

SBA Java Coding Standards

DRAFT

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U.S. Small Business Administration

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Revision Sheet

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1 GENERAL INFORMATION

1.1 Purpose

The purpose of this document is to provide the standards and procedures for JAVA Coding Standards at SBA.

1.2 Scope

The scope of this document is to describe, in detail, the procedure used to transfer files from a development environment to the test and production environments. This document describes the coding standards and procedures to be used during this process. As such, its primary audience is the development team responsible for JAVA operations.

1.3 Terms and Abbreviations

The following is a list of abbreviations used throughout this document:

EDMIS	Entrepreneurial Data Management Information System
PIMS	Partner Information Management System
OCIO	Office of the Chief Information Officer
OISS	Office of Information Systems Support
OT	Office of Technology
SBA	U.S. Small Business Administration

2 JAVA

2.1 Coding Standards

Adoption of Sun Java Development Coding Standards

[Taken from (<http://java.sun.com/docs/codeconv/CodeConventions.pdf>)]

It is important that the coding standards take into consideration the following:

- File Names
- File Organization
- Indentation
- Comments
- Declarations
- Statements
- White Space
- Naming Conventions
- Programming Practices

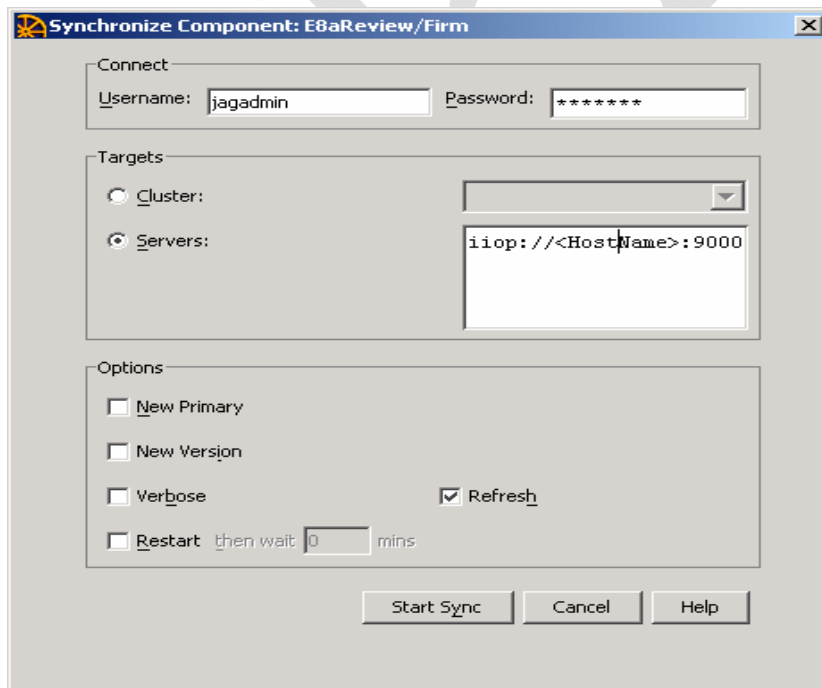
2.2 Deployment Standards

We have two application servers at present: JBoss and Sybase EAServer.

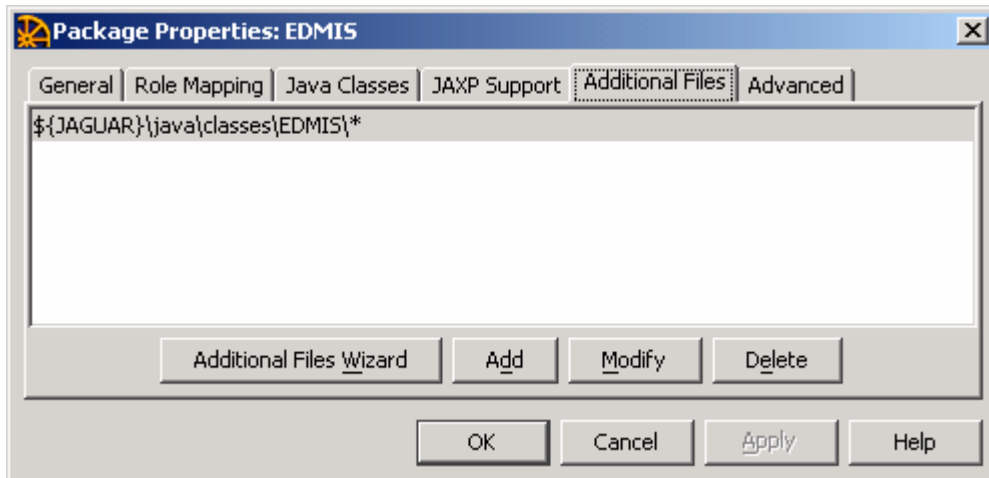
2.2.1 Synchronize the Jaguar (Sybase EAServer) Components

Rather than deploy the Jaguar components (CORBA), we synchronize them.

To synchronize the Jaguar components, it is necessary to select the component, right-click on it, and then select “Synchronize” from the menu. Upon doing this, we will see the screen displayed below:



Provide the necessary information as pertains to the particular server and then click on “Start Sync”. It will also synchronize the source files to the selected destination server that was specified in the “Package Properties” screen. For example, the screenshot below depicts EDMIS files that will be moved to the destination server:



2.2.2 Deploy the EJB to the JBoss Application Server

Currently, we are manually building JAR files, including both the compile code and source code, and then manually deploying them to the JBoss Server. In the near future, we will be using a standardized Ant build file (that all developers will use) in order to automatically build and deploy the JAR files to the JBoss Server.

2.2.3 Version Control & QC

At present, we are researching a version control system (SubVersion).

3 APPLICATION SERVERS

Application servers are used to take care of the business logic in a multi-tier architecture. Business logic is the functions that the software performs on the data. Multi-tier refers to the three tiers involved in the system: client, application server, and database.

Application servers are written for specific tasks that are defined by business needs. The application server's job is to retrieve, process and present data to the user interface. It also processes any input data whether queries or updates, including any validation, verification, and security checks that need to be performed.

An application server manages the enterprise beans contained within it. For each enterprise bean, the server is responsible for registering the object, providing a remote interface for the object, creating and destroying object instances, checking security for the object, managing the active state for the object, and coordinating distributed transactions. Optionally, the container can also manage all persistent data within the object

Professional Open Source(tm) from JBoss Inc. offers: (Taken from the JBoss website <http://docs.jboss.org/jbossas/jboss4guide/r1/html/pr02.html>):

- Standards-based and stable Java Middleware technology
- No cost open source product licenses
- Backed by a professional and expert support staff
- Comprehensive services including Professional Support, Training, and Consulting
- A very large and active community of developers
- An extensive worldwide network of authorized and certified partners

Benefits of Professional Open Source from JBoss Inc.:

- Lowest possible total cost of ownership
- Reliable and safe technology
- Support, accountability, and trust from a stable company
- Expedited problem resolution compared to commercial software vendors

3.1 JBoss

TBD (to be developed)

3.2 Sybase EAServer (Jaguar) Development Guide

Cold Fusion applications invoke Jaguar CORBA using Java Wrapper classes that exist in a Cf2Eas.jar file. We have used Sun java coding standards for implementing Jaguar CORBA Components. To create Java components, we need a development tool that supports JDK 1.4 or later and access to an EA Server installation. We need Administrator Role access to define or modify components. For development, we can use any compatible Java compiler in combination with EA Server Manager, or we can use a Java Integrated Development Environment (IDE).

The following outlines the steps to be followed in order to add, modify or delete an EA Server CORBA method(s). As a prerequisite, EA Server should be installed and the related components deployed on the developer's machine.

3.2.1 General Information about the Source Files

The source code files for package Security reside under
C:\Program Files\Sybase\EA Server\classes\PIMS

The files are:

- AddressImpl.java
- AgreementImpl.java
- AuthorizationImpl.java
- ContactImpl.java
- DBAccessImpl.java
- ElectronicAddressImpl.java
- LocationImpl.java
- NoteImpl.java
- PartnerImpl.java
- ValidationImpl.java

The source code files for package Security reside under
C:\Program Files\Sybase\EA Server\classes\Security

The files are:

- AppRoleImpl.java
- AuthenticationImpl.java
- BusinessUnitImpl.java
- EndUserImpl.java
- ManagementImpl.java
- RequestImpl.java
- RolePrivilegeImpl.java
- UserPrivilegeImpl.java
- UserRoleImpl.java

The source code files for package Security reside under
C:\Program Files\Sybase\EA Server\java\classes\EDMIS

The files are:

- EdmisBean.java
- M2226Bean.java
- M641Bean.java


```

M888Bean.java
Db2226Impl.java
Db641Impl.java
Db888Impl.java
Module2226Impl.java
Module641Impl.java
Module888Impl.java
ProcessXMLImpl.java
RealTimeImpl.java
ValidatorImpl.java

```

Each of the <component_name>Impl.java files represents the CORBA Component. Within each of the components, different methods have been implemented. The .java files are the parent classes.

3.2.2 Process for Adding a New Method

Open the <component_name>Impl.java files in any text editor.

Add a new method.

Make a batch file with the following contents to set the Java environment.

```

call " export\home\jaguar\bin\setenv"
set JAVA_HOME=%JAGUAR_JDK14%
set PATH=%JAVA_HOME%\bin;%PATH%
set OLD_CLASSPATH=%CLASSPATH%
set CLASSPATH=
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\easyclient.jar
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\easyserver.jar
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\easyj2ee.jar
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\classes\easyri.jar
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\classes
set CLASSPATH=%CLASSPATH%;%JAGUAR%\html\classes
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\TabularResults.jar
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\commons-logging.jar
set CLASSPATH=%CLASSPATH%;%OLD_CLASSPATH%

```

Go to Command Prompt and run this batch file.

If the method is added in a component which is a part of the package PIMS then

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\PIMS
```

If the method is added in a component which is a part of the package Security then

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\Security
```

If the method is added in a component which is a part of the package EDMIS then

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\EDMIS
```

Compile (using javac command) the <component_name>Impl.java file.

After a successful compilation,

Go to Start → Programs → Sybase → EAServer 5.2.0

Select Jaguar Server (jdk 1.4)

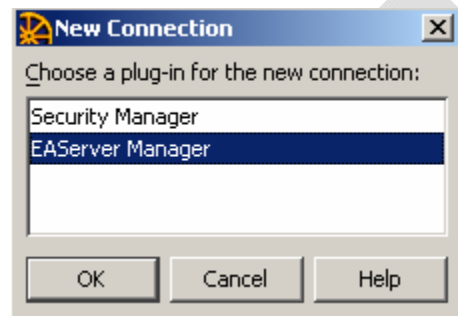
(This will start EAServer on the local machine)

Go to Start → Programs → Sybase → EAServer 5.2.0

Select EAServer Manager

(This will start the Jaguar Manager User Interface)

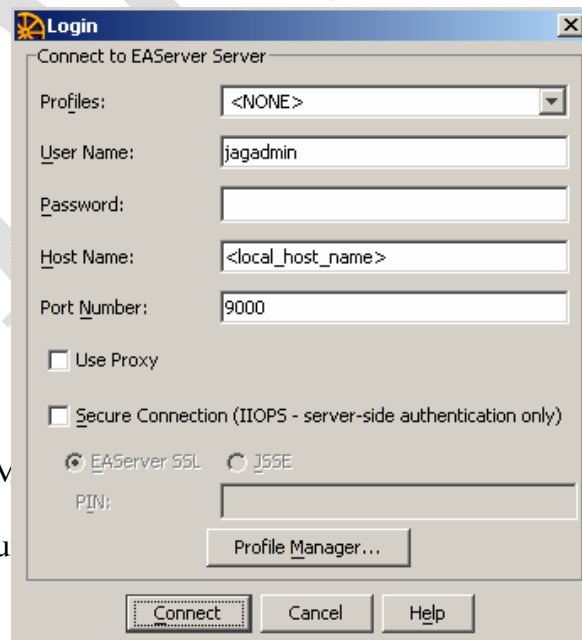
In Jaguar Manager, select Tools → Connect



Select EAServer Manager and click “OK”.

Enter the following information and click “Connect”.

(Make sure the Jaguar server on your machine is running at this time.)



Select EAServer M

Installed Packages.

Select PIMS, Secu
was created.

Component in which the method

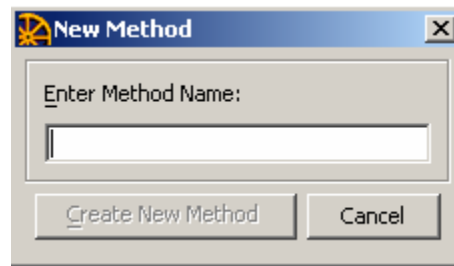
Select <component_name> → Interfaces → <package_name> ::< component_name>

Right click on <package_name> ::<component name> node

Select “New Method”

Enter the method name.

Important: The method name specified here MUST be the same as that specified earlier in <component_name>Impl.java file.



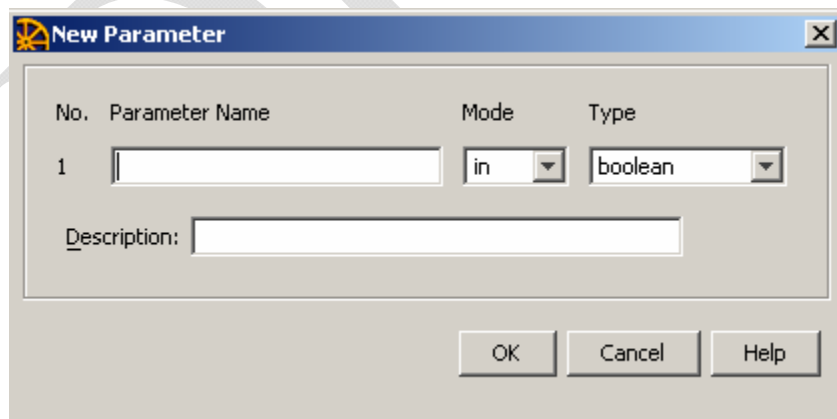
Click on “Create New Method”.

On the next window, specify the following:

Returns: Select from drop-down

This is the return type of the method which should be the same as specified in <component_name>Impl.java for this method

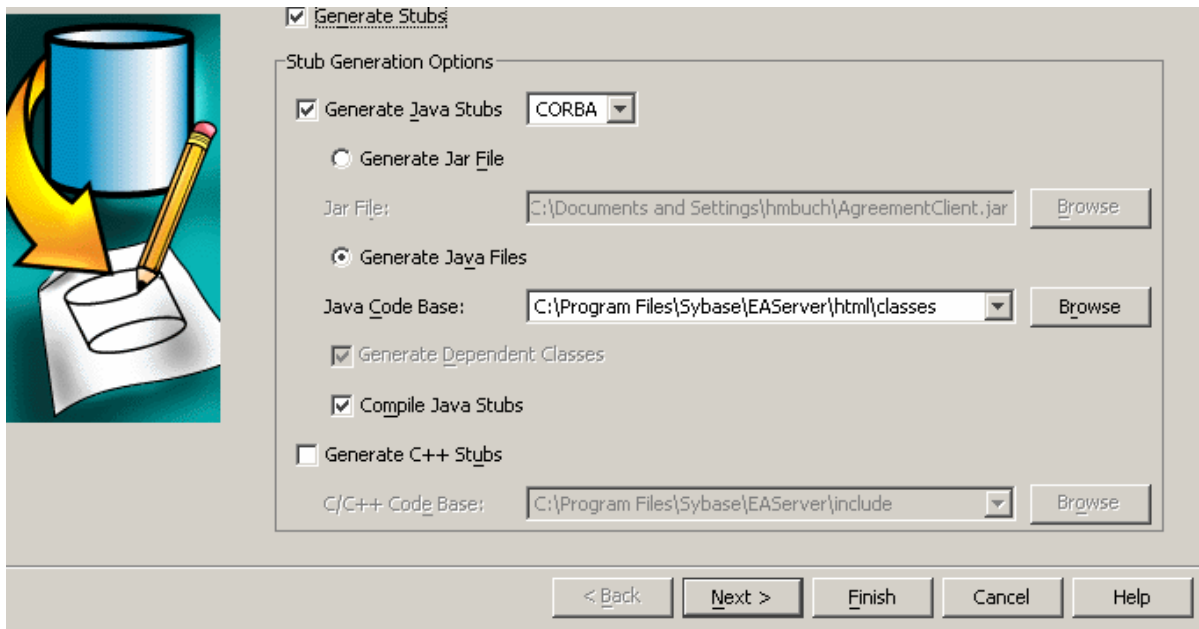
Parameters: Specify the input parameters (if any) for this method. Click on Add to get this window. Specify Parameter Name, Mode, and Type.



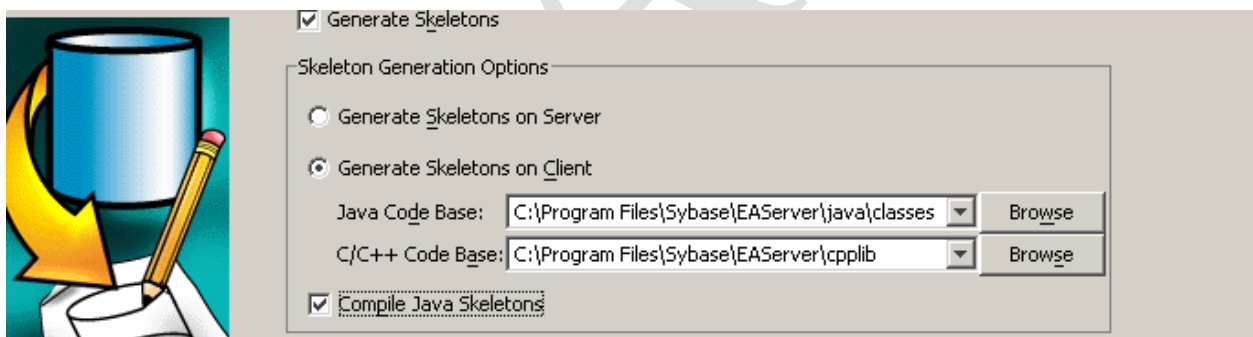
The new method should be visible in the Jaguar Manager UI now.

Select and right-click on the Component under which this method was created and then select “Generate Stub/Skeleton”.

On the next window, make sure to have the following settings:



Keep rest of the settings as default. Click on “Next >”.



Keep rest of the settings as default. Click on “Finish”.

Select the Component under which this new method was created.
Right click the Component and select “Refresh”.

3.2.3 Process for Adding/Deleting a Method’s Parameter

Open the <component_name>Impl.java files in any text editor.

Edit the method and add or remove method parameters. Go to command prompt and run the following commands to set the Java environment:

```
call "C:\Program Files\Sybase\EAServer\bin\setenv"  
set JAVA_HOME=%JAGUAR_JDK14%  
set PATH=%JAVA_HOME%\bin;%PATH%  
set OLD_CLASSPATH=%CLASSPATH%  
set CLASSPATH=  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\easyclient.jar  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\easyserver.jar  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\easy2ee.jar  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\classes\easyri.jar  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\classes  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\html\classes  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\TabularResults.jar  
set CLASSPATH=%CLASSPATH%;%JAGUAR%\java\lib\commons-logging.jar  
set CLASSPATH=%CLASSPATH%;%OLD_CLASSPATH%
```

If the method is added in a component which is a part of the package PIMS then:

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\PIMS
```

If the method is added in a component which is a part of the package Security then:

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\Security
```

If the method is added in a component which is a part of the package EDMIS then:

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\EDMIS
```

Compile (using javac command) the <component_name>Impl.java file.

After a successful compilation, start Jaguar Server and Jaguar Manager.

Go to Start → Programs → Sybase → EAServer 5.2.0

Select Jaguar Server

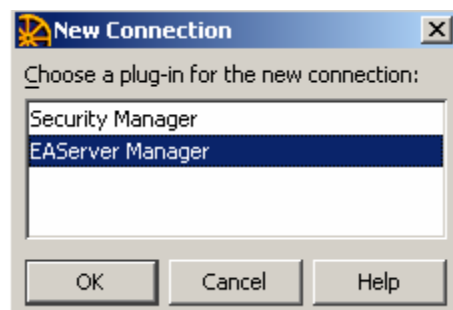
(This will start EAServer on the local machine.)

Go to Start → Programs → Sybase → EAServer 5.2.0

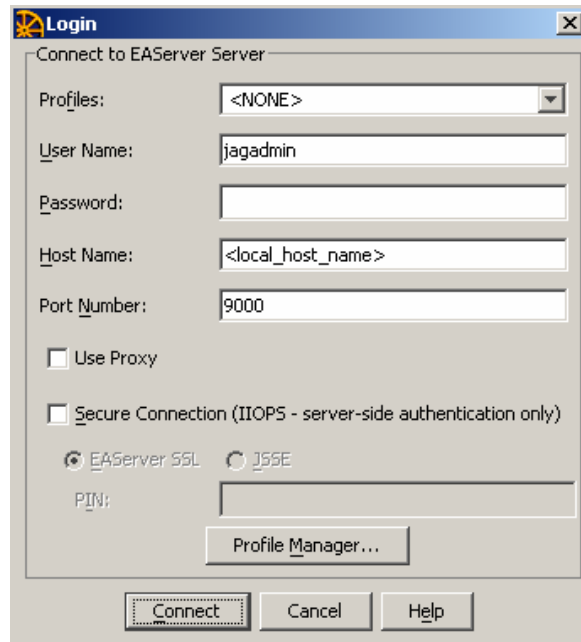
Select Jaguar Manager

(This will start the Jaguar Manager UI.)

In Jaguar Manager, select Tools → Connect.



Enter the following information and click Connect.
(Make sure EAServer on your machine is running at this time.)



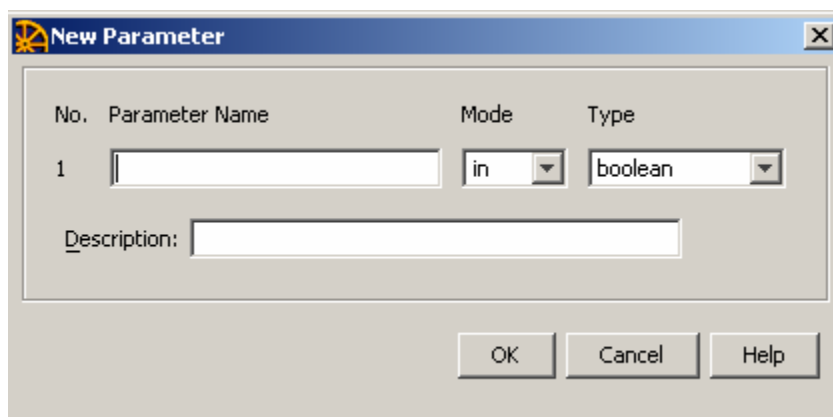
Select EAServer Manager → <local_host_name:9000 → Jaguar → Installed Packages.

Select either PIMS or Security package depending on the component in which the method was edited.

Select <component_name> → Interfaces → <package_name>::<component_name> → <method_name>

Right click on <method_name> and select “Method Properties”.

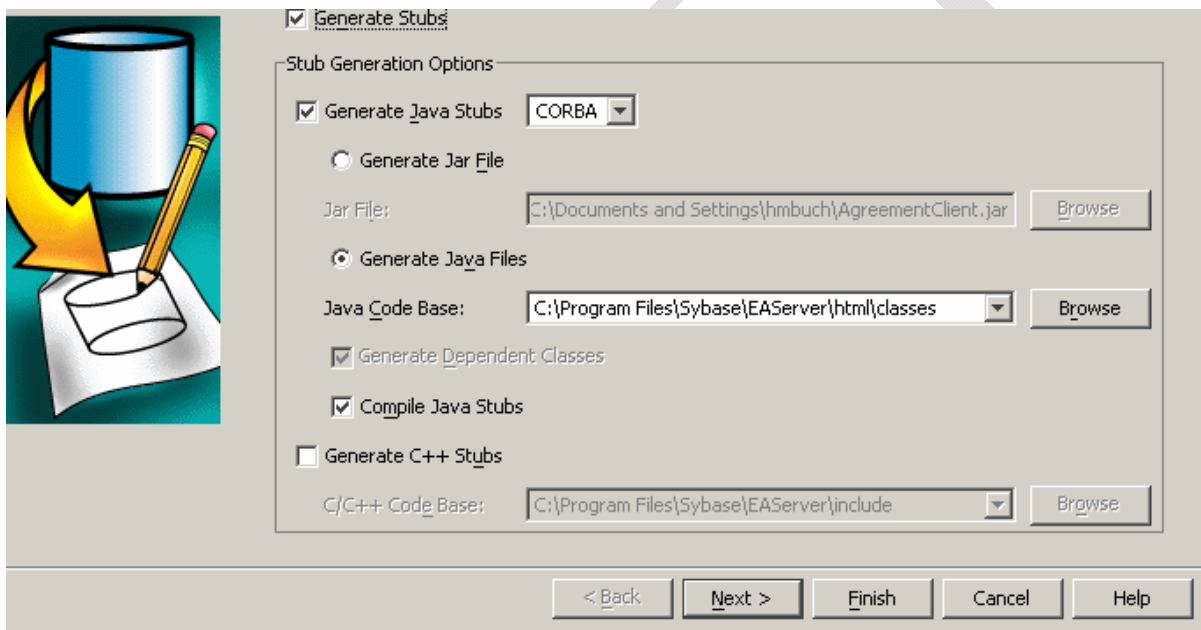
On the next window, in order to add a new parameter, click on “Add” to get this window. Specify Parameter Name, Mode, and Type.



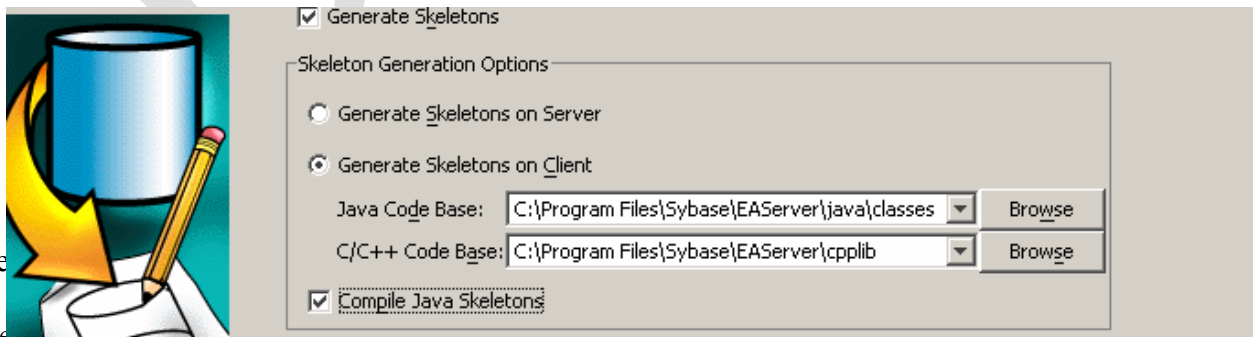
In order to delete a parameter, select the parameter by clicking on it. Then click on “Delete” button.

Select the Component under which this new method parameter was modified. Right click the <component_name> and select “Generate Stub/Skeleton”

On the next window, make sure to have the following settings:



Keep rest of the settings as default. Click on “Next >”.



Keep

Select the Component under which this new method was modified. Right click the Component and select “Refresh”.

3.2.4 Process for Modifying Logic Within an Existing Method

(Without Adding/Deleting Method Parameters or Changing the Method Name.)

Open the <component_name>Impl.java files in any text editor.

Edit the method and add or remove method parameters.

Go to command prompt and run the batch file to set the Java environment.

If the method modified is in a component which is a part of the package PIMS then:

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\PIMS
```

If the method modified is in a component which is a part of the package Security then:

```
C:\>cd C:\Program Files\Sybase\EAServer\java\classes\Security
```

Compile the <component_name>Impl.java file under the appropriate directory.

After successful compilation, start Jaguar Server and Jaguar Manager.

Select PIMS, Security or EDMIS package depending on the component in which the method was edited.

Select <component_name>

Right click on <component_name>and select Refresh.

3.2.5 Modifications in Wrapper Class for Cold Fusion

If an EAServer method is added or edited and that method is being used by a Cold Fusion application, then it has to exist in the wrapper classes.

After the process of creating a new method or adding/deleting parameters of an EAServer method is completed, the corresponding method in the Wrapper classes file also needs to be added or modified.

Modify the wrapper java files and compile them.