



Developing Java CAPS Projects



Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054
U.S.A.

Part No: 820-3370-12
June 2008

Copyright 2008 Sun Microsystems, Inc. 4150 Network Circle, Santa Clara, CA 95054 U.S.A. All rights reserved.

Sun Microsystems, Inc. has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more U.S. patents or pending patent applications in the U.S. and in other countries.

U.S. Government Rights – Commercial software. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements.

This distribution may include materials developed by third parties.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, the Solaris logo, the Java Coffee Cup logo, docs.sun.com, Java, and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. or its subsidiaries in the U.S. and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

Products covered by and information contained in this publication are controlled by U.S. Export Control laws and may be subject to the export or import laws in other countries. Nuclear, missile, chemical or biological weapons or nuclear maritime end uses or end users, whether direct or indirect, are strictly prohibited. Export or reexport to countries subject to U.S. embargo or to entities identified on U.S. export exclusion lists, including, but not limited to, the denied persons and specially designated nationals lists is strictly prohibited.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Contents

Developing Java CAPS Projects	5
Connecting to a Repository	6
▼ To Connect to a Repository	6
Creating a Repository-Based Project	8
▼ To Create a Top-level Repository-Based Project	8
Opening a Repository-Based Project	9
▼ To Open a Top-level Repository-Based Project	9
Adding and Connecting Project Components	10
Project Nesting	10
Using the Connectivity Map Editor	11
Linking Services and Destinations	13
▼ To Link Services and Destinations	13
Adding and Setting Up Schedulers	14
▼ To Add a Scheduler to the Project	14
▼ To Configure the Schedule	15
▼ To Configure the Time Zone	15
Project Context Menu	16
Project Component Context Menu	20
Connectivity Map Editor Toolbar	22
Project Component Overview	23
Project Components	23
Business Processes	25
Collaborations	25
Message Destinations	26
External Applications	27
Web Service Applications	28
Web Connectors	29
WLM Connectors	29

Collaboration Definitions	30
Object Type Definitions	30
Web Service Definitions	31
XML Schema Definitions	31
Constants and Variables	32
Connectivity Maps	32
Deployment Profiles	33
Index	35

Developing Java CAPS Projects

A Project represents a logical system designed to implement either all or part of a business integration task. The basic functionality of a Project is processing and routing messages, which it accomplishes by means of Collaborations. Projects are created using tools contained within the NetBeans IDE, and are deployed to specific runtime Environments that represent the physical system supporting the software. Components developed for use in one Project can be used in another, and a Project can internally reference another Project.

With the release of Java CAPS 6, Projects can be either Repository-based or based on Java™ Business Integration (JBI). With this release, you also create or open a top-level Repository-based project following the standard NetBeans pattern. Even though data for Repository-based Projects remains externally stored in the Repository, the projects appear as Project folders under the CAPSRepositoryProject directory. There is one folder for each top-level project, and these folders contain pointers to the Repository for each Java CAPS Project you create.

The CAPSRepositoryProject is synchronized with the top-level projects in the Repository each time the Repository is refreshed and each time NetBeans connects to the Repository. You can refresh the Repository by using the Tools > CAPS Repository > Refresh All menu item. Refreshing or connecting to the Repository downloads information from the Repository to the local CAPSRepositoryProject directory.

The following sections provide information on creating and opening a Repository-based top-level Project, and connecting Project components to each other. If you have any questions or problems, see the Java CAPS web site at <http://goldstar.stc.com/support>.

Procedures are described in the following topics:

- “Connecting to a Repository” on page 6
- “Creating a Repository-Based Project” on page 8
- “Opening a Repository-Based Project” on page 9
- “Adding and Connecting Project Components” on page 10
- “Linking Services and Destinations” on page 13

- “Adding and Setting Up Schedulers” on page 14

Project components are discussed in the following topic :

- “Project Component Overview” on page 23

Additional details about relevant features of the enhanced NetBeans IDE user interface are provided in the following topics:

- “Project Context Menu” on page 16
- “Project Component Context Menu” on page 20
- “Connectivity Map Editor Toolbar” on page 22

Connecting to a Repository

The following procedure describes how to connect to a Java CAPS Repository.

▼ To Connect to a Repository

- 1 **You can connect to a JavaCAPS Repository by selecting Tools > CAPS Repository > Connect, which displays the Connect to CAPS Repository dialog box. If you're already connected to a CAPS Repository, you can change Repositories by selecting Change Connection.**



- 2 Specify or confirm the appropriate connection parameters and click Connect.



Note – The Project Location you specify is the directory you need to browse to in the following step. By default, this directory is c:\Documents and Settings\username\My Documents\CAPSRepositoryProjects.

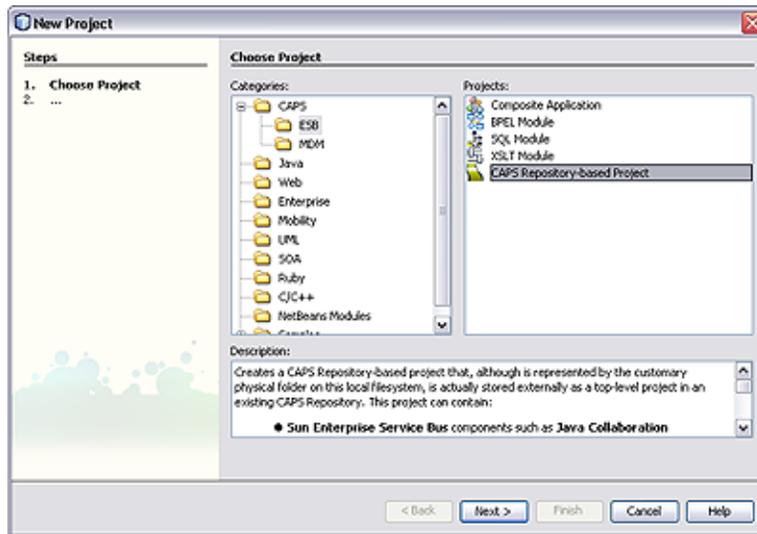
The preceding figure shows the Login ID and Repository Host fields to be disabled, indicating that the connection parameters have been determined. You can redefine these parameters in any open Project, even if you are not currently connected to a CAPS Repository, by selecting Tools > CAPS Repository > Change Connection, which enables these fields for editing. If you do so, all other open Repository-based Projects will be closed automatically, since open Projects must come from a single Repository.

Creating a Repository-Based Project

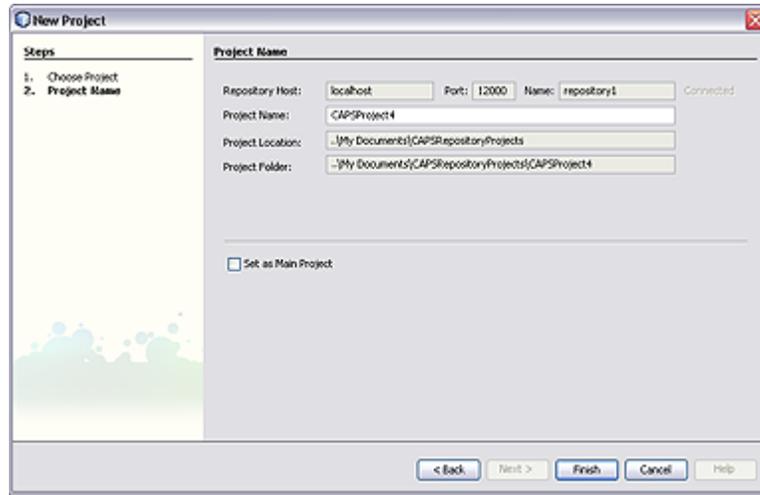
The following procedure describes how to create a new top-level, Repository-based CAPS project in the NetBeans IDE. After creating your project, it will appear under the NetBeans Projects window.

▼ To Create a Top-level Repository-Based Project

- 1 Click the New Project icon, or select File > New Project to initiate the New Project wizard.
- 2 In Step 1, select CAPS > ESB from the Categories column and CAPS Repository-Based Project from the Projects column, and click Next.



- 3 In Step 2, specify your Project Name and click Finish.

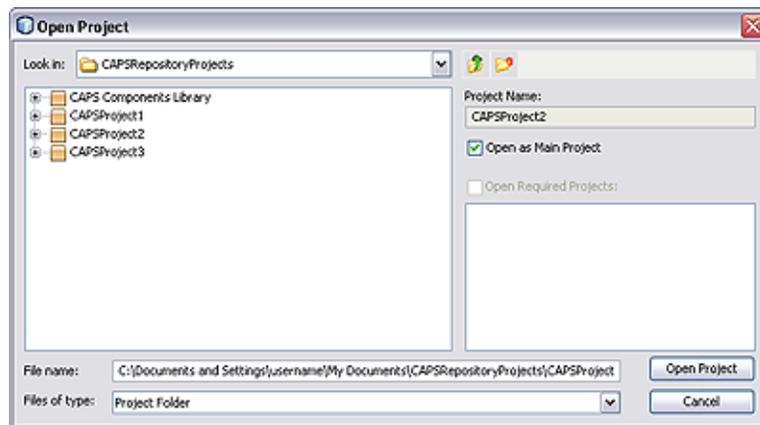


Opening a Repository-Based Project

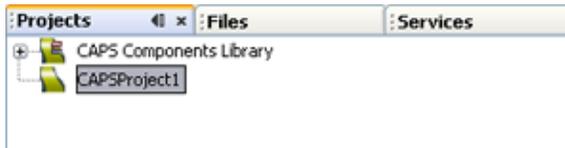
The following procedure describes how to open an existing top-level, Repository-based CAPS project in the NetBeans IDE.

▼ To Open a Top-level Repository-Based Project

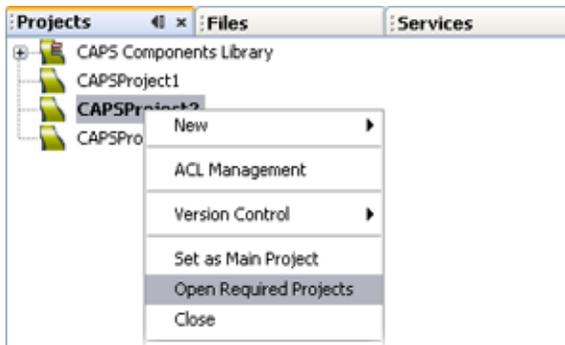
- 1 Click the **Open Project** icon, or select **File > Open Project**, which displays the **Open Project** dialog box.



- 2 Select one or more top-level projects from the displayed list and click Open Project. The project now appears as selected under the Projects window.



- 3 Select Open Required Projects from the context menu for the CAPS project to ensure that all other directly or indirectly referenced top-level CAPS projects are also opened under the Projects window.



Adding and Connecting Project Components

You can add most Project components to a Project by selecting the *New > Component Type* option from the Project context menu under the Projects window (a Scheduler is an exception). For those components appearing in the Connectivity Map Editor toolbar, you can simply drag the icon onto the Editor's canvas. Once you have finished editing the Connectivity Map, click the Generate Connectivity Map icon to add the components to the Project in the Repository.

Note – Collaboration Definitions should be created before adding Collaborations, because of the complication of multiple targets.

Project Nesting

Projects can contain Subprojects, which in turn can contain other Subprojects. Primarily because of limitations in the user interface, the working limit for nesting Projects within other Projects is five levels (total), as shown in the following figure.



FIGURE 1 Project Nesting

Using the Connectivity Map Editor

When you create a new Connectivity Map in the Enterprise Explorer, the editor panel displays the Connectivity Map Editor, as shown in the following figure. To define your Project, you simply drag icons from the toolbar to the workspace, or canvas, to populate the Connectivity Map with the necessary components. You can also create objects under the Projects window using the Project context menu, and drag them onto the Connectivity Map canvas.

You subsequently link the components by dragging the cursor from the output arrowhead of one to the input arrowhead of the other. The cursor turns into a hand during this operation.

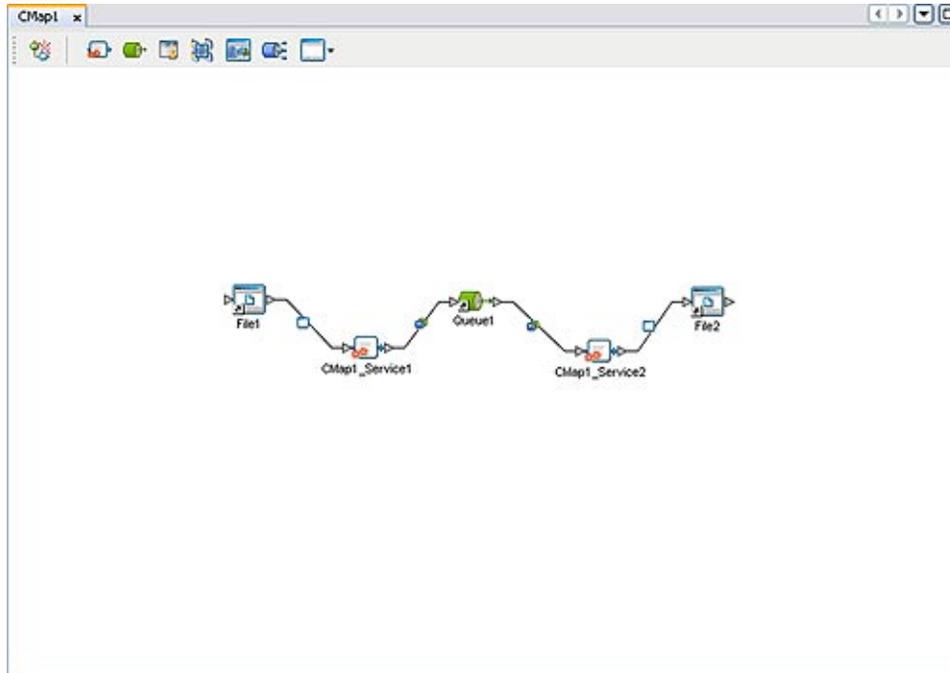


FIGURE 2 Connectivity Map Editor

The drag-and-drop components include services, queues, topics, schedulers, and external applications. Additional components, such as *Adapters* and *JMS Clients*, are placed automatically when you link the components you have placed manually.

It is important to understand that the logical components appearing in the Connectivity Map are essentially *placeholders* that refer to the “actual” components that exist in the Repository and appear under the *Projects* window. Deleting a queue or topic in the Connectivity Map only affects the placeholder, not the object in the Repository. Deleting a queue or topic in the Repository, however, does delete its placeholder counterpart in the Connectivity Map. Renaming either the object or the placeholder automatically renames both.

When you link two components on a Connectivity Map, the NetBeans IDE places a connection icon on the link; the entity represented by the icon depends upon the type of components you are linking.

- When you link an external application with a Collaboration, the NetBeans IDE automatically adds the appropriate adapter to the link. The adapter enables communication and movement of data between the external application and the other Project components. The adapter configuration specifies the logical connection properties for the link. See the individual adapter user guides for specific information.

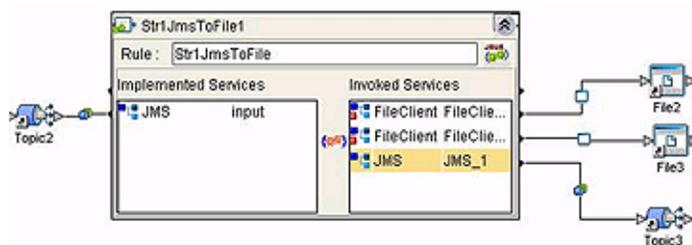
- When you link a Web Services External Application with a Collaboration, the NetBeans IDE automatically adds a *Web Service External Application Connector* to the link. This connector enables communication and movement of data between the web services application and the other Project components. The binding configuration specifies the logical connection properties for the link.
- When you link a Service with a Message Destination (queue or topic), the NetBeans IDE adds a *JMS Client* connection to the link. The JMS Client configuration specifies the logical connection properties for the linked Service.

Linking Services and Destinations

After you have bound a Collaboration Definition to a service to create a Collaboration as described in “[Collaborations](#)” on page 25, you must link the Collaboration’s services to the inbound and outbound destinations.

▼ To Link Services and Destinations

- 1 Double-click the Collaboration (or other service) to display its binding box, as shown in the figure below.
- 2 Drag the output port of the source component to the Implemented Services pane.
- 3 Drag the services from the Invoked Services pane to their appropriate destinations
- 4 Close the Collaboration binding box and click Save.



When there are multiple destinations, as in the example, the Connectivity Map Editor cannot resolve which output port connects to which destination. Because of this, you must first create the Collaboration Definition, and then make the connections by opening the Collaboration binding box and connecting the output ports for the individual services to their intended destinations.

Connection-related properties for the Collaboration or other service are configured in the adjoining JMS Client.

Adding and Setting Up Schedulers



FIGURE 3 Scheduler Icon

A *Scheduler* allows a service to be performed at a prescribed interval. It is treated as an external application, and must be deployed to a *Scheduler External System* in the runtime Environment.

As with other Project components, scheduler names can contain alphanumeric characters (letters and numbers), dashes, and underscores. The following special characters also can be used in scheduler names: <, >, &.

Note that:

- Double-clicking the connector icon displays the Properties dialog for the associated scheduler.
- Expanding the Scheduler node under the Projects window and selecting a sub-node (schedule type) also displays the Properties dialog for the scheduler.
- Right-clicking the scheduler under the Projects window displays its context menu. See “Project Component Context Menu” on page 20 for a list of menu options.

▼ To Add a Scheduler to the Project

- 1 **If this is the first scheduler to be added to the Project, select the Scheduler icon from the External Application menu in the Connectivity Map Editor. This adds the icon to the editor's toolbar.**
- 2 **Drag the Scheduler icon from the toolbar onto the canvas and link it to the appropriate service. The connector icon appears as a red dot, indicating that it is not configured.**
- 3 **Configure the schedule and the time zone as described in the following procedures.**
- 4 **Click the Generate Connectivity Map icon to add the scheduler to the Project in the Repository.**

▼ To Configure the Schedule

- 1 Select the appropriate schedule type, either from the `Projects` window or by accessing the `Properties` dialog. Selecting the type displays the properties for that type. For example, `Weekly on day` displays entry fields for the day of the week and the time.
- 2 Click in the value field to edit the value (a drop-down menu may be displayed).

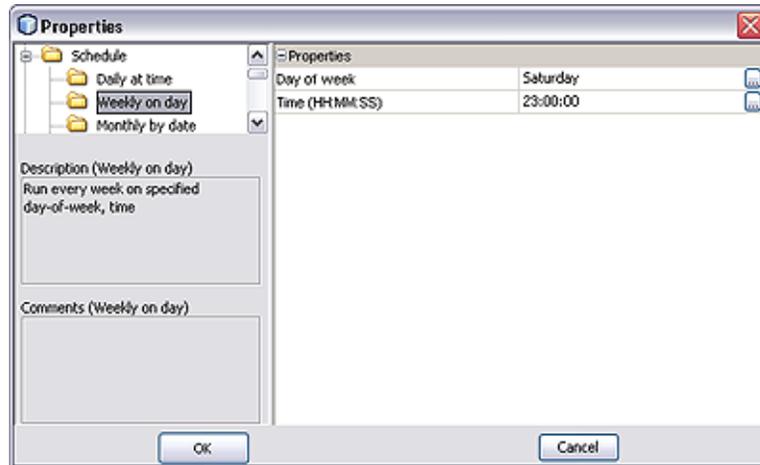


FIGURE 4 Scheduler Properties Dialog: Schedule

▼ To Configure the Time Zone

- 1 Select `Time Zone` to display the `Time Zone` entry field.
- 2 Click in the value field to display the menu, and select the time zone with which you want the Scheduler to be synchronized.

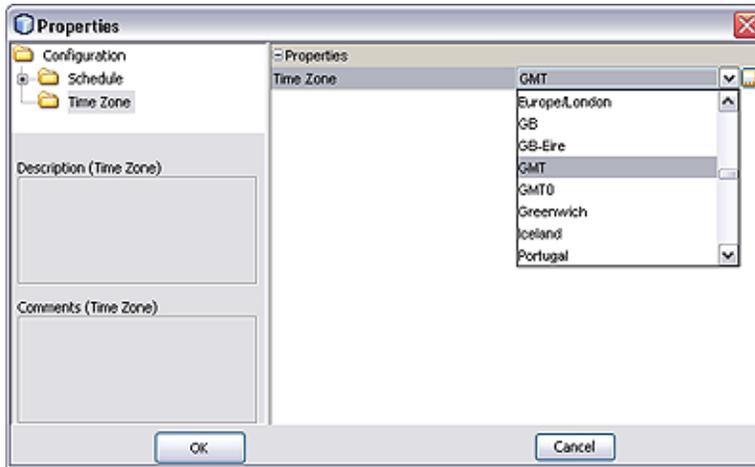


FIGURE 5 Scheduler Properties Dialog: Time Zone

Project Context Menu

The different components available to you to incorporate into a Project are represented in the Project context menu. Top-level Projects and Subprojects have context menus similar to those shown in the following figures. Additional menu options may be shown, depending upon what additional products you have installed.

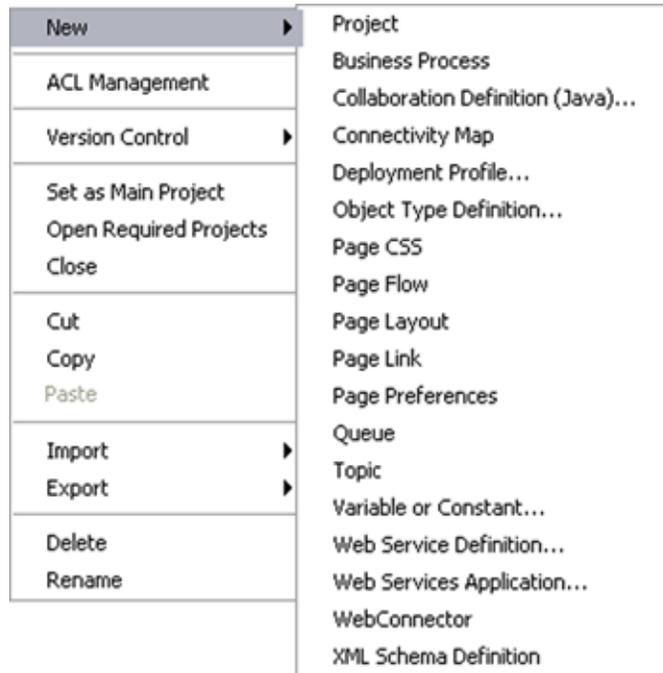


FIGURE 6 Project Context Menu



FIGURE 7 Subproject Context Menu

The various menu options are described in the following table.

TABLE 1 Project Context Menu Options

Option	Function
New	
Project	Adds a Subproject folder to the selected Project. You should limit the total number of Project/Subproject levels to 5.
Business Process	Adds a Business Process to the selected Project.
Collaboration Definition (Java)	Presents the Collaboration Definition Wizard (Java), with which you can create a Java based Collaboration Definition.
Connectivity Map	Adds a Connectivity Map to the selected Project.
Deployment Profile	Presents a dialog with which you can create a Deployment Profile for the selected Project.
Object Type Definition	Presents the OTD Wizard, with which you can create an Object Type Definition (OTD) file.
Page CSS	Used with Sun Composite Page Designer.
Page Flow	Used with Sun Composite Page Designer.
Page Layout	Used with Sun Composite Page Designer.
Page Link	Used with Sun Composite Page Designer.
Page Preferences	Used with Sun Composite Page Designer.
Queue	Adds a queue to the selected Project.
Topic	Adds a topic to the selected Project.
Variable or Constant	Presents a dialog with which you can add a constant or variable icon to the selected Project.
Web Service Definition	Adds a WSDL document to the selected Project and opens the Web Services Designer.
Web Services Application	Adds a Web Services Application to the selected Project.
Web Connector	Adds a Web Connector to the selected Project. Used with Sun Business Process Manager.
XML Schema Definition	Adds an XML Schema Definition (XSD) to the selected Project and opens the XSD Editor.
ACL Management	Presents the ACL Properties dialog, in which an Administrator can assign read/write privileges to users for the selected Project.

TABLE 1 Project Context Menu Options		(Continued)
Option		Function
Version Control	Check In	Presents a dialog with which you can check in a new version of the selected Project.
	Check Out	Presents a dialog with which you can check out the current version of the selected Project.
	Tag	Presents a dialog with which you can specify a tag to attach to the selected Project.
Set as Main Project		Sets the selected Project as the main Project (top-level Projects only). This option has no functionality in Java CAPS 6.
Open Required Projects		Ensures that all other directly or indirectly referenced top-level CAPS Projects are also opened when the selected Project is opened (top-level Projects only).
Close		Closes the selected Project (top-level Projects only).
Cut		Copies the selected Project and removes it from the current Project tree, after which you can paste it to another Project as a Subproject within the same branch (once only). All changes must be committed before you can cut the Project. Cut and paste is disabled for other users when you have the Project checked out.
Copy		Copies the selected Project, after which you can paste it to other Projects as a Subproject within the same branch (multiple times). All changes must be committed before you can copy the Project. You can copy a Project even when another user has the Project checked out.
Paste		Pastes a cut or copied component into the selected Project within the same branch (Projects are pasted as Subprojects). Pasting is disabled for other users when you have the Project checked out.
Import	File	Presents a dialog with which you can import an external file into the Project.
	Project	Presents a dialog with which you can import a Project as a Subproject under the selected Project.
	Web Service Definition	Presents a dialog with which you can import existing Web Service Definitions for defining a web service.
	XML Schema Definition	Presents a dialog with which you can import existing XML Schema Definitions for defining a web service.
Export	Project	Presents a dialog with which you can export the selected Project.

TABLE 1 Project Context Menu Options	(Continued)
Option	Function
Delete	Deletes the selected Project, subject to the following conditions: <ul style="list-style-type: none"> ■ You have <i>write</i> privileges for the Project (see ACL Management, above). ■ The Project is not checked out by anyone other than yourself. If these conditions are true, a dialog is displayed in which you confirm that you want to delete the selected Project. Clicking Yes then deletes the Project. If the selected Project contains active Deployment Profiles, a dialog is displayed listing those deployments and requesting that you deactivate them. You must select deactivation to enable the Yes button.
Rename	Activates the field, allowing you to rename the selected Project. Note that all Project names should contain only alphanumeric characters (letters and numbers), dashes, and underscores. Blank spaces are not allowed.

Project Component Context Menu

Project components have context menus such as that shown in the figure below.

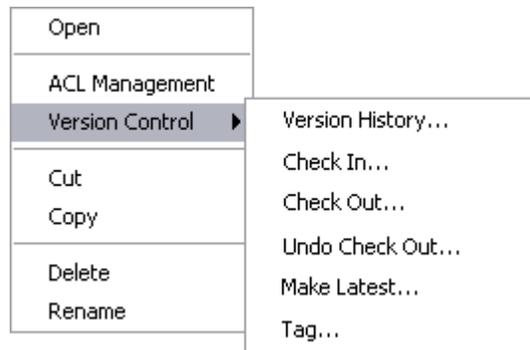


FIGURE 8 Project Component Context Menu

The various menu options are described in the following table.

TABLE 2 Project Component Context Menu Options

Option	Function
Open	If shown, opens the selected component in the appropriate NetBeans editor. Click the Refresh All icon or select Tools > CAPS Repository > Refresh All before you open any Project component (such as a Collaboration) to ensure that you open the latest version of the component.
ACL Management	Presents the ACL Properties dialog, with which an Administrator can assign read/write privileges to users for the selected component.
Version Control	Version History
	Check In
	Check Out
	Undo Check Out
	Make Latest
	Tag
Cut	Copies the selected component and removes it from the current Project, after which you can paste it to another Project within the same branch (once only). All changes must be committed before you can cut the component. Cut and paste is disabled for other users when you have the component checked out.
Copy	Copies the selected component, after which you can paste it to other Projects within the same branch (multiple times). All changes must be committed before you can copy the component. You can copy and paste a component even when another user has the component checked out. If a component is copied and pasted back into the original Project, the name is automatically modified with a suffix (_1); in the case of multiple pastes, the suffix is incremented by 1 for each subsequent paste.

TABLE 2 Project Component Context Menu Options (Continued)

Option	Function
Delete	<p>Deletes the selected component, subject to the following conditions:</p> <ul style="list-style-type: none"> ■ You have <i>write</i> privileges for the component (see ACL Management, above). ■ You have the component checked out to your workspace. ■ The component is not checked out by anyone other than yourself. <p>If these conditions are met, a dialog is presented in which you confirm that you want to delete the selected component. Clicking Yes then deletes the component.</p>
Rename	<p>Activates the field, allowing you to rename the selected component.</p> <p>Note that all Project component names should contain only alphanumeric characters (letters and numbers), dashes, and underscores. Blank spaces are not allowed.</p>
Properties	<p>Presents a dialog showing the configuration properties of the selected component, if such properties exist.</p>

Connectivity Map Editor Toolbar

The Connectivity Map Editor toolbar contains the icons listed in the following table, plus additional icons representing adapter add-ons and other Java CAPS components that you may have installed.

TABLE 3 Connectivity Map Editor Toolbar Icons

Icon	Component	Function
	Connectivity Map Generator	Generates an object in the Repository corresponding to the graphical construct on the Connectivity Map canvas.
	Service	A logical component that provides the framework for a process or Collaboration. See “Collaborations” on page 25.
	Queue	A Message Destination that conforms to the point-to-point messaging paradigm, having one sender and one receiver. See “Message Destinations” on page 26.
	WLM Connector	Connects a Business Process to the Worklist Manager for task assignment.

TABLE 3 Connectivity Map Editor Toolbar Icons (Continued)

Icon	Component	Function
	Web Connector	Connects a Business Process or Subprocess to another Business Process.
	Web Service Application	Represents a Web Service Application (see “ Web Service Applications ” on page 28).
	Topic	A Message Destination that conforms to the publish/subscribe messaging paradigm, having one sender (publisher) and multiple receivers (subscribers). See “ Message Destinations ” on page 26.
	External Applications	Represents an application external to Java CAPS. Click the arrow beside the icon to view a list of specific applications to which you can connect. See “ External Applications ” on page 27.

Project Component Overview

This topic briefly outlines the various components of a Repository-based Project.

Project Components

In a Repository-based Project, you specify the business logic for the specific implementation by defining the required Project components. For each of these components you specify logical properties, which are independent from the physical implementation. Projects are where you add and name message destinations, by dragging and dropping topics and queue icons onto the Connectivity Map canvas. See “[Connectivity Maps](#)” on page 32 for additional information.

On links between message destinations and their subscribers and publishers, there is a JMS client properties icon. By double-clicking the JMS client properties icon in the Connectivity Map, you can configure the connection for such items as persistent or non-persistent delivery mode, XA, and concurrent processing.

After having added the components for message destinations, you create the Object Type Definitions (OTDs) and Collaboration Definitions. After defining the Collaboration Definitions, you then create the relationships between the components by associating Collaboration Definitions with services. This defines a service as a Collaboration, and binds the Collaboration to its Collaboration Definition.

External Applications

Generally speaking, external applications are the beginning and end points of the Project data path.

See:

- [“External Applications” on page 27](#)
- [“Web Service Applications” on page 28](#)

Services

Services include Business Processes and Collaborations, which are the logical transformations to be performed on the data.

See:

- [“Business Processes” on page 25](#)
- [“Collaborations” on page 25](#)

Message Destinations

Message destinations (topics or queues) are internal storage and routing nodes within the Project.

See:

- [“Message Destinations” on page 26](#)

Connectors

Connectors provide links between Project components where JMS Clients are not appropriate, generally aside from the main data paths. They are used primarily when mapping Business Processes.

See:

- [“Web Connectors” on page 29](#)
- [“WLM Connectors” on page 29](#)

Definitions

There are several Project components that are incorporated into other components as definitions. As such, they are not independently mappable and do not appear in the Connectivity Map Editor.

See:

- [“Collaboration Definitions” on page 30](#)
- [“Object Type Definitions” on page 30](#)
- [“Web Service Definitions” on page 31](#)
- [“XML Schema Definitions” on page 31](#)
- [“Constants and Variables” on page 32](#)

Mapping Entities

Some additional Project components do not themselves appear in the data path, but rather affect those data path components in a global manner. Since they provide mapping information, they are not mappable in themselves, and do not appear in the Connectivity Map Editor.

See:

- [“Connectivity Maps” on page 32](#)
- [“Deployment Profiles” on page 33](#)

Business Processes



FIGURE 9 Business Process Icon

A business process is a collection of actions that take place in your company, revolving around a specific business practice. These business processes are modeled in Sun Business Process Manager, and then embodied as a *service* in a Repository-based Project. See *Designing Business Processes in Sun Business Process Manager* for information.

Collaborations



FIGURE 10 Java Collaboration Icon

A Collaboration represents a logical operation performed at run time between some combination of message destinations and external applications. These operations are often referred to as *transformations*. The nature of the operation is specified by a Collaboration Definition.

The Collaboration acts as a *service* having a publication or subscription relationship with each linked entity. The link is provided by a JMS Client connection, as described in [“Adding and Connecting Project Components” on page 10](#). Dragging a Collaboration Definition from under the Projects window and dropping it onto the Service icon in the Connectivity Map defines the service as a Collaboration. The icon changes from a generic service to a Java Collaboration.

Note – Any changes made to the names of the Collaborations should be done when the Collaboration is created. If the name is changed later, the Collaboration should be opened, regenerated if applicable, and saved again.

Message Destinations

A message destination is a container for stored data, and can follow either the JMS topic or JMS queue model.

- A *queue* is a message destination that conforms to the point-to-point messaging paradigm.



- A *topic* is a message destination that conforms to the publish-and-subscribe messaging paradigm.



You can add a message destination to a Project by selecting the **New > Queue** or **New > Topic** option from the *Project* context menu under the *Projects* window. You can also drag a Queue or Topic icon from the Connectivity Map toolbar onto the canvas. Clicking the **Generate Connectivity Map** icon then adds the component to the Project in the Repository. See also [“Connectivity Maps” on page 32](#).

Right-clicking the queue or topic under the *Projects* window displays its context menu. See [“Project Component Context Menu” on page 20](#) for a list of menu options.

As with other Project components, message destination names can contain alphanumeric characters (letters and numbers), dashes, and underscores. The following special characters also can be used in message destination names: `<`, `>`, `&`, `$`, `%`. Blank spaces are not allowed.

External Applications



FIGURE 11 External Application Icon

External applications are logical representations of external software applications that are being integrated by the Java CAPS system. These are linked to a Service by means of an adapter. Clicking the drop-down arrow beside the external application icon in the Connectivity Map Editor presents a menu showing those applications corresponding to adapters that you have installed, plus the Scheduler. Selecting an individual external application adds that icon to the toolbar. The default set of external applications is shown in the following figure.

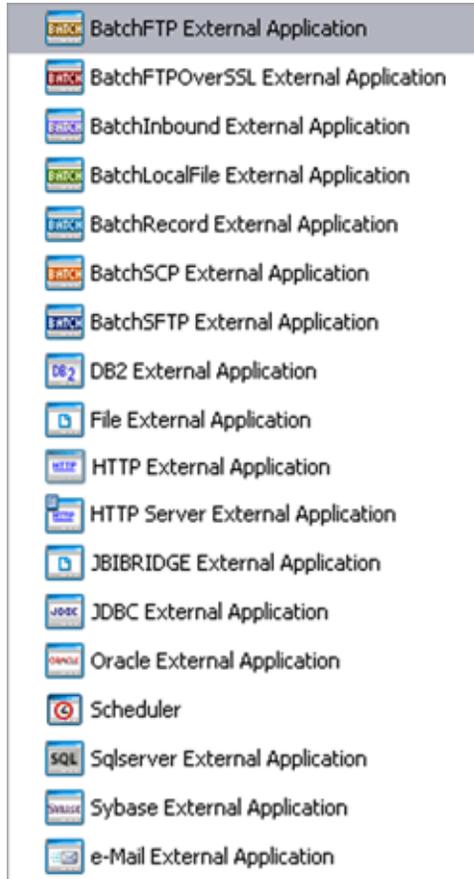


FIGURE 12 External Application Drop-Down Menu

Right-clicking the External Application under the Projects window displays its context menu. See “[Project Component Context Menu](#)” on page 20 for a list of menu options, and the individual adapter topics for additional information.

Web Service Applications



FIGURE 13 Web Service Application Icon

A *Web Service Application* is the logical representation of a web service that appears in a Repository-based Project.

If you are creating more than one Web Service Application for deployment in any given Environment, you must ensure that the respective *servlet context* properties have different values so that each application will have a different URL. See also “SOAP/HTTP Web Service External Systems” in *Creating a Runtime Environment*.

Right-clicking the Web Service Application under the Projects window displays its context menu. See “[Project Component Context Menu](#)” on page 20 for a list of menu options.

Web Connectors



FIGURE 14 Web Connector Icon

A Web Connector connects a Business Process or Subprocess to another Business Process, for example to complete a feedback loop from a Subprocess back to the parent Business Process. For an example of its use in Project, see the *Sun Business Process Manager Audit Processing Tutorial* in *Designing Business Processes in Sun Business Process Manager*.

WLM Connectors



FIGURE 15 WLM Connector Icon

A WLM Connector connects a Business Process to the Worklist Manager for task assignment. For an example of its use in Project, see the *Sun Business Process Manager Audit Processing Tutorial* in *Designing Business Processes in Sun Business Process Manager*.

Collaboration Definitions



FIGURE 16 Collaboration Definition Icon

Collaboration Definitions define how data should be processed and routed between Project components, how databases should be queried in response to requests, and how APIs to one or more applications should be invoked. The external data formats that characterize the input and output data structures in a Collaboration Definition are described by Object Type Definitions (OTDs).

A Collaboration will typically receive a message containing the external representation of a particular OTD. It will use the `unmarshal` method of an instance of that OTD to parse the data and make it accessible through the hierarchical data structure. Then it will perform some operation— for example, copying parts of the data to another OTD instance. Finally, it will invoke the `marshal` method on the other OTD instance to render the contents of its data structure as a single, serialized data stream for further transport.

At run time, an OTD instance is accessed directly from Java, using accessors resembling JavaBeans. Each of the nodes comprising the hierarchy of the data structure has a set of properties with `get` and `set` methods.

A Java-based Collaboration Definition provides a single operation that can be invoked from a Business Process. You can create multiple methods in a Java-based Collaboration Definition, but the additional methods can only be invoked from within the Collaboration Definition.

Object Type Definitions



FIGURE 17 Object Type Definition Icon

The basic functionality of a Project is processing and routing messages, which it accomplishes by means of Collaborations. To operate on a message, the Collaboration needs a description of the message structure and format. This description is embodied in an Object Type Definition, or OTD, instances of which are incorporated into the Collaboration Definition.

A Collaboration will typically receive a message containing the external representation of a particular OTD. It will use the `unmarshal` method of an instance of that OTD to parse the data and make it accessible through the hierarchical data structure. Then it will perform some operation— for example, copying parts of the data to another OTD instance. Finally, it will invoke the `marshal` method on the other OTD instance to render the contents of its data structure as a single, serialized data stream for further transport.

In some cases, the OTD can be generated semi-automatically based on the external data source itself; in other cases, you must create the OTD using the tools provided in the NetBeans IDE.

Web Service Definitions



FIGURE 18 Web Service Definition Icon

Web Service Definitions, embodied as Web Service Definition Language (WSDL) files, can be used to invoke and operate web services on the Internet and/or to access and invoke remote applications and databases. WSDL files are used when you are building a web service.

A Web Service Definition, or WSD Object, can either be formed by importing an existing WSDL document or newly created using the Web Service Definition Editor. The minimum requirement for a WSD Object is that it represent an abstract WSDL document by containing (either directly or by import) one or more Operations and related messages. The WSD Object can also contain binding information.

XML Schema Definitions



FIGURE 19 XML Schema Definition Icon

XML schemas define the structure, content, data types, and elements allowed in an associated XML document. They also describe the semantic-processing instructions associated with the elements contained in the document. The XML schema is embodied in an XML Schema Definition (XSD) file, itself an XML document. XML schemas are used when you are building a web service based on a Java CAPS Collaboration Definition (Java).

Constants and Variables



FIGURE 20 Constant or Variable Icon

- **Project Constants**

Constants are name-value pairs that are visible across the Project. Using a constant allows you to define the value once, and then refer to it from the various Project configurations, rather than having to redefine the value everywhere it is needed. For example, you might define a standard currency to be used globally throughout the system.

- **Project Variables**

Variables function as placeholders, having values that are determined when you create a specific Deployment Profile. They can be either literals or Environmental constants.

Constants and variables are discussed further in *Defining Constants and Variables*.

Connectivity Maps



FIGURE 21 Connectivity Map Icon

A *connectivity map* is a graphical representation of your Project, containing the various logical components comprising the Project's data path and the links between them.

You can add a connectivity map to a Project by selecting the **New > Connectivity Map** option from the *Project* context menu in *Projects* window, which automatically opens the *Connectivity Map Editor*. The *Connectivity Map Editor* allows you to create much of your Project by simply dragging and dropping icons onto a Project canvas and then connecting them to form data paths. You then can configure the components by means of dialogs that are displayed by clicking on the component icons.

Right-clicking the connectivity map under the *Projects* window displays its context menu. See “[Project Component Context Menu](#)” on page 20 for a list of menu options.

Deployment Profiles



FIGURE 22 Deployment Profile Icon

Deployment profiles define how specific instances of a Project are deployed to a particular Environment, following the model shown in the following figure. A deployment profile contains information about the assignment of services and message destinations to application and message servers. It also contains version information for all relevant objects in the Project.

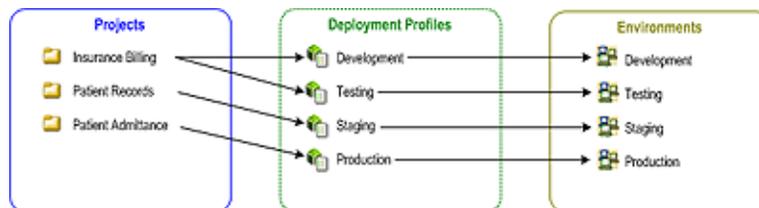


FIGURE 23 Java CAPS Implementation Model

To create a new deployment profile, right-click on a Project under the Projects window to display its context menu. From the menu, select **New > Deployment Profile**. See [Deploying Java CAPS Projects](#). To edit an existing deployment profile, select **Open** from its context menu. Either of these actions opens the Deployment Editor, where you can map Project components to the appropriate Environment components. See [“Project Component Context Menu”](#) on page 20 for a list of menu options.

Index

A

ACL properties, 18, 21
application, external, 27-28

B

business process, 25

C

collaboration, Java, 25-26
Collaboration Definition, 30
connectivity map, 32
Connectivity Map, Editor, 11

D

Definition
 Collaboration, 30
 Object Type, 30-31
 Web Service, 31
 XML Schema, 31
Deployment Profile, 33

E

Editor, Connectivity Map, 11
external application, 27-28

J

Java, collaboration, 25-26

N

nesting of Projects, 10-11

O

Object Type Definition, 30
OTD, 30-31

P

Profile, Deployment, 33
Project, nesting, 10-11

S

Scheduler, 14-15
Subproject, nesting, 10-11

W

Web Service Definition, 31

X

XML Schema Definition, 31

XSD, 31