

**IBM® Rational® Rhapsody®  
Developer for Ada  
Linux Version**

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**User's Guide**





## 1. Notices

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## ***Introduction***

This document is the user's guide of *IBM® Rational® Rhapsody® Developer for Ada on Linux os.*

## ***2. Installation Notes***

### **2.1. Precompiled Libraries**

As part of Rational Rhapsody installation you are receiving the following files:

- Basic behavior services sources. These are compiled on installation.
- Animation C libraries.

These files have been tested against the following Ada compilers

- RATIONAL Apex 4.4.0



## 2.1.1. Manually rebuilding the behavior services

### 2.1.1.1 For Apex

If you are using Apex compiler, only NewFWK95 is available. The new behavior services should be installed in a view of a subsystem. As the FWK needs booch components and Rhpanim, some views must also be created for them. A script helps doing this.

```
<Rhapsody installation>/Sodius/apexForRiA.sh [Apex_model_path][Apex_view_name]
```

This script is launched during install of Rhapsody. But it can be used to create other views of the FWK. It needs 2 parameters :

- Apex\_model\_path : an Apex model path to create the view
- Apex\_view\_name : name of the Apex view.

If no parameters are passed, then the default Apex model will be used and the name of the view will be "view".

This script will create view in the following subsystems :

```
<Rhapsody installation>/Share/LangAda95/booch_ada_95/Booch.ss (only if <Rhapsody installation>/Share/LangAda95/booch_ada_95 exists)
```

```
<Rhapsody installation>/Share/LangAda95/aom_new_95/aom_new_95.ss
```

```
<Rhapsody installation>/Share/LangAda95/src/RiA_Framework.ss
```

Example :

```
<Rhapsody installation>/Sodius/apexForRiA.sh  
/Home/RATIONAL/Apex/base/ada/model.ss/i386_linux2.ada95.portable.4.4.0.re  
l i386_linux2.ada95.portable.4.4.0
```

If you need to update the FWK, you should open the FWK model  
/Share/LangAda95/Ada\_FWK/Ada\_FWK.rpy with Rhapsody, and create manually a new  
configuration

Change the directory of the component Oxf

---

Component : Oxf in Ada\_FWK \*

General | Scope | Variation Points | Description | Relations | Tags | Properties

Name: Oxf L

Stereotype: ...

Directory: . ...

Libraries: ...

Additional Sources: ...

Standard Headers: ...

Include Path: ...

Type: ☒ Library ☐ Executable ☐ Other

Locate OK Apply

Create a new configuration called Apex

Set the path as followed.

Configuration : Apex in Oxf \*

General | Description | Initialization | Settings | Checks | Relations | Tags | Properties

Directory: ../src/RiA\_Framework.ss/view.re ... ☐ Use Default

Libraries: ...

Additional Sources: ../\..\..\aom\_new\_95 ...

Standard Headers: ...

Include Path: ...

Instrumentation

Instrumentation Mode: None Advanced ...

Webify

☐ Web Enabling Advanced ...

Time Model: ☒ Real ☐ Simulated

Statechart Implementation: ☐ Reusable ☒ Flat

Environment Settings

Locate OK Apply

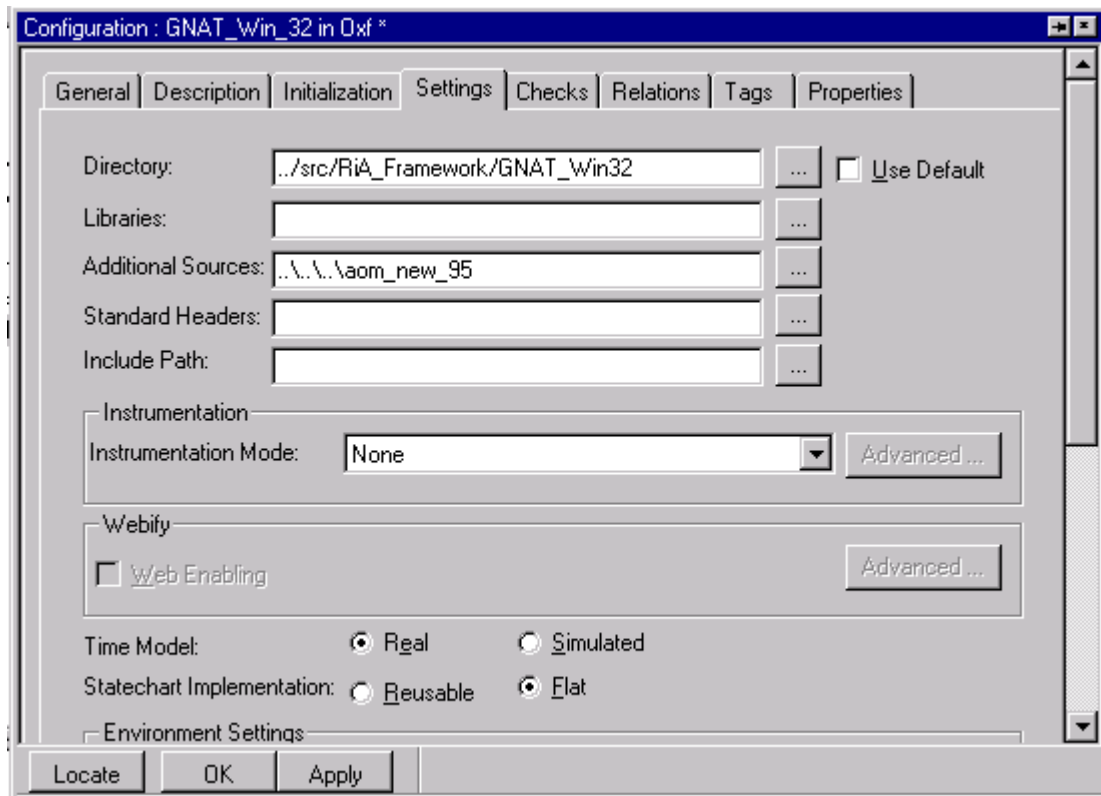
Delete manually all the ada files which are in the view (not the view itself)

Regenerate the model for Apex configuration.

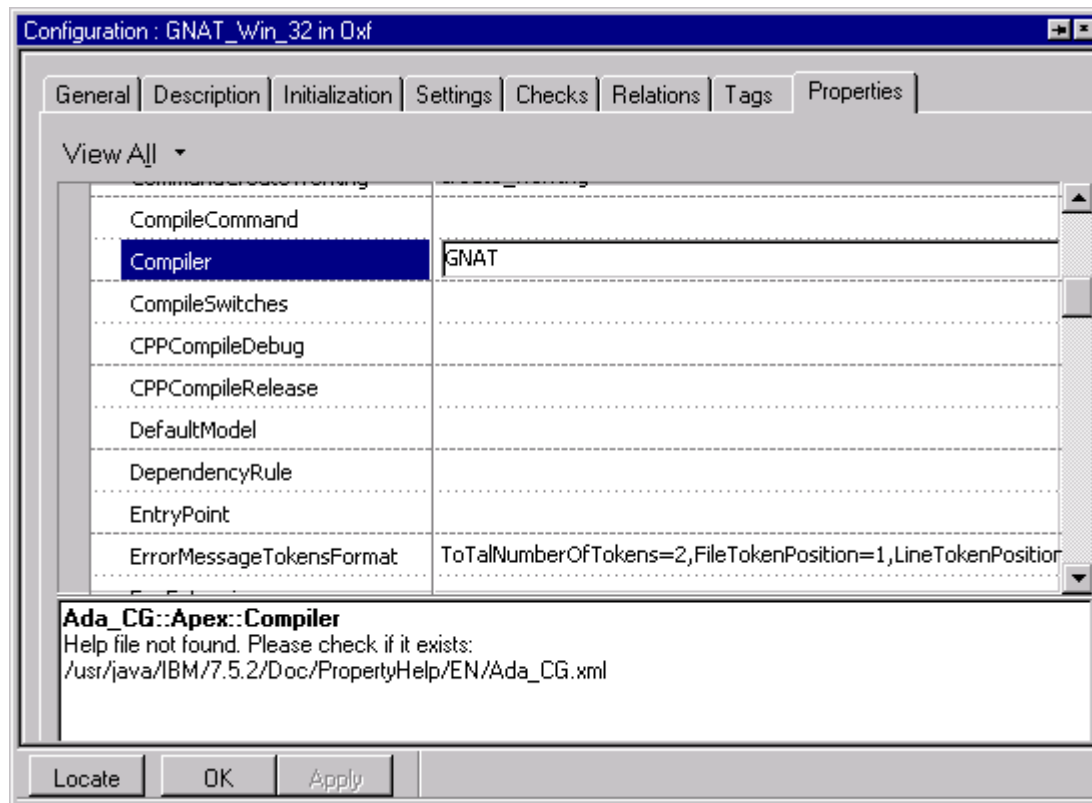
If the subsystem doesn't exist, the compilation may not work, because some imports are missing. To create them, run the script `/sodius/apexForRiA.sh`.

If you want to create a new view with an updated FWK, you should update files of GNAT\_win\_32 configuration. For that, GNAT\_win\_32 configuration should be updated:

Change the path



Set the property `Ada_CG:Apex:compiler` to "GNAT"



Regenerate the model for GNAT\_Win\_32 configuration

Run the script `/sodius/apexForRiA.sh` with correct parameters to create the new view. (the script uses the files generated for GNAT\_Win\_32 configuration in folder (LangAda95/src/RiA\_Framework/Gnat\_win\_32)

### 2.1.2. Manually rebuilding the animation C libraries

#### Rebuilding for Apex

The build is done using the native GCC compiler of Linux.

If you are using Apex, you might have to follow these steps :

- Open a shell terminal.
- Go to the `<Rhapsody installation>/Share/LangC` directory.
- Type "**`make -f adaLinuxbuild.mak`**"

The following files will be generated in the `<RhapsodyInAdaInstallDir>/Share/LangC/lib` directory:

- `adaLinuxaomanim.a`
- `adaLinuxomcomappl.a`
- `adaLinuxoxfinst.a`



## 2.2. Install Booch components

In some case code generator creates some dependencies to Booch components. Rhapsody doesn't install Booch Components files. User must do it manually, by following the procedure above.

### Install Booch Components 95

- Get the files from the following URL for example:
- <http://sourceforge.net/projects/booch95/files/>
- Unzip the files
- Copy the folder "src" into <Rhapsody\_install\_folder>\Share\LangAda95\Booch\_ada\_95\src

### Install Booch Components 83

- Get the files from the following URL for example:
- [http://www.adapower.com/original\\_booch/original\\_booch.html](http://www.adapower.com/original_booch/original_booch.html)
- Unzip the files
- Copy the folder "src" into <Rhapsody\_install\_folder>\Share\LangAda83\Booch\_ada\_83\src

If you are using Apex, a subsystem and a view must be created to be able to create a dependency between the Rhapsody project and Booch Components. The script <Rhapsody installation>/Sodius/apexForRiA.sh is able to create this view. A script like that can be also used.

```
ApexPath=""          # define the path of Apex
rhpInstallDir=""     # define the path of install of Rhapsody
rhpShareBooch=""     # define the path where the src folder of Booch Components
is located
modelName=""        # define the Apex model used to create a view. Usually ""
viewName=""         # usually use "view"

subsystemName="$rhpInstallDir/Share/LangAda95/Booch_ada_95/Booch.ss"
if [ -d $subsystemName ]
then
    echo "*** subsystem $subsystemName already exists"
else
    $ApexPath/apexinit -batch create_subsystem $subsystemName
fi

viewBooch=$subsystemName/$viewName
if [ -d $viewBooch.rel ]
```

```
then
    echo "*** view $viewBooch.rel already exists"
else
    $ApexPath/apexinit -batch create_release -model $modelName $viewBooch
    $ApexPath/apexinit -batch migrate $rhpShareBooch/src/*.ad* -into
    $viewBooch.rel
    $ApexPath/apexinit -batch code $viewBooch.rel
    #\$ApexPath/apexinit -batch remodel -release_kind frozen \$viewBooch.rel
```

### 3. *Generating code for Apex*

#### 3.1. **Launch Rhapsody for Apex**

Rhapsody must run in an Apex context in order to be able to use some Apex command.

The command to launch it is :

```
Apexinit -exec <Rhp_Install_Dir>/RhapsodyInAda (Summit)
```

```
Apexinit -clearcase -exec <Rhp_Install_Dir>/RhapsodyInAda (Clearcase)
```

Two scripts can execute this command :

```
<Rhp_Install_Dir>/ RhapsodyInApex (Summit)
```

```
<Rhp_Install_Dir>/ RhapsodyInApexCC (Clearcase)
```

When launching Rhapsody, the Apex IDE is also opened. User will then be able to use Apex functionality as he use to do.

It is possible to mask Apex Window by using the option “-S”.

#### 3.2. **Generated code location**

Apex projects are organized into subsystems. Each subsystem contains some views which describe compile configuration, and which contain Ada source files.

Ada code generator will generate files in a view of a subsystem or in a Rational subsystem. User needs to specify manually the path where the code should be generated in configuration settings. The path must end with <subsystem\_name>.ss/<view\_name>.wrk( or rel) or <Rational\_subsystem\_name>.rss/

The extensions are mandatory. If they are wrong or omitted, then code generation will stop.

Recommended usage.

---



Usually, Rhapsody generates a directory for each component, and a directory for each configuration. The default path is then `<project_path>/<component_name>/<configuration_name>`. The recommended usage is to affect a subsystem to a component and a view to a configuration, or a Rational subsystem to a configuration.

For Apex Summit, the path should be

`<project_path>/<component_name>.ss/<configuration_name>.wrk( or rel)`

For Apex Clearcase, the path should be

`<project_path>/<component_name>/<configuration_name>.rss`

All packages of the project will be generated in a view or a Rational subsystem, depending on component's scope. If there is the need of defining only one package per subsystem, then one component per package must be created with a scope on this package only.

### 3.3. Subsystem and view creation

Code generator will check if subsystem and view directory exist, and if they have been created by Apex. If the subsystem or the view has not been created by Apex, then they are deleted, and code generator will call an Apex command to create them.

A view is created, using a model which will import some predefined subsystems. If user wants to use a specific model, then he can do it by updating property `Ada_CG:Apex:DefaultModel`. This property should be filled with `"-model <model path>"`. This property should be updated before creating the view. If the view is already created, and the user wants to change its model, then he should use Apex tools.

If Apex is used in Clearcase context, then a Rational subsystem is created instead of Subsystem and view.

### 3.4. Add imports

If a subsystem needs to import another subsystem, it is possible to add it in configuration settings. This will add a new Apex import command in the makefile. To do this the field "include path" of configuration settings must be filled with the path of the view to be imported. Several imports can be added, separated by an end of line.

### 3.5. Use Apex editor

In order to use Apex editor instead of Rhapsody's one, the project's properties must be set like that:

```
General::Model::ClassCodeEditor = CommandLine
General::Model::EditorCommandLine = apex visit
```

### 3.6. Rational Rhapsody with Apex limitations.

- Only Ada95 and new FWK95 are supported.
  - Rational Rhapsody is only able to create subsystem, and view, and generate code in a view respecting Apex naming convention. Rational Rhapsody can also run an Apex link command, with the build or rebuild item of Code menu. All other Apex commands are not available and may be used with Apex IDE.
-

