, but you must fix the component overlap information that the system has. See the related topic about fixing an overlap.
4. On the **Artifacts** page, in the Folders view, right-click the folder to clone artifacts into and click **Clone from a Component**, and follow the steps in the wizard.

   Remember:

   - By default, all outgoing links from RM artifacts are also cloned. RM owns only links to other RM artifacts, so outgoing links only go to other RM artifacts. To disable the cloning of outgoing links, clear the **Include Links** option. You might disable this feature if you decide that existing links from the artifact are no longer relevant for your project area.
   - When you clone modules, the views from those modules are also cloned.

   If you later decide to clone the artifacts again to get the links, any changes you made to the artifacts in the target component are overwritten.

   When you select a folder, all its artifacts and subfolders are also selected for cloning, but you don't see them in the list. If you later add an artifact or subfolder that is already part of another folder in the list, the artifact is still cloned only once.

   For each artifact that you clone, a new version is added to the change set.
5. Deliver the change set that you created in step “3” on page 252.

Results

Items that are not included when you clone artifacts:

- Links *to* the cloned artifacts *from* artifacts in other applications because the links are owned by the other artifact's application.

  Because cloning preserves the URL of the artifact, you can still see links to the cloned artifact when you work in a global configuration that includes the cloned artifacts and the artifacts that link to them.
- Tags and comments
- Reviews

If later you must add the source and target configurations of the component to the same global configuration, see the related topic about fixing component overlap.

If you clone those artifacts again from the source component into your change set, your changes to them are overwritten.

Related concepts

Links across project areas after enabling configuration management

Related tasks

"Fixing overlapping components" on page 76

After you clone artifacts, two components overlap if they have any artifacts in common, regardless of those artifact versions. The system prevents you from adding configurations of those components to the same global configuration. Fix the component overlap and then add the configurations to the global configuration.

Related information

Components

Defining your component strategy (Jazz.net article)

Viewing and changing link validity status in ELM projects

Troubleshooting local configurations and configuration management

If you encounter errors or exceptions related to configuration management or local configurations, review the log file for your IBM Engineering Lifecycle Management (ELM) application. Other problems can be solved by working in a global configuration context.

Errors and exceptions related to configuration management are written to the log file of the corresponding IBM Engineering Lifecycle Management (ELM) application. By default, this log file is named *ELM_application_name*`.log`

Errors and exceptions related to links between artifacts are in the `ldx.log` file of the Link Index Provider (LDX) application (/ldx).

Some problems, such as not seeing links between artifacts, are solved by switching to a global configuration context from the **Current Configuration** menu on the toolbar.

For details and solutions to other problems that you might encounter, see Troubleshooting configurations and configuration management .

Related concepts

Cross-project links to versioned artifacts after enabling configuration management

Related information

Unexpected local configuration in Current Configuration menu

Troubleshooting configurations and configuration management

Artifact recovery to resolve data inconsistencies

When a team works in multiple configurations, if change sets are delivered between configurations that conflict, data inconsistencies can occur. To fix those inconsistencies, you can recover the artifacts in a configuration manually.

When working in a configuration management enabled project in which where there are multiple configurations , data inconsistencies can occur if there are conflicts when delivering changes. To avoid such conflicts, you should keep change sets relatively small and deliver them as soon as possible. However, if a data inconsistency does occur, you can manually recover missing artifacts in your configuration. For example, consider this scenario:

Artifact recovery scenario

You have three artifacts in the Artifacts folder in the 1.0 stream:

1. From the 1.0 stream, the 1.1 stream is created. The artifacts in both streams are identical.
2. In the 1.0 stream, a team member deletes the Artifact folder and the three artifacts.
3. In the 1.1 stream, you modify two of the artifacts in the Artifacts folder.

4. You accept changes from the 1.0 stream to the 1.1 stream. However, you do not deliver the changes to the modified artifacts that are now in conflict. As a result, the modified artifacts no longer have a parent folder in the current configuration.
5. If you search for the modified artifacts, you can still find them, but you cannot find them if you filter by folder.
6. To fix the problem, go to the **Configuration Management** tab of the project properties and recover the artifacts manually. When you click **Recover**, all folders and artifacts that do not have a parent folder in the current configuration are searched for.

Related concepts

"Configuration management in the RM application" on page 6

Reporting

This section describes how to create and view reports in the Requirements Management (RM) application.

Reporting in the Requirements Management (RM) application

You can run and view reports that are based on a data warehouse and create document-style reports that are about requirement and other lifecycle data.

The Requirements Management (RM) application supports document-style reports and reports that are based on a data warehouse.

Important: Projects that are enabled for configuration management do not populate the data warehouse and are therefore not included in any data warehouse reports. For information on reporting on configuration data, see reporting on data in configurations.

Document-style reports have these characteristics:

- You can generate them by using a report wizard. You can open the wizard from these places in the RM application:
  - The **Reports** page
  - The Actions menu ☰ on the **Artifacts** and **Reviews** pages
  - The Actions menu ☰ in the Modules editor
  - The Actions menu ☰ in the Collections editor
- They come with a set of reports that you can select from the report wizard.
- They use live data, as opposed to data in a data warehouse.

For more information about document-style reports, see Creating document-style reports in the Requirements Management application.

Reports that are based on a data warehouse have these characteristics:

- You can generate them using the Report Builder. This is the easiest and fastest way to generate data warehouse reports.
- They use data from a data warehouse.
- They come with a set of reports that you can run and view.

Related concepts

"Modules in the Requirements Management application" on page 129
A module is a structured document that is composed of multiple artifacts. You can create structure in a module by modifying the order and hierarchy of its artifacts. The artifacts that are created for modules

are stored as module content in a folder. Base artifacts can be used to manage the module artifacts independent of the module.

"Collections" on page 176
A collection is a set artifacts that you create for a specific purpose.

"Reviews" on page 181

Related information

Reporting

Creating document-style reports in the Requirements Management application

IBM Engineering Requirements Management DOORS Next (DOORS Next) includes several document-style reports that you can generate to view information about the artifacts, modules, collections, and module views in your Requirements Management (RM) projects. If the available reports do not suit your needs, you can create custom report templates.

Before you begin

You do not need to install extra components to generate the document-style reports that are included in the RM application.

Note: If you are working in a project that is enabled for configuration management, document-style reports are created by using data from the configuration in which you are currently working. If you are using IBM Engineering Lifecycle Optimization - Publishing (PUB), you can specify the configuration in which you want to create reports.

About this task

You can generate a document-style report on all the artifacts on a page, or on selected artifacts. The following formats are supported:

- HTML
- PDF

  The PDF font must be configured to one that has international character support for Linux or Windows systems. Otherwise, special characters might not be shown in your PDF file.

  For information about how to install fonts on Linux systems, consult the documentation for your specific Linux distribution. As an alternative, if the fonts are available in a non-default directory, you can set the true-type font directory by using the **`com.ibm.rational.rpe.pdf.truetypefontdirectory`** Java parameter. After you set a directory, the formatting driver loads the fonts from that directory. If the necessary font is not available on the operating system, you can set the *substitution font* on the PDF output property to an available font.
- XSL-FO (XSL Formatting Objects)

  This is a standard unified presentation language for documents. You can use this format with post-processors to generate output that can be printed or rendered. You can also use it with scripts to post-process your results. For more information about this format, see XSL Formatting Objects.
- Microsoft Word

  When you generate a report in this format, if you see an error message about the table of contents, right-click the message and click **Update Field**. If you use a Windows operating system, you can configure Word stylesheets on the DOORS Next server to automatically run macros. However, if you use macros on a non-Windows operating system, the following error message is written to the logs: CRRPE3137W The Microsoft Word macro was ignored.

  Note: A limitation in Microsoft Word prevents you from following any links in the generated report. To view the linked artifact, copy the URL and paste it in your browser.

Tip: Although Microsoft Excel is not supported for report generation, you can create a custom view and export it to CSV format, which you can then import into an Excel spreadsheet.

If you insert a file into an artifact, you can download, open, and print the file in the application where it was created. For more information, see “Inserting files into requirement artifacts” on page 119.

Procedure

1. You can generate a document-style report on the artifacts in your projects in several ways. Choose one of the following approaches.
   - If you are new to the RM application and want to try the reporting features, complete the following steps.
     a. In your RM project, click **Reports**.
     b. On the **Reports** page, click **Generate a report**.
   - If you are working with artifacts, modules, collections, or module views in the grid, you can generate a report by completing the following steps.
     a. On the **Artifacts** page, choose the artifacts to include in the report. You can use a filter to find and show specific artifacts. See “Filters and views for artifacts in requirements projects” on page 111.
     b. Click the Edit icon  and click one of the following menu items.
        – To report on artifacts or collections, click **Generate Report for Artifact**.
        – To report on modules, click **Generate Module Report for Artifact**.
        – To report on module views, click **Generate Report for View**.
2. In the Create a report wizard, select the type of report to create. The list of available reports depends on the artifacts that you selected.

   When you generate a report from a module, the Create a Report dialog box stores your most recent settings. These settings persist across sessions and can be reused for generating more reports.
3. Click **Next** and complete the steps in the wizard.

Results

The report is saved in the location that you specified.

Creating custom document-style reports

You can create custom report templates that are based on PUB, and then create your own document-style reports from those templates.

You must be familiar with the REST APIs for accessing report information. You must also have a full PUB license. For more information, see Customizing document-style reports and Making document-style reports available to viewers.

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Related concepts

“Reporting in the Requirements Management (RM) application” on page 254
You can run and view reports that are based on a data warehouse and create document-style reports that are about requirement and other lifecycle data.

“Filters and views for artifacts in requirements projects” on page 111

Filters and views are useful for sorting and displaying artifacts that are based on specific criteria. You can use filters and the configure page settings to display artifacts, and then save this configuration as a view to use later.

"Exporting requirements artifacts to CSV and spreadsheet files" on page 161
You can export text-based artifacts from a requirements project into comma-separated values (CSV) files or into spreadsheet (XLS and XLSX) files. The content of the exported file is governed by the columns that are in the current view.

Running data warehouse reports in the Requirements Management (RM) application

You can run and view requirements management metrics reports that are based on the data in the data warehouse. The reports show information about requirement artifacts and traceability information about related quality management and change management data.

Before you begin

Before you can run or view a data warehouse report, you must install Report Builder.

Important: Projects that are enabled for configuration management do not populate the data warehouse and are therefore not included in any data warehouse reports. For information on reporting on configuration data, see reporting on data in configurations.

About this task

Important: Metrics about requirements management are not collected in the data warehouse by default. For information about enabling data collection, see Collecting data with the data collection component.

Tip: When an artifact is in a module, it represents a requirement in the context of that module and generates two separate artifacts in the data warehouse. In certain reports, such artifacts might be shown twice in the same report.

Procedure

Create a report in Report Builder, selecting Data Warehouse as the data source.

Results

The report runs, the results are shown, and information about the report is shown.

Related concepts

"Reporting in the Requirements Management (RM) application" on page 254
You can run and view reports that are based on a data warehouse and create document-style reports that are about requirement and other lifecycle data.

Related tasks

"Creating document-style reports in the Requirements Management application" on page 255

Related information

Report Builder

Collecting data with the Data Collection Component

Reports that are provided with the Requirements Management (RM) application

The Requirements Management (RM) application includes document-style reports from the **Create a Document-Style Report** wizard. You can use the reports to analyze requirements and identify trends in projects.

The document-style reports that are available in the **Create a Document-Style Report** wizard are listed in Table 1.

Important:

- Metrics about requirements management are not collected in the data warehouse by default. For information about enabling data collection, see Collecting data with the data collection component.
- Projects that are enabled for configuration management do not populate the data warehouse and are therefore not included in any data warehouse reports.

Table 32. Reports in the Document-Style Report wizard.

Name	Description
Use Case Diagram Specification	Shows organized requirements by use case diagram.
Requirements Specification	Shows both functional requirements, such as use cases, and non-functional requirements, such as supplementary requirements.
Traceability Report	Shows a requirement-centered view of links to work items that implement the requirements and to test suites that validate the requirements.
User Interface Specification (by Screen Flow Diagram, by Sketches, and by Storyboards)	Shows the artifact description, artifact type, and images of the specified graphical artifacts.
Audit History	Shows the history of changes to the selected artifacts.
Reviews	Shows details about the progress and content of the reviews, including the creator, project start date, due date, and overall state. This report is in the Create a Document-Style Report wizard only when you open the wizard from within a review.
Print Module as a Book	Shows the module as a book that you can print.
Print Module as a Table	Shows the module as a table that you can print.

Requirements management reportable REST API

The Requirements Management (RM) application provides a reportable REST API, which can be used by live reports and by data collection jobs to access RM application data.

For information about reportable REST API resources that the RM application provides, see the Reportable REST API documentation on Jazz.net.

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Related information

Requirements management data dictionary

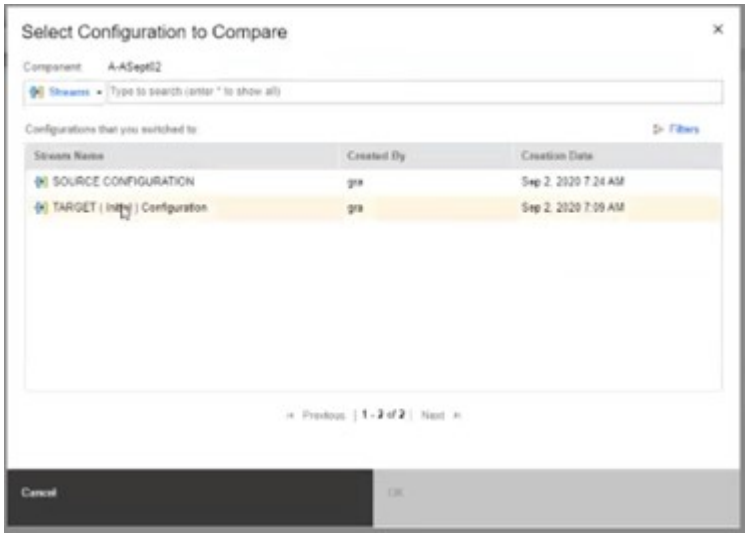
Creating compare configuration report

You can create a configuration comparison report that contains the differences between two related configurations, baselines, streams or change sets. The comparison report provides information that is related to elements that are found in source and target configurations, and the elements that are found in both configurations. The compare utility wizard is enhanced to create the comparison report.

Procedure

1. From the Administration menu  , select **Manage Components and Configurations**.
2. Click the current configuration name, and then click **Compare Configuration**.

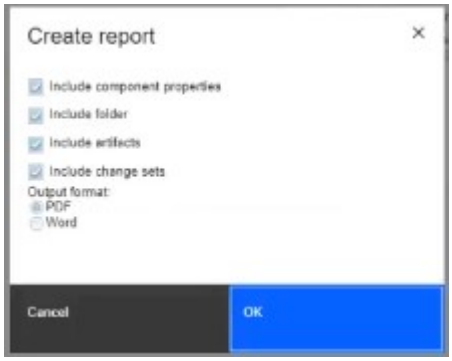
3. **Select Configuration to Compare**, which you want to compare with. (Source and target configurations).



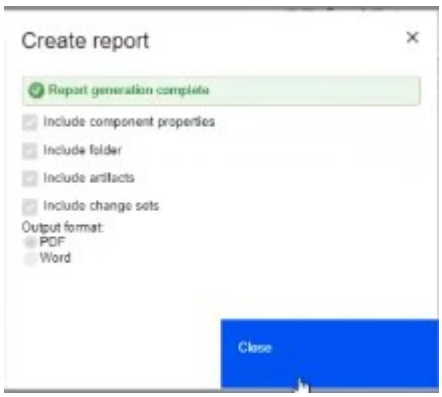
4. Click **Print report** to create the report of the selected configurations.

5. Select one of the various following options for creating the report:
   a. Include component properties.
   b. Include folder.
   c. Include artifacts.
   d. Include change sets.

   Note: The change sets included in the report are the ones that are used for the comparison. If an artifact is changed several times, then only the last change set is included in the list of change sets.
6. Select the output format in the **Create report** dialog box.
   a. PDF
   b. Word



7. Click **OK**.



- The report is generated. The changes are visible in a special style. The gray elements are old changes and the yellow highlighted changes are new changes that are available in source stream.

Warning: The Compare configuration report requires a large Java Virtual Machine (JVM) heap setting in DOORS Next server. You must take note of the following points:

- A single report run can cause DOORS Next server to crash, if sufficient heap memory is not available to the JVM.
- The API used to generate Word and PDF reports usually requires a large heap in the final stage of report generation. In addition, the amount of heap that is required to run your report varies greatly depending on the comparison. If you are comparing a baseline to the current stream and you choose an older baseline, it may multiply the amount of heap that is required to process the report.
- Customers who perform many ReqIf or CSV or MS Word imports are likely to need more heap to process the compare configuration report.
- Depending on the data shape, to successfully generate a compare configuration report of 500 MB may require 12-16 GB additional heap per concurrent report generation. To prevent the generation from having a large impact on other server operations, a larger heap is advised.
- For more information, review the following technote: IBM Engineering Lifecycle Optimization - Publishing: Aspose.Words out of memory error when generating document-style report from DOORS Next

Troubleshooting

This section describes how to troubleshoot and find support for the Requirements Management (RM) application.

Read the General troubleshooting and support section to understand the general process for problem determination, troubleshooting, and how to get support from IBM Software Support.

Troubleshooting the Requirements Management application

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

For details about the log messages, see the Error messages documentation. Read the General troubleshooting and support section to understand the general process for problem determination, troubleshooting, and how to get support from IBM Software Support.

Note: The capabilities that the RM application provides in the IBM Engineering Lifecycle Management (ELM) are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

In some cases, you or an administrator can use the application log files to diagnose problems. If you cannot resolve a problem without help from IBM Software Support, the support representative can use the application log files to find more information about the problem.

If you file a defect or another type of work item about the RM application and want your request addressed quickly, you must provide certain information. For details about what information to provide, see "Guidelines for filing defects and other work items" at https://jazz.net/wiki/bin/view/Main/FilingDefects.

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Related information

Error messages overview

Log file locations for the Requirements Management (RM) application

If you encounter errors or exceptions while you are using the Requirements Management (RM) application, you can use the generated log files to research the issues and find resolutions for them. The capabilities that are provided by the RM application are licensed as IBM Engineering Requirements Management DOORS Next (DOORS Next).

Requirements management server logging information

The log files in the RM application include `rm.log` and `jts.log`.

If you use IBM® Rational® Quality Manager, the default `rm.log` file location is *`WebSphere Install Dir`*`/profiles/AppSrv01/logs`.

Note: For ELM version 7.0.2 SR1 iFix015 and later, the logging property file name and configuration parameters are changed because of the move to log4j2. For more information on the updates, see IBM Support portal.

The location of a log file is determined by the `log4j.properties` file in the *`JAZZ_HOME/log_file_name`* directory. The default setting for the *`JAZZ_HOME`* directory is `log4j.appender.logfile.File=logs`. For example, for the `jts.log` file, the default setting is `log4j.appender.file.File=logs/jts.log`.

The format of the log file is supported by IBM Tivoli® Log Analyzer. To analyze a log file, import the file into that tool.

For the location of log files for other applications and servers, see Log file locations

Related information

Error messages overview

Enabling logging in the web client for the RM application

You can enable logging in the web client for the Requirements Management (RM) application to capture information about events, processes, and other activities, which you can use for debugging purposes. To access the log messages in the web client, you specify a log level in the URL for the application.

To enable logging in the web client, include the **`clientlog`** parameter in the RM application URL. This parameter specifies the level and type of logging that occurs when the RM application is used. By default, the log level is set to 4 (ERROR). For example, the following URL captures debugging-related information and log messages about processes, events, and important decision points:

`https://<host>:<port>/rdm/web?debug=true&clientlog=1`

All log messages are written to the browser console.

The following table describes the different logging levels that you can set.

Table 33. Web client logging levels	
Level	**Description**
5 (SILENT)	Nothing is logged.
4 (ERROR)	Use this level to log only errors that break the normal workflow. Typically, his type of error affects the user experience and requires human intervention.
3 (WARN)	Use this level to capture details about unexpected inputs or situations that are not typical, but that do not break the normal work flow. For example, the following situations might generate messages at this level: the use of deprecated APIs, the incorrect use of APIs, and other runtime situations that are undesirable or unexpected, but not necessarily incorrect.
2 (INFO)	Use this level to capture information about high-level events such as session lifecycle calls, database calls, or remote API calls. Information at this level is an abstract of an event: it does not include specific details that are covered by the debug level.
1 (DEBUG)	Use this level to capture details that can help you troubleshoot problems, for example, relevant information about processes, events, and important decision points.
0 (TRACE)	Use this level to generate more detailed output about objects, data structures, and environment compared to the DEBUG level.

Note: The logging levels for the web client are inclusive. For example, if you specify **clientlog=3**, all warnings and errors are logged. To work with the RM application in debug mode, you can use the **clientlog** parameter and set **debug** to true. If you do not work in debug mode, only the log messages that are part of the RM application are included in the web client log.

Examples

If you include **clientlog=1** in the RM application URL, and then open a project that includes link constraint rules, you might see log entries like these:

```
LinkingConstraintsCache: Getting constraints for project <projectURL>
LinkingConstraintsCache: Get constraints for project finished in <#>ms.
LinkTypeUtils: Processing <#> link types for project.
```

If you include **clientlog=1** in the RM application URL, and then open the audit history page for an artifact, you might see log entries like these:

```
AuditHistoryRetriever: Getting artifact history.
AuditHistoryRetriever: Get artifact history finished in <#>ms.
AuditHistoryViewer: Populating <#> audit history change entries for detail pane.
```

Fixing a converter issue while using the server in headless mode on a Linux system

On Linux systems, an error might occur when you start the Requirements Management (RM) server from a command line (headless mode).

Problem

The RM application includes a converter that visually renders graphical artifacts, such as business process diagrams, use case diagrams, parts, sketches, storyboards, and screenflows. The converter runs on the server. When you start the RM server in headless, or console, mode on a Linux system, the action silently fails and the CRRRW8010E error message is displayed.

Solution

Before you can start the server, terminate the Java process and take remedial action. For more information, see "Troubleshooting CRRRW8010E A server error prevented the generation of the content" in Jazz.net article Requirements Management (RM) converter application.

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Related concepts

"Troubleshooting the Requirements Management application" on page 224
The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Recovering missing artifacts from configurations

When a team works in multiple configurations, if change sets are delivered between configurations that conflict, data inconsistencies can occur. To fix those inconsistencies, you can recover the artifacts in a configuration manually.

Problem

When working in a configuration management enabled project in which there are multiple configurations, data inconsistencies can occur if there are conflicts when delivering changes. This could make it seem like artifacts have disappeared from the configuration.

Solution

1. From the Administration menu, click **Mange Project Properties**.
2. Click the **Configuration Management** tab.
3. Under Recover Resources, click the **Recover** button.

Tip: You must complete the recovery process during off hours when other tasks or process are not running as the recovery process might take long time for completion.

For more information, see Artifact recovery to resolve data inconsistencies.

Related concepts

"Troubleshooting the Requirements Management application" on page 224
The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Fixing file preview font issues in other languages on a Linux system

If a preview image for a file looks different from the original document, the server might be missing fonts that were used in the document. Chinese and other international characters do not display correctly by default.

Problem

The file preview image does not display correctly in other languages on Linux systems.

Solution

For languages to display correctly, the administrator must install a font that supports those characters. For more information, see Upload file preview - Adding fonts section.

Related concepts

"Troubleshooting the Requirements Management application" on page 224

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Opening artifacts in multiple browser tabs or windows

If you try to open one or more artifacts in a new tab or window, only one tab or window opens. In addition, a message about pop-up windows is displayed.

Problem

In the Requirements Management (RM) application, you can open one or more artifacts in a new tab or window by using the **Open Artifact** menu. If you try to open artifacts in multiple tabs or windows, after the first tab or window opens, nothing else opens and a message states that pop-up windows are blocked.

Solution

Configure your browser to allow pop-up windows to open. For example, to configure the Chrome browser, when you see the message about pop-up windows, select **Always allow pop-ups** to allow them from the specified location and then click **Done**. After you configure the browser, you can open artifacts in a new tab or window without errors.

Related concepts

"Troubleshooting the Requirements Management application" on page 224

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Opening artifacts in new tabs in the same browser window

If you try to open an artifact in a new tab in the same browser window, a new window opens.

Problem

In the Requirements Management (RM) application, you can open an artifact in a new tab by using the **Open Artifact** menu. However, instead of opening in a tab in the same browser window, the artifact opens in a new window.

Solution

Configure your browser to open new tabs within the same browser window. For example, to configure a Firefox browser, open the browser preferences window. On the **Tabs** page, select **Open new windows in a new tab instead** so that pages are opened in tabs instead of windows. After you configure the browser, you can open artifacts in new tabs in the same browser window.

Related concepts

"Troubleshooting the Requirements Management application" on page 224

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Redirecting HTTP requests in the Requirements Management application

HTTP requests are not automatically redirected to HTTPS.

Problem

In the Requirements Management (RM) application, HTTP requests are not automatically redirected to HTTPS. When this problem occurs, you might see a message that starts with `A connection to the server cannot be established`.

Solution

Redirect HTTP requests to HTTPS by adding an entry to the `web.xml` file of the RM application. For more information about how to redirect requests, see the HTTP requests are not automatically redirected to HTTPS entry in the workaround article on Jazz.net.

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Related concepts

"Troubleshooting the Requirements Management application" on page 224
The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Pasting invalid XHTML text from an external source in the Requirements Management (RM) application

If you paste text from an external source into the Requirements Management (RM) application, the text must be in valid XHTML format. The application validates all XHTML text that comes from external sources.

Problem

If you paste invalid text, a message is displayed and prompts you to resolve the issue.

Solution

When the message is displayed, select an option for how to handle the text. You can try to fix the text, paste the XHTML text as plain text, or choose to not paste the text.

Related concepts

"Troubleshooting the Requirements Management application" on page 224
The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Cutting, copying, and pasting text in browsers with security limits

If you run the Requirements Management (RM) application in certain browsers, you cannot cut, copy, and paste by using the editor menu. If you try to cut, copy, or paste, a security message is displayed.

Problem

For security reasons, some browsers limit application access to the operating system clipboard. For example, in Firefox, you might receive this message: `Your browser security settings prevent automatic copying.` Similarly, in Internet Explorer, you might receive this message: `Do you want to allow this web page to access your clipboard?`

Solution

Use keyboard shortcuts to cut, copy, and paste text. Press Ctrl+X to cut, Ctrl+C to copy, and Ctrl+V to paste. Alternatively, configure your browser to allow application clipboard access.

Related concepts

"Troubleshooting the Requirements Management application" on page 224
The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Related reference

DOORS Next keyboard shortcuts

Updating custom Word templates to use in version 4.0 or later of the Requirements Management application

After you upgrade the Requirements Management (RM) application to version 4.0 or later from a release of version 3.0 or earlier, problems occur in custom Microsoft Word templates.

Problem

In releases of version 3.0 and earlier, custom Word templates use the `.dot` extension. Starting in version 4.0, those templates use the `.doc` extension.

When you upgrade to version 4.0 or later, the templates that are included in the RM application are automatically updated to the `.doc` extension. However, custom templates are not updated. As a result, problems can occur in the custom templates.

Solution

An administrator must manually update the custom templates. For instructions to work around this issue, see Custom Word templates are not updated in an upgrade on Jazz.net.

Related concepts

"Troubleshooting the Requirements Management application" on page 224

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Creating a hyperlink to a local file in the Requirements Management (RM) application

When you create a hyperlink to a local file in the Requirements Management (RM) application, the link might not work.

Problem

After you create a hyperlink to a local file, the link does not work.

Solution

For security reasons, some browsers require that you install a LocalLinks plug-in that enables local link navigation. For more information, see Windows file URI scheme. Alternatively, you can bypass the problem by uploading the target file to the server.

Related concepts

"Troubleshooting the Requirements Management application" on page 224

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Moving artifacts from a folder without save or edit permissions

A user who does not have save or edit permissions for a folder can still move artifacts out of the folder.

Problem

If you set up team permissions and assign team ownership to a folder, those permissions cannot prevent users from moving artifacts out of the folder. Even if users do not have permission to save and edit artifacts in the folder, they can still move artifacts out of the folder.

Solution

This functionality is working as designed.

Related concepts

"Troubleshooting the Requirements Management application" on page 224

The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Error occurs during project template creation for a large project

If an error occurs when you try to create a project template, you can resolve the error by using one of the following solutions:

Problem

Project templates have a default size limit. If you try to create a project template that exceeds the limit, a processing error occurs.

Solution

The default size limit for project template creation is approximately 10,000 artifacts, although that number varies based on the product version. You can override the default limit by placing the server in debug mode.

To place the server in debug mode, follow these steps:

1. Log in as a JazzAdmin user and then go to https://*host*:*port*/rm/admin.
2. Select **Advanced Properties**.
3. Find the `debug.enabled` property.
4. Change the property's value to `true`.
5. Click **Update Property**.
6. Create the project template.
7. Disable debug mode for the server by repeating steps 1 - 3. Then, change the value of the `debug.enabled` property to `false`.

Problem

Project templates have a maximum permissible file size of 1 GB. If you try to create a project template that exceeds the 1 GB size limit, following message is displayed in the server log file- "CRRRS4289E: The project template is too large."

Solution

Create a template with fewer resource types selected and delete any unnecessary large wrapper resources such as compressed files, Visio files, Photoshop files, and then try creating the template again.

Note: Before you create the template, remove large files from the project.

Related concepts

“Troubleshooting the Requirements Management application” on page 224
The Requirements Management (RM) application provides information on troubleshooting different issues and log messages.

Support information for the Requirements Management application

IBM Support provides information about software issues, including technotes, tips, and workarounds.

For more information, see the IBM Support community site.

Troubleshooting local configurations and configuration management

If you encounter errors or exceptions related to configuration management or local configurations, review the log file for your IBM Engineering Lifecycle Management (ELM) application. Other problems can be solved by working in a global configuration context.

Errors and exceptions related to configuration management are written to the log file of the corresponding IBM Engineering Lifecycle Management (ELM) application. By default, this log file is named *ELM_application_name*`.log`

Errors and exceptions related to links between artifacts are in the `ldx.log` file of the Link Index Provider (LDX) application (/ldx).

Some problems, such as not seeing links between artifacts, are solved by switching to a global configuration context from the **Current Configuration** menu on the toolbar.

For details and solutions to other problems that you might encounter, see Troubleshooting configurations and configuration management .

Related concepts

Cross-project links to versioned artifacts after enabling configuration management

Related information

Unexpected local configuration in Current Configuration menu

Troubleshooting configurations and configuration management

Glossary

This glossary provides terms and definitions for IBM Engineering Lifecycle Management.

The following cross-references are used in this glossary:

- See refers you from a non-preferred term to the preferred term or from an abbreviation to the spelled-out form.
- See also refers you to a related or contrasting term.

“A” on page 268 “B” on page 271 “C” on page 273 “D” on page 277 “E” on page 279 “F” on page 280 “G” on page 282 “H” on page 282 “I” on page 283 “J” on page 285 “K” on page 285 “L” on page 285 “M” on page 287 “O” on page 288 “P” on page 289 “Q” on page 291 “R” on page 291 “S” on page 294 “T” on page 298 “U” on page 300 “V” on page 300 “W” on page 301 “X” on page 302 “Z” on page 302

A

abstract factory
A class that mediates between concrete classes and neutral interfaces by returning the concrete class to an application and implementing a particular interface.

accept

1. In configuration management, to update a stream to take changes that someone else has delivered.
2. In source control management, to add any change set to a repository workspace. The change set can come from a stream, another repository workspace, or it can be attached to a work item.

access control
In computer security, the process of ensuring that users can access only those resources of a computer system for which they are authorized.

accessor method
A method that an object provides to define the interface to its instance variables. See also mutator method.

access permission
A privilege that permits the access or use of an object.

access right
A designation of the rights that users have, such as read, modify, create, delete, and admin (RMCDA).

access token

1. An object that contains security information for a process or thread, including the identity and privileges of the user account that is associated with the process or thread.
2. A value used by the consumer to gain access to the protected resources on behalf of the user, instead of using the user's service provider credentials.

action pin
In activity diagrams, an element that represents information or physical objects flowing into, or out of, action nodes.

actor
A representation of a user of a system, or an external component that sends information to, or receives information from, the system.

actual
Pertaining to the project data such as costs, dates, and work that have occurred, as opposed to those that are scheduled, or planned.

actual result
The behavior produced/observed when a component or system is tested. (ISTQB)

adapter
An intermediary software component that allows two other software components to communicate with one another.

administrator user
A user account that bypasses all access rights checks. This account is used only when absolutely necessary, such as in initial configuration tasks or if no other users can log in.

adoption item
A development work item that tracks when changes by one team must be adopted by another team.

agile software development
A software development methodology that focuses on collaboration and quality to produce complete product increments at regular intervals, called iterations or sprints.

allowlist
A list of items, such as usernames, email addresses, or IP addresses, that are granted access to a certain system or function. When an allowlist is used for access control, all entities are denied access, except for those that are included in the allowlist.

ALM
See application lifecycle management.

anchor
The first item that is clicked when using multiple select actions to select a range of items.

Ant with Enterprise Extensions
A set of extensions to Apache Ant that makes it possible to build z/OS-based applications using Ant.

Apache Ant
A Java-based open-source tool from Apache Software Foundation that is used to automate build processes.

application
One or more computer programs or software components that provide a function in direct support of a specific business process or processes. See also application server.

application lifecycle management (ALM)
An iterative and continuous process of coordinating people, processes, and tools with the goal of delivering a software or systems project. This process involves planning and change management, requirements definition and management, architecture management, software configuration management, build and deployment automation, application security, and quality management. The features of this process include traceability across lifecycle artifacts, process definition and enactment, and reporting.

application server
A server program in a distributed network that provides the execution environment for an application program. See also application.

archive
A backup copy of a module or project that can be stored on any computer and restored to a database.

argument
A value passed to or returned from a function or procedure at run time.

arithmetic operator
A symbol, such as + or -, that represents a fundamental mathematical operation. See also composite expression.

array
A structure that contains an ordered collection of elements of the same data type in which each element can be referenced by its index value or ordinal position in the collection.

artifact
An entity that is used or produced by a software or systems development process. Examples of artifacts include designs, requirements, source files, plans, scripts, simulations, models, test plans, and binary executable files. In an HTTP context, artifacts have a URI and are called resources. See also back link, baseline, component, configuration, configuration provider, configuration specification, global configuration provider, revision, stream, version.

Artifacts page
A list of all of the artifacts in a project, as they exist at the project level.

artifact type
A class of objects that is specific to an artifact. For example, requirements management artifacts include the following types: document, business process sketch, user interface sketch, user interface sketch part, screen flow, storyboard, use case diagram, requirement, glossary, and term. See also resource shape.

asset
In IBM Engineering Lifecycle Optimization - Publishing, an item that is used in or produced by the document generation process. Assets include document templates, document specifications, scripts, and style sheets.

assign
To appoint or designate a profile or resource to an activity that is to be completed within a specified period.

association
The semantic relationship between two or more classifiers that specifies connections among their instances.

association class
A model element that has both association and class properties. An association class can be seen as an association that also has class properties, or as a class that also has association properties.

asynchronous
Pertaining to events that are not synchronized in time or do not occur in regular or predictable time intervals.

attribute

1. A defined quality and values that can be assigned to an artifact. For example, a work item artifact might have a 'priority' or 'severity' attribute.

2. Descriptive information that provides important details about a module, requirement, discussion, or element.

attribute data type
A descriptor of the information that can be stored in an attribute. Data types might define integer values, string values, date values, and other basic formats of data.

attribute definition
An object that users create to store information in addition to the system attributes where data is stored.

attribute DXL
A scripting language that uses a DXL program to calculate the value of an attribute. One can use this attribute in multiple columns and views.

attribute group
Convenience grouping of one or more attributes. For example, the attribute group "Address" might include the attributes Street, City, State, and Zip.

attribute type
The specification in an attribute definition of the kind of data that can be stored in an instance of an attribute. Examples include simple data types, such as string or number, as well as more complex data types like currency or date.

audit
An examination of the changes that have been made to a artifact over time.

authorization
The process of granting a user, system, or process either complete or restricted access to an object, resource, or function.

auto-deploy

1. An automated process that retrieves and packages build output, and then moves that output to another location so that users can run or test it.
2. To automatically retrieve and package build output, then move that output to another location for users to run or test it.

auto-resolve conflict
The automatic merging of conflicting changes to an item. Conflicts can only be automatically resolved if the conflicting changes are made to two separate areas within the item.

away database
A database where a partition is imported and viewed or edited before being returned to the home database.

B

back link
A relationship between artifacts in different products where each artifact stores a link that points to the other artifact. See also artifact, back linking.

back linking
A process in which two links are used to define a relationship between artifacts in different products. Neither product has to query for these links because that information is provided in each product. See also back link, link discovery.

backlog
In agile development, a list of features or technical tasks that are necessary for a project or release that the development team assesses and prioritizes to assign work.

balanced binary tree
A tree structure that provides for rapid location of items in a text list.

base artifact
An artifact that is at the project level and not viewed as an embedded object in another artifact.

base-aware mode
The process of comparing two units against each other, and against a base unit.

baseline

1. A read-only copy of a module, which contains the history of the module up to the time the baseline was created.
2. In source control management, a permanent copy of a component in a particular repository workspace or stream. A component baseline represents a configuration of a component at a particular point in time.
3. An uneditable configuration of one or more components that captures a meaningful state of artifacts. Teams can use baselines as a known configuration or an initial state for a new stream of work. See also artifact, configuration, stream.

baseline comparison
A list that displays the differences between any two baselines of the same module, and includes objects that have been modified, added, or deleted.

baseline set
A group of baselines that are treated as a single unit for project planning and management purposes.

baseline staging stream
See staging stream.

base type
A data type that controls the type of data that can be entered into an attribute. For example, an attribute definition that is created using the Date base type can only store date values.

base unit
In a comparison of two projects, or portions of projects, a third project that acts as the basis of the comparison.

batch mode
A command line option that allows Rational DOORS to start up without the graphical user interface (GUI), run a specified DXL program, then stop. The product starts up by surpassing the login screen and the database explorer.

behavioral model
A representation of the life-cycle behavior of the system as defined in statecharts.

black box
An abstraction of a device or system in which only its externally visible behavior is considered and not its implementation or inner workings.

block definition diagram
A representation of the components of a system and the flow of information between components. Block definition diagrams include blocks, actors, standard ports, dependencies, and flows. See also block diagram.

block diagram
A representation that defines the structure of a system and identifies the large-scale organizational parts of the system. Block diagrams show the flow of information between system components and the interface definition through ports. See also block definition diagram, internal block diagram.

blocked
The status of a test case that cannot be run because the preconditions for running the test case have not been met.

boilerplate text
Reusable text or code that is automatically added to a field or template in response to an event.

branch

1. To create a stream for parallel or insulated development.
2. A distinct path leading to or originating from an element in a process model or UML diagram.

breakpoint
A marked point in a process or programmatic flow that causes that flow to pause when the point is reached, typically to allow debugging or monitoring.

build definition
An object that defines a build, such as a weekly project-wide integration build.

build engine
The representation of a build system that runs on a dedicated server.

business process sketch
A diagram that illustrates a directed flow of activities that are specified by using a subset of Business Process Modeling Notation (BPMN). Two types of processes are supported: simple and business-to-business.

business rule
A policy, constraint, or required operation that applies to a specific set of business conditions or dependencies. An example of a business rule for a bank is that a credit check is not required when opening an account for an existing customer.

C

callback function
Executable code that allows a lower-level software layer to call a function defined in a higher-level layer.

calling thread
The task in progress in a multitasking environment.

call stack
The ordered list of all programs or procedures currently started for a job. The programs and procedures can be started explicitly with the CALL instruction, or implicitly from some other event.

capability
A function or feature that is made available by an application, tool, or product.

CCM
See change and configuration management.

certificate
A digital document that binds a public key to the identity of the certificate owner, thereby enabling the certificate owner to be authenticated. A certificate is issued by a certificate authority and is digitally signed by that authority.

change and configuration management (CCM)
A systematic approach to establish and maintain the consistent performance of a system or product throughout its lifecycle, and to effectively manage changes in that product or system.

change bar
An indicator that displays when an object was last changed.

change management
The process of controlling and tracking modifications to artifacts.

change proposal system
A system that allows users to review modules and suggest changes to them.

change request

1. A request to change some aspect of the project, project plan, activity definition, or document.
2. A request from a stakeholder to change an artifact or process.

change set
A group of related changes to artifacts in a workspace or stream.

channel
A collection of test environment properties that describes a delivery platform in your test effort.

check in
To save local changes in a change set that is part of a repository workspace. A checked-in change set can later be shared with a team by delivering the change set.

class loader
Part of the Java virtual machine (JVM) that is responsible for finding and loading class files. A class loader affects the packaging of applications and the runtime behavior of packaged applications deployed on application servers.

class path
A list of directories and JAR files that contain resource files or Java classes that a program can load dynamically at run time.

cleartool
The primary command-line interface to ClearCase and ClearCase LT version-control and configuration management software.

clickjacking
The malicious practice of hiding links in clickable content to redirect users to an unexpected location.

CLM
See Collaborative Lifecycle Management.

CLM project
A project that was created using IBM Collaborative Lifecycle Management tools.

clone

1. To create a new version of an artifact in a different component. The new version has the same ID as the original artifact. See also refactor.
2. A new version of an artifact in a different component. The new version has the same ID as the original artifact.

CM
See configuration management.

code churn
A report that shows the volume of changes in a project over time.

code respect
In programming, a feature that preserves the order of elements in the original code structure during code generation.

cold standby
A recovery method in which backup servers with installed applications are in place and in a stopped state.

Collaborative Lifecycle Management (CLM)
See Engineering Lifecycle Management.

comment
An annotation attached to an artifact, element, or a collection of elements.

compiler
A program that translates a source program into an executable program (an object program).

completed change set
A change set that can no longer be changed. Change sets can be shared with others only after they are marked as a completed change set.

complexity attribute
An attribute that enables the selection of another attribute by which work items are sized. This attribute is used in release plans to compute the progress of each plan.

component

1. In configuration management, a unit of organization for a reusable set of engineering artifacts. A configuration of a component selects versions of the artifacts of that component. See also artifact, component skew.

2. In source control management, a grouping of related artifacts in a stream or repository workspace. A component can contain any number of folders and files.

component skew
A situation that occurs when a configuration hierarchy contains different configurations of the same component. See also component, configuration.

composite expression
In Q Language, a large expression that has been created from a series of smaller expressions. See also arithmetic operator.

composite object
An object that contains other objects. For example a document object that contains not only text, but also graphics, audio, image, and video objects, each of which can be manipulated separately as an individual object.

composite type
A data type modeled using structural features instead of verbatim, language-specific text.

compress
To hide objects within a data hierarchy. A plus sign is used in a compressed section to indicate that objects are hidden.

compression
The act of hiding child items of a selected object when the outline view is selected.

concrete class
A class that can be directly instantiated.

concrete factory
In object-oriented programming, a class that is used to create instances of another class. A concrete factory isolates the creation of objects of a particular class into one place so that new functions can be provided without widespread code changes.

concurrent-use license
A license that limits the number of users that can be connected to a resource concurrently.

config spec
See configuration specification.

configuration

1. A unique set of versions of artifacts. Configurations commonly identify one version of each artifact in the set. The artifacts can be unchanging (from a baseline) or open to change (in development). In some systems, configurations can be hierarchical, so that they contain other configurations. See also artifact, baseline, component skew, configuration context, configuration management, configuration provider, configuration specification, global configuration, global configuration management, global configuration provider, local configuration, stream, version.
2. The set of artifacts in the component (not necessarily all of them), and the versions of those artifacts that represents the state of a component.

configuration context
The current configuration that is being worked in, which is either a local configuration or a global configuration. See also configuration, global configuration.

configuration layer
A customized set of metadata that can be used to configure data sources and variables.

configuration management (CM)
A process for grouping and tracking versioned artifacts across the development lifecycle to help identify and track the artifacts in a specific version of a system. See also configuration, global configuration management.

configuration provider
An application that manages sets of versioned artifacts, for example, change management or test management artifacts. See also artifact, configuration.

configuration specification (config spec)
A set of rules that specify versions of artifacts. Commonly a configuration specification identifies at most one version of a given versioned artifact. See also artifact, configuration, version.

conflict
A situation in which two or more change sets independently modify the same item in a repository workspace.

connection

1. A set of properties, such as host name, server launcher settings, and security settings that is required to communicate with a specific remote system.
2. An asset that contains a data source URL and authentication details, which can be associated to data sources.
3. In IBM Engineering Lifecycle Optimization - Engineering Insights views, the set of UI properties that define the look and feel of links between artifact containers.

consequence cost
The impact on cost if a risk is not addressed.

constraint block
An element that defines a generic or basic mathematical formula. Constraint blocks can be used to create parametric diagrams.

constructor
In object-oriented programming, a special method used to initialize an object.

consumer
An entity that receives data from another entity.

content assist
A feature of some source editors that prompts the user with a list of valid alternatives for completing the current line of code or input field.

content link
A simple hypertext link in rich text or graphical artifacts that provides navigation only. See also trace link.

content store
The database that contains the data needed to operate, such as report specifications, published models, and security rights.

context-aware search
A search function that uses natural language terms to search for work items and source code in Java, C, C++, and COBOL. Regular expressions and wildcard characters are not required.

context root
The web application root, which is the top-level directory of an application when it is deployed to a web server.

CR
See change request.

critical path
A series of activities that determines the earliest completion of a project; the critical path changes as activities or tasks are completed ahead or behind the original schedule estimates.

CSV file
A text file that contains comma-separated values. A CSV file is commonly used to exchange files between database systems and applications that use different formats.

custom user
A user type that has the same permissions of a standard user plus the ability to create projects, archive data, partition data, create groups, create users, or manage the database.

cyclic array
An array whose elements are organized as a linked chain.

D

dashboard
A user interface component that provides a comprehensive summary of pertinent information from various sources to the user.

data collection
The process of collecting data from one or more sources, cleansing and transforming it, and then loading it into a database.

data driven testing
A scripting technique that stores test input and expected results in a table or spreadsheet, so that a single control script can execute all of the tests in the table. Data driven testing is often used to support the application of test execution tools such as capture/playback tools. (ISTQB) See also keyword driven testing.

data dump
A large amount of data transferred from one location or system to another.

data mart
A subset of a data warehouse that contains data that is tailored and optimized for the specific reporting needs of a department or team. A data mart can be a subset of a warehouse for an entire organization, such as data that is contained in online analytical processing (OLAP) tools.

data model
A common model that facilitates reporting of all types of data from multiple data sources.

data set definition
A Jazz model object that describes a data set on z/OS and is stored in the IBM Engineering Workflow Management Jazz repository. If the data set already exists, the data set definition must specify just the data set name. If the data set is new, the data set definition must specify both the name of the data set, and the characteristics of the data set, such as record format. Every data set that a build process references must correspond to a data set definition.

data set prefix
An identifier that, together with the data set name (indicated in the data set definition), specifies a data set that is allocated to IBM Engineering Workflow Management. A data set prefix can contain multiple segments, including a high-level qualifier (HLQ); for example, HLQ.PROD. With a prefix defined by a user, artifacts can be modified in isolation from other users.

data source
The source of data itself, such as a database or XML file, and the connection information necessary for accessing the data.

data source schema
An XML or JSON based file that defines the structure and properties of the data source. See also XML data configuration file.

data spill
An unintentional or unwanted disclosure of data.

data type
In programming languages, a descriptor of a set of values together with a set of permitted operations. A data type determines the kind of value that a variable can assume or that a function can return.

data warehouse
A subject-oriented collection of data that is used to support strategic decision making. The warehouse is the central point of data integration for business intelligence. It is the source of data for data marts within an enterprise and delivers a common view of enterprise data.

decision node
A representation of an if-then-else condition. A decision node splits a single transition in a statechart or activity diagram into several branch transitions.

defect
A project element that allows stakeholders to track bugs and bug fixes.

defect aging
A report that helps track patterns in defects, which can be used to take corrective action for reducing both defect resolution time and number of defects.

defect report
A document reporting on any flaw in a component or system that can cause the component or system to fail to perform its required function. (ISTQB)

delete
To mark an item to be purged from the database.

deliver

1. In source control management, to conduct an outgoing flow of change sets and baselines from a repository workspace to a stream or to another repository workspace.
2. To add changes to a stream, or make them available to be accepted into a stream.

dependencies linker
An extension to the link wizard that allows dependencies to be created between particular model elements.

dependency
A link between interrelated projects activities. Activities with these links depend on the start and finish dates of at least one other element and therefore cannot be completed without taking the other into consideration.

dependency build
A build definition that saves time and system resources by only building artifacts that need to be rebuilt based on what has changed since the last successful build. Changes to a program's source or dependencies, and deletion or modification of a program's output will be detected and cause the program to be rebuilt.

deployment
A process that retrieves the output of a build, packages the output with configuration properties, and installs the package in a pre-defined location so that it can be tested or run.

deployment plan
A template of a virtual service definition.

diagram connector
A connector that joins several segments in the same statechart to facilitate jumps to different parts of a diagram without drawing complex transitions and cluttering the statechart.

difference element
An element that exists in both sides of a comparison, though some of its fields or properties are different.

discard
To remove a change set from a repository workspace.

discussion
A mechanism for reviewers to exchange views about the content of a module or an object, within the module or object itself.

document

1. An item that can be stored, retrieved, and exchanged among systems and users as a separate unit. It can be any multimedia digital object. A single document can include varied types of content, including for example, text, and images.
2. The output generated from current data with a single click that is formatted by a report definition. Documents can be in Microsoft Word, Excel, HTML, PDF or XSL-FO formats. See also report.

document generation
The process of applying a template to a data source to generate a document-style report.

document mode
A default display mode for formal modules. Data is displayed in a table with rows and columns.

document specification
The definition of document templates, data sources, and output formats used to create a report.

DOORS extension language (DXL)
A scripting language used in Rational DOORS.

downstream
Pertaining to a direction that goes with the flow of a development process that moves from requirements to designs to implementation to tests. For example, tests are downstream from requirements. See also upstream.

duplicate set
A set consisting of one primary change proposal and any number of duplicates. In a duplicate set, only the primary change proposal is reviewed and applied.

duration
A period of time during which a project element continues. It is calculated as the finish time minus the start time.

DXL
See DOORS extension language.

DXL library
A library of DXL programs that can be used to manipulate and manage Rational DOORS data. The library includes example programs and templates. User-defined DXL programs can also be stored in the DXL library.

E

Eclipse
An open-source initiative that provides independent software vendors (ISVs) and other tool developers with a standard platform for developing plug-compatible application development tools.

editable section
A section of objects in a module that does not inherit access from the parent and can be locked and edited independently of other objects when the module is opened in shareable edit mode.

effort
The estimated hours of work required for an activity. Effort is calculated based on the specified duration (in days) of the activity, and the number of working hours per day specified in the project calendar. See also work.

electronic signature (eSignature)
An electronic stamp that is added to email messages, fields, or sections that verifies that the person who originated the message is the author and that no one has tampered with the data.

element

1. Palette items that can be added to a template,.
2. A constituent of a model.

ELM
See Engineering Lifecycle Management.

encapsulation
In object-oriented programming, the technique that is used to hide the inherent details of an object, function, or class from client programs.

Engineering Lifecycle Management (ELM)
The integration of products on Jazz technology to connect the work of analysts with development and test teams. These integrations provide a common approach to artifact linking, dashboards, security, and user interface frameworks.

entity tag (ETag)
An HTTP header that is used for web cache validation and conditional requests from browsers for artifact resources. These headers are unique and can be quickly compared to determine whether

two artifact versions are the same. ETags can also help prevent artifacts from being overwritten by simultaneous updates.

entry criteria
The set of generic and specific conditions for permitting a process to go forward with a defined task, e.g. test phase. The purpose of entry criteria is to prevent a task from starting which would entail more (wasted) effort compared to the effort needed to remove the failed entry criteria. (ISTQB)

epic
In agile development, a work item that defines a big use case with a large or unknown amount of work, which is often completed over several sprints. Epics can be divided into stories.

eSignature
See electronic signature.

ETag
See entity tag.

ETL
See extract, transform, and load.

event
An occurrence of significance to a task or system. Events can include completion or failure of an operation, a user action, or the change in state of a process.

execution result
The behavior or response that is produced or observed when a component or system is tested. This behavior and information regarding the test run such as the weight distribution and result details are also recorded. See also expected result.

exit criteria
The set of generic and specific conditions, agreed upon with the stakeholders, for permitting a process to be officially completed. The purpose of exit criteria is to prevent a task from being considered completed when there are still outstanding parts of the task which have not been finished. Exit criteria are used to report against and to plan when to stop testing. (ISTQB)

expand
To display information collapsed under a category name or parent document.

expected result
The behavior predicted by the specification, or another source, of the component or system under specified conditions. (ISTQB) See also execution result.

extension
A client-side element or function that is not installed with a system, but instead is authored by a system user.

external contribution
The contribution of a global configuration that resides on one Global Configuration Management server to a global configuration that resides on a different Global Configuration Management server.

external link
A connection from an object to an entity or resource that is outside the Rational DOORS database.

extract, transform, and load (ETL)
See data collection.

extra resource
A resource that is included in the Lifecycle Query Engine (LQE) index but not in the Tracked Resource Set (TRS) feed.

F

factory
In object-oriented programming, a class that is used to create instances of another class. A factory is used to isolate the creation of objects of a particular class into one place so that new functions can be provided without widespread code changes.

fail
A test is deemed to fail if its actual result does not match its expected result. (ISTQB)

failed patch
A patch that is out of sequence because the entity tags (ETags) of artifacts in the Lifecycle Query Engine (LQE) index and artifacts in the Tracked Resource Set (TRS) feed do not match. LQE cannot apply such patches to artifacts in the LQE index.

favorite
A project, folder, or module that is used frequently and stored in a specific list.

filter
A device or program that separates data, signals, or material in accordance with specified criteria.

fine-grained component
See component.

finish-to-start
A dependency type between two project elements where the predecessor element must finish before the successor element can start.

flow
An arrangement between two workspaces or between a workspace and a stream that enables users to deliver and accept change sets.

flow target
A source or destination of incoming and outgoing change sets. In a team setting, most workspaces have flow targets. The flow target can be another repository workspace or a stream. Streams have flow targets only if they are part of a stream hierarchy.

folder
A named collection of related modules that can be retrieved, moved, and otherwise manipulated as one entity.

footprint
The amount of computer storage that is occupied by a computer program. For example, if a program occupies a large amount of storage, it has a large footprint.

fork
In UML diagrams, a node that is used to model a single flow of control that divides into two or more separate but simultaneous flows.

formal module
A module that stores objects and their associated attribute and link information.

formal review
A review characterized by documented procedures and requirements, e.g. inspection. (ISTQB)

friend
An entity that has an established connection to another entity for communication. For example, a server can be a friend to another server.

friend class
A class in which all member functions are granted access to the private and protected members of another class. It is named in the declaration of another class and uses the keyword friend as a prefix to the class.

full capacity licensing
A method of licensing in which the licensee must obtain PVU entitlements that are sufficient to cover all activated processor cores in the physical hardware environment that are made available to or managed by the licensed program.

functionality testing
The process of testing to determine the functionality of a software product. (ISTQB) See also security testing.

function call
An expression that transfers the path of execution from the current function to a specified function (the called function). A function call contains the name of the function to which control is transferred and a parenthesized list of values.

function object
See functor.

functor
An object that can be called or invoked as if it were a function.

functor class
The class that is generated when the functor-based code reuses code generation functionality for activity diagrams of classes. The new class implements an activity diagram on the class level.

G

gadget
A proprietary widget that works under specific conditions or that is designed to a certain standard, such as a dashboard widget based on the OpenSocial standard. See also widget.

Gantt chart
A graphical representation of a project timeline and duration in which schedule data is displayed as horizontal bars along a time scale.

gap
In source control management, a state in which a target workspace or stream is missing preceding change sets for a change set that is being accepted or delivered. When a gap occurs, the change set cannot be accepted or delivered; it must be applied as a patch, which creates a new resulting change set.

GCM
See global configuration management.

global configuration
A configuration that gathers configurations from multiple tools, so you can define all the relevant artifacts for a system. Global configurations can establish the same context across all tools when each tool stores artifacts in otherwise unrelated configurations. See also configuration, configuration context, global configuration management.

global configuration management (GCM)
A process for gathering configurations from multiple tools that helps visualize and manage relationships in the development lifecycle by tracking artifact links across lifecycle tools and stages. See also configuration, configuration management, global configuration.

global configuration provider
A configuration provider that coordinates contributions from multiple configuration providers. See also artifact, configuration.

graphic difference
A visual difference that does not have an effect on the logic of a model.

graphics mode
An alternative display mode for formal modules. The module structure is displayed as a tree and each object in the module is represented as a box showing a selected attribute.

group
A logical organization of users whose membership allows them to perform the same activities or provide the same authority to access resources.

H

harden
To secure a system by reducing its vulnerabilty.

heading
An artifact in a module that is automatically numbered and displayed prominently. A best practice is for headings to be their own artifact type.

heap
An area of storage that is allocated with a lifetime unrelated to the execution of the current routine. The heap consists of the initial heap segment and zero or more increments.

heartbeat
A signal that one entity sends to another to convey that it is still active.

history
The recorded changes to modules and objects, which can be viewed on module and object properties sheets.

home database
A database where a partition definition is created. This is the database where the master copy of the data is stored.

home GCM server
See home Global Configuration Management server.

home Global Configuration Management server (home GCM server)
The Global Configuration Management server that an application can contribute configurations to. Typically, this server is the one registered with the Jazz Team Server that is associated with the application.

hook
An empty script in which code can be entered.

hotspot
Text or a picture in a rich-text field that a user can click to perform an action, run a formula or script, or follow a link.

hot standby
See idle standby.

I

idle standby
A recovery method in which backup servers with installed applications are in place and started, but in an idle state.

idle timer
A timer used by the operating system factory for simulated-time modeling.

if-then-else statement
A statement that compares two or more sets of data and tests the results. If the results are true, the THEN action is taken; if not, the ELSE else action is taken.

impact analysis
The identification of how a change to one item affects other, related items.

impediment
An item that prevents progress or a work item to track something that prevents progress.

incoming change set
A change set in a stream or repository workspace that flows to a user repository workspace. An incoming change set is present in a workspace flow target, but not in the workspace itself.

incoming link
A link from the current (target) artifact to a source artifact, such as a Validated By link from a requirement to a test case. See also outgoing link.

index
A set of URIs that point to resources in one or more lifecycle tool so that the set of URIs can be queried together. Access depends on the identity of the authenticated user.

inheritance

1. The process of passing access rights to a child item from a parent item by default.
2. An object-oriented programming technique in which existing classes are used as a basis for creating other classes. Through inheritance, more specific elements incorporate the structure and behavior of more general elements.

inherited value
An attribute value that is inherited from the parent object by a child object.

in-link
A link to an object in a module from another object in the same module, or from an object in a different module in the database.

in-place editing
A function in which objects, graphs, or tables can be edited without exiting the currently active application.

instance
An entity to which a set of operations can be applied and that has a state that stores the effects of the operations.

instance line
A vertical timeline in a sequence diagram that shows the sequence of messages that an object processes and the states that it enters over its lifetime.

internal block diagram
A diagram that shows the internal structure or decomposition of a block into its parts or subsystems. See also block diagram.

internal contribution
The contribution of a global configuration to another where both configurations reside on the same Global Configuration Management server.

interrupt
Suspension of a process, such as execution of a computer program, caused by an external event and performed in such a way that the process can be resumed.

interrupt service routine (ISR)
A software routine that receives and examines interrupts and determines how to handle them.

invalid
In linking and traceability, pertaining to a manually set status when two artifacts do not satisfy the meaning of the link between them. The contents of at least one artifact must change to satisfy the link. See also suspect, valid, validity summary.

ISPF client
An SCM client used for working with source code from the ISPF interface. The ISPF client can be used to load, edit, check in, and deliver source. It can also be used to access build functions and associate work items with changes.

ISR
See interrupt service routine.

iteration
In agile development, a set period of time in which work is completed. Sprints can vary in length, for example, from 1 to 4 weeks, but typically have a fixed duration within a project.

iteration plan
An artifact that shows the work items and additional unstructured information for a team or project area within a development phase.

iterator
A class or construct that is used to step through a collection of objects one at a time.

J

Java Database Connectivity (JDBC)
An industry standard for database-independent connectivity between the Java platform and a wide range of databases. The JDBC interface provides a call level interface for SQL-based and XQuery-based database access.

JDBC
See Java Database Connectivity.

join
In UML diagrams, a node that models two or more flows of control that unite into a single flow.

K

kernel
The part of an operating system that contains programs for such tasks as input/output, management and control of hardware, and the scheduling of user tasks.

keystore
In security, a file or a hardware cryptographic card where identities and private keys are stored, for authentication and encryption purposes. Some keystores also contain trusted or public keys. See also keytool.

keytool
A utility used for creating SSL encryption keys and managing the keystores where they are maintained. See also keystore.

keyword
A statement or group of statements that one can reuse in test scripts.

keyword driven testing
A scripting technique that uses data files to contain not only test data and expected results, but also keywords related to the application being tested. The keywords are interpreted by special supporting scripts that are called by the control script for the test. (ISTQB) See also data driven testing.

L

label specifier type
An enumerated attribute type that the user selects to configure electronic signatures. The enumerated attribute type is comprised of the values from which signatories can choose.

language definition
A Jazz model object that serially connects the translators used to build an artifact. The association of a language definition to an artifact provides instructions for how the artifact should be built.

last mile
In communications, the final part of the network that delivers services to end users.

layout DXL
A layout that uses a DXL program to calculate values, which are then shown in a column, typically to construct traceability or impact analysis reports. The DXL program is associated with one column, not with an attribute.

level
In a database, the successive vertical dependencies in a hierarchical structure.

library
A system object that serves as a directory to other objects. A library groups related objects, and allows users to find objects by name.

library definition
A system object that describes an IBM i Library, and is stored in the IBM Engineering Workflow Management Jazz repository. Every library that a build process references must correspond to a library definition.

lifecycle
The complete process for planning, creating, testing, and deploying software or systems.

lifecycle application
A tool that manages the work for a phase of the development lifecycle. See also lifecycle tool.

lifecycle index
A set of URIs that point to resources in one or more lifecycle tools so that the set of URIs can be queried together. Access depends on the identity of the authenticated user.

Lifecycle Query Engine (LQE)
A component that indexes and searches for assets that are stored in any tool that can support the Tracked Resource Set (TRS) specification.

lifecycle tool
An application that manages the work for a phase of the development lifecycle. See also lifecycle application.

lifeline
In a sequence diagram, a connectable element (an object or a role) that describes how each instance participates in the interaction over a period of time.

link

1. A bidirectional indication of dependency between two or more requirements in the same module or different modules.
2. In a linked data system, a relationship between two artifacts as expressed by a unique URI.

link discovery
A capability that enables external applications that are integrated with Rational DOORS to find OSLC links in Rational DOORS and make them visible in the external applications. See also back linking.

linked data
A method of publishing structured data so that it can be linked to and from other data sets.

linker
A program that resolves cross-references among separately compiled object modules and then assigns final addresses to create a single executable program.

link index provider (LIP)
An application that indexes links to artifacts in contributing applications and makes those links available to other applications.

linkset
A division of information in each module that contains information about the links from one particular module to another.

linkset pairing
A specification for which link module should be used when links are created between certain modules.

links explorer
A capability for visualizing relationships among artifacts and modifying those relationships.

link type
A definition of a relationship between artifacts. A link type has a relationship label that indicates how the linked artifacts are related.

link validity
See validity.

LIP
See link index provider.

load rule

1. An entry in a load rule file that determines how an item from a repository workspace, such as a file, folder, or symbolic link, is loaded into a local sandbox.

2. A statement in the config spec that specifies an element or subtree to load into a snapshot view. Config specs can have more than one load rule.

local change
A change to an element that only exists in a sandbox and has not yet been committed to the repository workspace.

local configuration
A configuration that's managed by one tool. See also configuration.

local heap
A preallocated, continuous, bounded chunk of memory that has the capacity to hold a user-defined number of objects.

logical difference
A change that effects the logic of a model.

LQE
See Lifecycle Query Engine.

M

make command
A statement that can be used to build an application.

Managed Bean (MBean)
In the Java Management Extensions (JMX) specification, the Java objects that implement resources and their instrumentation.

marshal
To convert an object into a data stream for transmission over a network.

master configuration
The configuration data held in a set of files that form the master repository for either a deployment manager profile or a stand-alone profile. For a deployment manager profile, the master configuration stores the configuration data for all the nodes in the network deployment cell.

master page
The definition of the header, footer, and watermark for a document to generate.

MBean
See Managed Bean.

merge
To combine some or all of the content of one stream or baseline into another stream.

metaclass
A class whose instances are classes. Metaclasses are typically used to construct metamodels.

metadata
Data that describes the characteristics of data; descriptive data.

metadata model
A set of related dimensions, query subjects, and other objects that represent data for reporting applications.

migrator
In the asynchronous migration task, a process that runs to upgrade data for a specific artifact type.

milestone
A significant event in a project or process that is used to determine progress toward goals.

minimap
In a large diagram, a view that shows a smaller version of the entire diagram to orient users to their current location in the diagram.

missing resource
A resource that is included in the Tracked Resource Set (TRS) feed but not in the Lifecycle Query Engine (LQE) index.

model
A representation of a process, system, or subject area, typically developed for understanding, analyzing, improving, and replacing the item being represented. A model can include a representation of information, activities, relationships, and constraints.

module
A structured document that is composed of multiple requirement artifacts. Structure can be created in a module by modifying the order and hierarchy of the artifacts.

mutator method
A method that an object provides to define the interface to its instance variables. See also accessor method.

mutex
See mutual exclusion.

mutual exclusion (mutex)
A flag used by a semaphore to protect shared resources. The mutex is locked and unlocked by threads in a program.

MXBean
An MBean (managed bean) that references a predefined set of data types so that any client, including a remote client, can use the bean.

O

OAuth
An HTTP-based authorization protocol that gives applications scoped access to a protected resource on behalf of the resource owner, by creating an approval interaction between the resource owner, client, and resource server.

object
A self-contained piece of information in a module that can be arranged in a hierarchy and linked to show dependencies.

Object Request Broker (ORB)
In object-oriented programming, software that serves as an intermediary by transparently enabling objects to exchange requests and responses.

Open Services
See Open Services for Lifecycle Collaboration.

Open Services for Lifecycle Collaboration (Open Services, OSLC)
An open community that facilitates collaboration and standardization across the delivery lifecycle by building practical specifications for integrating software.

ORB
See Object Request Broker.

OSLC
See Open Services for Lifecycle Collaboration.

outgoing change set
A change set in a repository workspace that flows to a stream or to another repository workspace. An outgoing change set is present in a workspace, but not in a workspace flow target.

outgoing link
A link from the current (source) artifact to a target artifact, such as a Satisfies link from a test case to a requirement. See also incoming link.

outgoing synchronization
A process by which changes that users make to work items are propagated to the ClearQuest user database.

outlining
A method of reducing the amount of text that is displayed in a module so that the module structure can be seen clearly.

out-link
A link from an object in a module to another object in the same module, or to an object in a different module in the database.

P

package

1. A product or component that is specifically designed for installation by IBM Installation Manager.
2. A subset of a project that is created to make metadata available to users. Different packages can be created so different user groups can create the reports they need.
3. A set of tasks that a person is allowed to perform.

page
In a graphical interface, a predefined display image that typically provides fields and controls that help users accomplish tasks.

parameter

1. In UML modeling, a specific argument that passes information between behavioral features of models, such as operations.
2. A value or reference passed to a function, command, or program that serves as input or controls actions. The value is supplied by a user or by another program or process.

parametric diagram
A diagram of the mathematical relationships among the parts of a system that are being designed.

parm
See parameter.

partition definition
A specification of the modules to be included in a partition file. It defines the access that is allowed to each module in the partition, and the access that is allowed to the attributes and views in each of those modules.

pass

1. A test is deemed to pass if its actual result matches its expected result. (ISTQB)
2. The status of a test when the actual results match the expected result.

patch
A type of change event in the Tracked Resource Set (TRS) feed that has information about minor modifications to artifacts.

pattern
A sequence of characters used either with regular expression notation or for path name expansion, as a means of selecting various characters strings or path names, respectively. The syntaxes of the two patterns are similar, but not identical.

personal stream
In configuration management, a modifiable configuration of artifacts that is insulated from public streams. Users can test their changes before delivering them to a public stream.

PLE
See product line engineering.

plug-in
A separately installable software module that adds function to an existing program, application, or interface.

port
A distinct interaction point between a class and its environment or between the behaviour of a class and its internal parts.

post-command condition
Environmental and state condition that must be fulfilled after document generation. See also pre-command condition.

postcondition
Environmental and state conditions that must be fulfilled after the execution of a test or test procedure. (ISTQB) See also precondition.

pre-command condition
Environmental and state condition that must be fulfilled before document generation. See also post-command condition.

precondition
Environmental and state conditions that must be fulfilled before the component or system can be executed with a particular test or test procedure. (ISTQB) See also postcondition.

predecessor
An activity in a dependency relationship that logically precedes another.

priority
In software and systems development, a rank assigned to requirements or work items to determine the order in which they are worked on.

processor core
A single processing unit on a chip with multiple processing units.

processor value unit (PVU)
A unit of measure that is assigned to each processor core for software licensing purposes. PVUs vary according to chip architecture. See also subcapacity.

product
Something produced that is marketed or sold. A product is formed from a particular configuration of component parts, which can be software applications, physical parts, or services. A complex product might contain multiple systems. A system might be made up of multiple products. See also product line, system, variant.

product backlog
See backlog.

product family
See product line.

product line
A group of closely related products that are variants of each other. Products that make up a product line are often produced from a common base or architecture. See also product, system, variant, variation point.

product line engineering (PLE)
A method for designing and developing a line of products that are based on common components with variations in features and functions to provide a diverse product line efficiently at a reduced development cost.

project

1. A temporary endeavor or initiative created and managed to achieve an organization's objectives.
2. An organized collection used to group folders or packages. Projects are used for building, version management, sharing, and organizing resources related to a single work effort.

project area
An area in the repository where information about one or more software projects is stored.

project area configuration
See local configuration.

project manager
A type of Rational DOORS user who can perform a limited set of management tasks.

project release plan
An artifact that shows plan items and additional unstructured information for a team or project area and all related child team areas and iterations.

project snapshot
A subset of a baseline that identifies artifacts that have been approved or assigned to a milestone or other meaningful event.

promotion
A mechanism for moving binaries, source code, source code data, build maps, output, Partitioned Data Sets (PDS) on z/OS or libraries on IBM i, and other build artifacts up the development-test-production hierarchy on a z/OS or IBM i system.

property
A characteristic of an object that describes the object. A property can be changed. Properties describe an object name, type, value, or behavior, among other things.

proposal
An item that suggests a change to an object in a module.

purge
To permanently delete data from a location, system, or database.

PVU
See processor value unit.

Q

Q Language
A language used to write advanced conditions and create advanced statements about attributes.

QM
See quality management.

quality management (QM)
A systematic approach to build quality into a solution and assess the quality of deliverables and processes throughout a project lifecycle.

query

1. A way of retrieving information from the lifecycle index of artifacts, such as products, work items, requirements, design models, and test cases. The resulting list of artifacts can be used to populate a view, run a report, perform an analysis, and more.
2. A specification for a set of data retrieved from a data source.

queue tail
The last item in a queue.

R

RDF URI
See Uniform Resource Identifier.

reactive class
A composite class that has a statechart and consumes events.

reactive object
An object that is a composite, and can receive and process events. Reactive objects have state-based behavior that is defined in a statechart.

realization relationship
In UML, a dependency relationship in which one class implements the behavior that another class specifies.

rebase

1. A source control operation that makes a development work area current with the set of versions represented by a more recent baseline in another stream, usually the project's integration stream or a feature-specific development stream.
2. To recalculate the base resources of a tracked resource set.

reconcile
To compare and optionally update the links in an artifact that point to other artifacts. When a source artifact is reconciled, its links are compared with the states of its associated target artifacts in another application. After reconciliation, the changes can be synchronized or ignored, or the associated artifacts can be updated. See also synchronize.

redact
See scrub.

redline markup
A function in Rational DOORS that highlights both inserted and deleted text.

refactor
To make changes across a set of artifacts without changing the behavior of the application or its relationships to other elements. See also clone.

repo
See repository.

report

1. In Rational Publishing Engine, the specification fof the parts of a document to generate, as defined by templates such as for the table of contents, front cover, body, index, and back cover. See also document.
2. A set of data deliberately laid out to communicate business information.

reportable shape
A user-defined set of conditions that defines which attributes and link types are available for use by external reporting tools.

report server
An application server that hosts reports and report editors.

report template
A template that is used to create reports. Parameters in the report template are specified when the report is created or run.

repository (repo)
A persistent storage area for data and other application resources.

repository workspace
A repository object that includes one or more components. Repository workspaces are typically used by individual team members to contain their changes in progress. Team members deliver their changes from their repository workspace to the stream and accept changes from other team members into their repository workspace from the stream. Every repository workspace has an owner, and only the owner can make changes in the workspace. See also workspace.

Representational State Transfer (REST)
A software architectural style for distributed hypermedia systems like the World Wide Web. The term is also often used to describe any simple interface that uses XML (or YAML, JSON, plain text) over HTTP without an additional messaging layer such as SOAP.

ReqIF
See Requirements Interchange Format.

request token
A value that is used by the consumer to obtain authorization from the user and that is exchanged for an access token.

requirement

1. A condition or capability that a system must provide. This condition is either derived from user needs or stated in a contract, standard, specification, or other document.
2. A condition or capability needed by a user to solve a problem or achieve an objective that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document. (ISTQB)

Requirements Interchange Format (ReqIF)
An XML file format and workflow to exchange requirements, metadata, and status between software tools from different vendors.

requirements management (RM)
A systematic approach to eliciting, organizing and documenting the requirements of a system, and establishing and maintaining agreement between the customer and the project team on changes to those requirements.

Requirements Management Rich Text Format (RM-RTF)
The native format of textual requirements in the RM system.

resolve
To reconcile conflicts among change sets in a repository workspace.

resource

1. A specific XML entity in an XML data source. A resource can be associated with an XML schema and can be used to map a data source to a relational database table to create reports.
2. See artifact.
3. A person who can be assigned to work breakdown structure (WBS) elements.

resource definition

1. See data set definition.
2. See library definition.

resource group
A collection of XML sources from a product that share a common base web address. The web address determines the connection between the product data and the relational database that is used to create reports.

resource leveling
During plan scheduling, the process of resolving over-allocated resources by delaying tasks until the assigned resources are available to work on them.

resource shape
In the Open Services for Lifecycle Collaboration (OSLC) specification, a high-level description of the contents, properties, and constraints of a resource. See also artifact type.

response file
A file that can be customized with the setup and configuration data that automates an installation. During an interactive installation, the setup and configuration data must be entered, but with a response file, the installation can proceed without any intervention.

REST
See Representational State Transfer.

resume
To reinstate a previously suspended change set to a repository workspace.

reverse proxy
An IP-forwarding topology where the proxy is on behalf of the back-end HTTP server. It is an application proxy for servers using HTTP.

revision
A version of an artifact that is designed to replace an earlier version, such as a model year of a car or a revised requirement. See also artifact, version.

rich hover
An in-context preview of the content that a link points to when the cursor hovers over the link.

risk
An ongoing or upcoming concern that has a significant probability of adversely affecting the success of major milestones.

RM
See requirements management.

RM-RTF
See Requirements Management Rich Text Format.

roll back
To revert a software package to a previously installed version.

roundtripping
A process of converting data from one type to another and then back to the first type while preserving the format and content of the data.

S

sandbox
An area on a file system where a developer can modify and test items in isolation, before returning them to the source control component and sharing them with other developers. A sandbox is a reflection of all or part of a repository workspace on disk.

scalar
Pertaining to a single data item.

schedule constraint
A limit to set controls on the start and finish dates on project tasks. Available constraints are as soon as possible and finish-no-later-than.

schema

1. See XML schema.
2. A specification for the structure and semantics of some related data. The schema is used to validate or otherwise understand a group of data.

SCIM
See System for Cross-domain Identity Management.

SCM

1. See source control management.
2. See software configuration management.

screen flow
A representation of a sequence of user-driven software processes that are presented as a series of graphical user interfaces.

scrub
To permanently delete all instances of and references to specific data, such as removing all traces of sensitive information from an application.

scrum

1. An agile software programming method that uses small, self-organizing, cross-functional teams, and iterative, incremental practices.
2. A daily, informal meeting between stakeholders in an agile development project. Participants must include a scrum master, the product owner, and the team and might include the product manager and other stakeholders.

search path
A list of the libraries provided to a IBM Engineering Workflow Management build to locate artifacts for the build, including the load library and object library for an i Project on IBM i.

Secure Sockets Layer (SSL)
A security protocol that provides communication privacy. With SSL, client/server applications can communicate in a way that is designed to prevent eavesdropping, tampering, and message forgery.

security certificate
A certificate containing information used by the SSL protocol to establish a secure connection. The information can include who a certificate belongs to, who issued it, its unique serial number, its valid dates, and its encrypted 'fingerprint' that is used to verify the contents of the certificate.

security testing
Testing to determine the security of the software product. (ISTQB) See also functionality testing.

semaphore
An entity used to control access to system resources. Processes can be locked to a resource with semaphores if the processes follow certain programming conventions.

server friend
A server that allows other servers to communicate with it. After cross-server communication is configured, project areas and artifacts can be linked across servers.

severity
In software and systems development, a measurement of the importance for a unit of work, for example, critical, high, medium, or low.

shareable edit
A method of editing where users can lock different sections in the same module and edit those sections.

signature
The name and parameters of a behavioral feature.

silent installation
An installation that does not send messages to the console but instead stores messages and errors in log files. A silent installation can use response files for data input.

Simple Cloud Identity Management
See System for Cross-domain Identity Management.

single sign-on (SSO)
An authentication process in which a user can access more than one system or application by entering a single user ID and password.

singleton
A class that can be instantiated only once. A singleton class cannot be an interface.

skeleton code
A server-side code.

skipped resource
A resource that cannot be fetched with an HTTP GET request to the application by Lifecycle Query Engine.

smart card
An intelligent token that is embedded with an integrated circuit chip that provides memory capacity and computational capabilities.

snapshot

1. In IBM Engineering Lifecycle Optimization - Engineering Insights, a saved, shareable instance of a view that shows artifacts and their relationships at the moment that instance is saved. A snapshot can be refreshed to show current artifacts and relationships.
2. See baseline.
3. In source control management, a collection of baselines that represents the configuration of a repository workspace or stream at a point in time.

snippet
In Rational Publishing Engine, a document template that contains only the elements for reuse in other document templates.

socket
A communications handle used by TCP/IP.

software configuration management (SCM)
The tracking and control of software development. SCM systems typically offer version control and team programming features. See also source control management.

source code data
Metadata, dependency properties, and other user-defined data that are created and updated periodically by running scanners against the source code. The data can be queried, edited, and used to analyze the impact of potential changes. Source code data is used by dependency builds to determine which dependant artifacts have changed and therefore require that buildable files be rebuilt.

source control
A tool that is used to manage source code, documents, and other artifacts to place under version control and share with a team.

source control management (SCM)
An aspect of software configuration management that involves managing changes to collections of files. See also software configuration management.

SPARQL
A query language for RDF that is used to express queries across diverse data sources. The W3 specification defines the syntax and semantic of the SPARQL query language.

sprint
See iteration.

SSL
See Secure Sockets Layer.

SSO
See single sign-on.

stack
An area in memory that typically stores information such as temporary register information, values of parameters, and return addresses of subroutines and is based on the principle of last in, first out (LIFO).

staging stream
A copy of a stream hierarchy that acts as a staging area for a new baseline.

stakeholder
An individual or organization that is involved in or may be affected by project activities.

stale resource
A resource that is out-of-date in the Lifecycle Query Engine index because a change made in the application is not yet reflected in the index.

start date
A point in time associated with the start of work and usually qualified as actual, planned, estimated, and scheduled. Start date combined with duration and dependencies permits the calculation of finish date.

statechart
A chart, added at the class level, that describes the behavior of a particular class. Statecharts also define the behavior of objects by specifying how they react to events or operations.

stereotype
A meta-classification of an element. Stereotypes have semantic implications which can be specified for every specific stereotype value.

story
A development work item that defines part of a use case or a specific contribution to the value of the overall product.

storyboard
A sequential illustration of a user scenario that consists of numbered frames on a timeline.

stream

1. In configuration management, a modifiable set of versioned artifacts. See also artifact, baseline, configuration.
2. In source control management, a repository object that includes one or more components. Streams are typically used to integrate the work that is stored in repository workspaces. Team members deliver their changes to the stream and accept changes from other team members into their repository workspaces from the stream.

struct
An aggregate of elements having arbitrary types.

stub code
A piece of client-side code used for converting parameters.

stylesheet
A set of formatting rules that specify the standard appearance for a document.

subcapacity
Pertains to a software licensing scheme that bases charges on the capacity of the partition where the licensed program is used, rather than on the total capacity in the server. See also processor value unit.

summary task
A container element that comprises a series of tasks.

suspect
In linking and traceability, pertaining to a status when two artifacts might not satisfy the meaning of the link between them. The contents of the artifacts must be reviewed to verify that they satisfy the link. See also invalid, valid, validity summary.

suspend
To temporarily remove a change set from a repository workspace.

suspicion profile
A profile that identifies a set of link types, artifact types, and attributes to watch for changes. When artifacts that match the profile criteria are changed, the linked artifacts are marked with a suspicion indicator.

sync
See synchronize.

synchronization engine
The process that synchronizes data between Rational ClearCase and IBM Engineering Workflow Management source control.

synchronize (sync)
To add, subtract, or change one feature or artifact to match another. See also reconcile.

system
A set of individual components, such as people, machines, or methods, that work together to perform a function. See also product, product line.

system attribute
An attribute that is automatically generated when a module or object is created.

system definition reference search
A search that is used to discover which artifacts are associated with a particular system definition. The search can also re-reference a set of artifacts with a different system definition in one step.

system definitions
A collective term referring to a group of definitions in IBM Engineering Workflow Management, including IBM i libraries, z/OS data set definitions, language definitions, and translators.

system definitions node
A project node that is used to organize IBM i libraries and search paths, z/OS data set definitions, language definitions, and translators in the Team Artifacts view of IBM Engineering Workflow Management.

System for Cross-domain Identity Management (SCIM)
An Internet Engineering Task Force (IETF) specification and open API for managing user identities in cloud-based applications and services.

system tick
The minimal interval of a system timer.

T

tag
An identifier that groups related artifacts.

task

1. In agile development, a work item that defines a specific piece of work.
2. A scheduled project activity to which a resource can be assigned to perform work.

TC
See test case.

TCER
See test case execution record.

team area
A place within a project area for managing team membership, roles, assignments, and team artifacts.

team release plan
An artifact showing plan items and additional unstructured information for a team or project area and a development iteration and the associated child iteration plans.

template

1. In UML modeling, a model element with unbound formal parameters that you can use to define families of classifiers, packages, and operations. A parameterized model element that describes or identifies the pattern for a group of model elements of a particular type.
2. A reusable report layout that can be used to set the presentation of part of a query or report definition. Each template includes information from data source schemas, variables, and styles.

test case (TC)

1. A set of tasks, scripts, or routines that automate the task of testing software.
2. A set of input values, execution preconditions, expected results and execution postconditions, developed for a particular objective or test condition, such as to exercise a particular program path or to verify compliance with a specific requirement. (ISTQB)

test case execution record (TCER)
A record of the execution environments for a specific instance of a test case. One can use this record to run a test case instance and to track the status of each test run.

test configuration
A set of characteristics of the system that hosts the system under test. These characteristics affect the conditions for test execution and the evaluation of test results.

test data
Data that exists (for example, in a database) before a test is executed, and that affects or is affected by the component or system under test. (ISTQB)

test design specification
A document specifying the test conditions (coverage items) for a test item, the detailed test approach and identifying the associated high level test cases. (ISTQB)

test environment
An environment containing hardware, instrumentation, simulators, software tools, and other support elements needed to conduct a test. (ISTQB)

test estimation
The calculated approximation of a result related to various aspects of testing (e.g. effort spent, completion date, costs involved, number of test cases, etc.) which is usable even if input data may be incomplete, uncertain, or noisy. (ISTQB)

test plan
A set of test cases that defines an area of testing.

test script
Commonly used to refer to a test procedure specification, especially an automated one. (ISTQB)

test suite
A collection of test cases that are grouped for execution purposes.

test suite execution record (TSER)
A record of the execution environments for a specific instance of a test suite. One can use this record to run a test suite instance and to track the status of each test run.

thread
A stream of computer instructions that is in control of a process. In some operating systems, a thread is the smallest unit of operation in a process. Several threads can run concurrently, performing different jobs.

tick time
The interval of time that defines the basic system tick.

tick timer
A timer used by the operating system factory for real-time modeling.

time code
A code that is used by resources in the timesheet module to classify reported time.

timeline
An area of activity in a project that typically has its own schedule, deliverables, teams, and process.

timeout
An event that occurs at the end of a predetermined period of time that began at the occurrence of another specified event.

timer
A task that produces output at certain points in time.

TLS
See Transport Layer Security.

toolkit
A set of development tools used to write and test software applications.

topology
The physical or logical mapping of the location of networking components or nodes within a network.

trace link
A hyperlink that conveys relationships between the artifacts it links, such as dependency, origin, derivation, implementation, or validation. Trace links have link types, which are defined by an Open Services for Lifecycle Collaboration specification or by a project. See also content link.

track build item
A development work item that tracks required fixes after a failed build.

tracked resource set (TRS)
The set of resources in a finite collection of artifacts, expressed as a set of members (a base) and a change log.

translator
A Jazz model object that describes a single build step in which a translator executable program is invoked with the required inputs and outputs. Inputs and outputs are the same as z/OS data sets or IBM i libraries, so a translator must reference multiple data set or library definitions.

Transport Layer Security (TLS)
A set of encryption rules that uses verified certificates and encryption keys to secure communications over the Internet. TLS is an update to the SSL protocol.

traversal
The process of systematically visiting each node in a diagram or tree once.

traverse
To systematically visit each node in a diagram or tree once.

TRS
See tracked resource set.

trusted consumer
A consumer that can share authorization with other trusted consumers and does not require user approval to access data. A consumer must be designated as trusted in an access request to become a trusted consumer.

TSER
See test suite execution record.

type definition
An entry in the type system for an artifact type, attribute, data type, or link type.

type system
The set of types of artifacts and the definitions of their attributes, data types, and link types that are available in an application.

type system model
A collection of types and property information that is gathered from a set of tools and their data artifacts.

U

undelete
To restore an item to the database.

Uniform Resource Identifier (URI)
A unique address that is used to identify content on the web. The most common form of URI is the web page address, which is a particular form or subset of URI called a Uniform Resource Locator (URL). A URI typically describes how to access the resource, the computer that contains the resource, and the location of the resource on that computer.

upstream
Pertaining to a direction that goes against the flow of a development process that moves from requirements to designs to implementation to tests. For example, requirements are upstream from tests. See also downstream.

URI
See Uniform Resource Identifier.

use case
The specification of a sequence of actions that a system can perform, interacting with users of the system. Use cases are used in system analysis to identify system requirements.

user interface sketch
A mock-up of a graphical user interface at any one point in the application's operation.

V

valid
In linking and traceability, pertaining to a manually set status when two artifacts satisfy the meaning of the link between them. See also invalid, suspect, validity summary.

validity
In linking and traceability, an assessment of whether two artifacts satisfy the meaning of the link between them. See also validity summary.

validity summary
In linking and traceability, an aggregate assessment of whether links for an artifact are valid. See also invalid, suspect, valid, validity.

variable

1. In Rational Publishing Engine, a customized data attribute that is defined for a template and whose value can be assigned or calculated when a document is generated.
2. In IBM Engineering Workflow Management, a user-defined parameter that can be included in the command and option strings of the translator.

variant
A version of an artifact or a product that is identified by a specific set of characteristics that distinguish it from other artifacts or products in the product line, where each variant can exist at the same time as other versions of the artifact or product. See also product, product line, variation point.

variation point
An aspect of a design with multiple potential values that, when chosen, define one of the characteristics that distinguish one product from another within a product line. See also product line, variant.

verbose logging
A logging option that records more information than standard logging to provide information for troubleshooting.

version
The referenceable state of an artifact. In a linked data system, each version can be referenced with a unique URI. See also artifact, configuration, configuration specification, revision.

view

1. A subset of information that can be displayed by applying filters or sorting.
2. In Eclipse-based user interfaces, any pane in the workbench that is outside the editor area and can be stacked (dragged and dropped) on top of other views. Views provide different ways to look at or work with the resources in the workbench.

V process model
A visual representation of the systems development lifecycle as a modified waterfall methodology, with the phases arrayed across a V shape to correlate development with testing.

W

WBS
See work breakdown structure.

web app
See web application.

web application (web app)
An application that is accessible by a web browser and that provides some function beyond static display of information, for instance by allowing the user to query a database. Common components of a web application include HTML pages, JSP pages, and servlets.

webify
To enable a model to work on the web.

widget
A portable, reusable application or piece of dynamic content that can be placed into a web page, receive input, and communicate with an application or with another widget. See also gadget.

wireframe
A simple line diagram or schematic that is used to mock up user interfaces or web pages.

work
An assignment to tasks with estimated or planned hours. See also effort.

work breakdown structure (WBS)
A grouping of project elements, organized in a hierarchical tree structure. It defines the total scope of the project at the highest level in the tree and each descending level provides an increasingly granular definition of each element.

workflow
A sequence of connected steps that moves an action to completion.

working set
A user-defined set of conditions that defines which projects, folders, and modules are available for use by external reporting tools.

work item
An artifact representing a generalized notion of a development task, such as a task, defect report, or enhancement request.

workspace

1. In Eclipse, the collection of projects and other resources that the user is currently developing in the workbench. Metadata about these resources resides in a directory on the file system; the resources might reside in the same directory. See also repository workspace.
2. A context that contains a collection of artifacts that a user with appropriate permission can modify.

workspace flow target
A source or destination of incoming and outgoing change sets.

wrapper thread
A thread used to wrap an external thread so it can be treated as one of the application threads on the call stack. A wrapper thread can be suspended, resumed, can have its priority set, and can participate in animation.

X

XDC file
See XML data configuration file.

XML data configuration file (XDC file)
A configuration file that defines the relationship between entities in a data source and columns in a relational table. See also data source schema.

XML schema
A mechanism for describing and constraining the content of XML files by indicating which elements are allowed and in which combinations. XML schemas are an alternative to document type definitions (DTDs) and can be used to extend functionality in the areas of data typing, inheritance, and presentation.

Z

zComponent
A logical group of z/OS artifacts that share a common context; for example, all of the artifacts in a zComponent might comprise part of some application.

zComponent project

1. An Eclipse integrated development environment (IDE) project with specific z/OS IBM Engineering Workflow Management components.
2. A container into which buildable artifacts, such as COBOL programs, can be grouped.

zFile
An artifact that represents a PDS member on MVS. A zFile can be associated with a language definition for Ant builds or for Rational Developer for System z integration syntax checking.

zFolder
A container for a group of artifacts within a zComponent Project, used to represent a partitioned data set (PDS). Each zFolder is associated with a data set definition to create the source PDS on z/OS.

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