

Oracle9iAS Forms Services HowTo Deploy Icons

An Oracle Whitepaper
June 2003

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Oracle9iAS Forms Services – HowTo Deploy Icons

INTRODUCTION

Oracle9iAS Forms Services is a component of the Oracle9i Application Server (Oracle9iAS) and represents the runtime framework to deploy Forms applications on the Web.

Oracle9iAS Forms Services is also contained in the Oracle9i Developer Suite (Oracle9iDS) for testing purposes while developing Forms applications.

Forms Applications deployed in Oracle9iAS Forms Services don't use platform specific image formats when displaying icons¹ on buttons and tree item controls.

This Whitepaper explores various options of deploying icons in Oracle9i Forms applications. In its first chapter this paper provides an end-to-end example as a jumpstart to deploy icons in Oracle9i Forms.

This paper does not discuss the Oracle9iAS Forms Services architecture in detail, but assumes a basic understanding of its architecture².

DON'T WANT TO LEARN ABOUT THE DETAILS? JUST GET STARTED!

You don't have time to spend on learning about the background details but want to get started immediately?

The following end-to-end example explains how to deploy icons in Oracle9i Forms applications using Java Archive (Jar) files, to get you started immediately. Oracle recommends deploying icons in Jar files.

Entering the fast lane

You have an Oracle9i Forms application with many icons used on buttons and/ or a hierarchical tree control. The icons are all in GIF format and are stored in the c:\myApp\icons directory.

- On the command line, navigate to the c:\myApp\icons directory and issue the following command to store the icons in a Java archive:

¹ Throughout this paper the terms “image icons” and “icons” are use interchangeably. Both terms refer to images in GIF or JPG format to show icons in buttons and tree control items in Forms Web applications

² A Whitepaper about the Oracle9iAS Forms Services architecture can be found at otn.oracle.com/products/forms

```
<Oracle Home>\jdk\bin jar -cvf myAppIcons.jar *.gif
```

- The myAppIcons.jar file, created in the c:\myApp\icons directory, needs to be copied to the <Oracle Home>\forms90\java directory.
- Use a text editor to open the formsweb.cfg file in the <Oracle Home>\forms90\server directory and add the myAppIcons.jar file in the application section

```
[myApp]
```

```
...
```

```
archive_jini=f90all_jini.jar,myAppIcons.jar  
imagebase=codebase
```

- Restart Form to see the deployed icons.

Best Practices

You should cleanly separate custom application files from the Forms default installation directories by doing the following:

- Instead of storing the myAppIcons.jar file in the forms90/java directory, copy it to the directory storing all the other custom Forms application files (fmx, pll). For this example, the directory is c:\myApp.
- Modify the archive_jini value in formsweb.cfg file to ensure that all entries are on one line

```
[myApp]
```

```
...
```

```
archive_jini=...3, /forms90/myApp/myAppIcons.jar  
imagebase=codebase
```

- Configure the HTTP Server and map the c:\myApp directory to the virtual path “/forms90/myApp/”.

Note: To define a virtual directory such as /forms90/myApp in Oracle9iDS, open the orion-web.xml file in the <Oracle9iDS Home>\j2ee\Oracle9iDS\application-deployments\forms\forms90web directory and add the following line

```
<virtual-directory virtual-path="/myApp"  
real-path=" c:\myApp" />
```

³ f90all_jini.jar goes here

Note that the “/ forms90/ ” directory prefix is automatically added to the virtual path in Oracle9iDS.

Note: To define a virtual directory / forms90/ myApp in Oracle9iAS, use a text editor to open the forms90.conf file in the <Oracle9iAS Home>\ forms90\ server directory and add the following line:

```
# Forms image path
AliasMatch ^/forms90/myApp/(..*) " c:\myApp/$1"
```

- Restart the HTTP Server for the virtual path “myApp” definition to become active.
- Test the virtual path in a browser with the following URL:
http:// <host name>:<port>/ forms90/ myApp/ myAppIcons.jar
- If successful, the Browser prompts you to download the Jar file. Press cancel to close this dialog.
- Next, restart Forms.

USING ICONS IN ORACLE9i FORMS APPLICATIONS

To deploy Forms applications on the web that contain icons in buttons and in tree control items, you’ll first need to convert the icon files into GIF (GIF 89a⁴) or JPG format⁵.

Unlike the client/ server model of previous versions of Forms, in Oracle9i Forms there is no UI_ICON variable to locate icons used in Forms applications. Instead, image icons in Oracle9iAS Forms Services are referenced by a URL that is constructed internally based on three things: the “imagebase” parameter in the formsweb.cfg configuration file, the icon name in the items property palette, and the default icon path setting in the Forms registry.dat properties file.

At runtime, icons in your Forms applications are referenced through the Forms Java Applet.

The “imagebase” parameter

Forms application specific settings, as well as default settings, are stored in the *formsweb.cfg* configuration file, which is located in the <Oracle_Home>⁶\ forms90\ server directory. The *imagebase* parameter specifies the

⁴ The older GIF 87a is not supported in Java

⁵ You can search the Internet for conversion tools that create the supported image files from Windows .ico formats

⁶ The term <Oracle Home> refers to the Oracle9iDS Home and the Oracle9iAS Home

location where Oracle9iAS Services looks for icons that are used in Forms applications. The imagebase parameter can be set to one of the two values: “documentbase” and “codebase”.

Documentbase

The default value of the imagebase parameter⁷ is *documentbase*, which means that icons are looked up in a directory relative to the directory from where the Forms start HTML file was downloaded. It looks like this:

```
[your_app_name]
form=...
imagebase=documentbase
```

Because Oracle9i Forms uses the Forms Servlet to dynamically render the Applet start HTML file, the default icon location is the Forms Servlet root directory *<Oracle9iDS Home>\forms90\j2ee\forms90app\forms90web*.⁸

If you don't want to keep your icons there, you'll need to specify a different location by

- Using a directory that is virtually mapped in the HTTP server running the Oracle9iAS Services;
- Using an absolute URL that points to a server that stores the icon images.

You specify these locations in the *Registry.dat* properties file located in the *forms90\java\oracle\forms\registry* directory.

At the bottom of the Registry.dat file the following two image properties can be found: *default.icons.iconpath* and *default.icons.iconextension*

The default value of *default.icons.iconpath* is left empty, which means that images are expected to be in the Forms Servlet root directory, which is *forms90\j2ee\forms90app\forms90web* in Oracle9iDS.

- *default.icons.iconpath=/ virtual_image_path/*
This setting expects image icons to be located in the physical directory mapped to */ virtual_image_path/* in the HTTP Server configuration. Forms uses the following path when searching for icons:
http:// <download host>:<port>/ virtual_image_path/ <image name>.gif
- *default.icons.iconpath=http:// hostname:port/ virtual_image_path/*
This setting looks for images in the virtual directory defined by the

⁷ The default value is set as a Forms Applet parameter in the “USER PARAMETERS” section of the *formsweb.cfg* file

⁸ Because Oracle9iAS handles files using the Oracle HTTP Server and *mod_oc4j*, the Servlet root directory cannot be accessed directly. Therefore, the default *documentbase* setting only works within Oracle9iDS

absolute URL. This option is useful if the image icons are not stored on the same application server that runs the Forms application.

The default `icons.iconextensions` property is defaulted to GIF and defines the image format used in iconic buttons and tree item controls. To use the JPG image format instead, change the value of this property to JPG.

Codebase

```
imagebase=codebase
```

The codebase parameter points to the `forms90\java` directory of the Oracle9iAS or Oracle9iDS installation that contains all the Jar files that are used to run Forms on the Web. The codebase parameter can be used for referencing image icons in Forms applications when they are contained in a Java Archive file (jar). To use the codebase parameter for referencing images within a Forms application, the following parameters need to be added in the `formsweb.cfg` file for the particular application

```
[your_app_name]
form=...
imagebase=codebase
archive_jini=f90all_jini.jar,<your_image_archive>.jar
...
```

CONFIGURING ORACLE9i FORMS FOR ICON DEPLOYMENT

This sections explains the icon deployment options for Oracle9iDS Forms Developer and Oracle9iAS Forms Services.

Using Icons that are stored in the default documentbase (Oracle9/DS only)

Images are searched in this directory only if no changes have been added to the Registry.dat file and no additional path information is provided in the Forms item property *icon Filename*.

To use this default configuration, you only need to copy the image icons used in the Forms application to the `forms90\j2ee\forms90app\forms90web` directory.

If you use directory name prefixes in the Forms icon Filename property, make sure that the subdirectory of the forms90web directory has the same name⁹.

⁹ Customer used directory prefixing in client/ server Forms because the UI_ICON path also only allowed one directory for storing icons

Using Icons that are stored in a path defined in the Registry.dat file

The Forms Registry.dat file can be used to define an icon path that is relative to the documentbase, an independent virtually mapped physical directory on the application server, or another application server machine.

All changes applied to the Registry.dat file don't require a restart of the HTTP server.

```
default.icons.iconpath = /images/
```

In this configuration, Forms expects the images to be stored in a physical directory that is virtually mapped to the 'images' name in the configuration of the HTTP listener.

When a separate physical server directory outside of the Forms installation is used to store icon files it cleanly separates custom files from the Oracle9i Forms installation directories.

Defining virtual paths in Oracle9iDS

In Oracle9iDS, the Oracle HTTP listener is not available; instead the OC4J HTTP listener is used. Therefore, configuring the virtual path for images needs to be done in the orion-web.xml file located in the <Oracle9iDS Home>\j2ee\ Oracle9iDS\ application-deployments\ forms\ forms90web directory. The following setting defines a virtual directory *forms90/images/* that points to the icon directory *c:\temp* directory:

```
<virtual-directory virtual-path="/images"  
real-path="C:\temp" />10
```

You may wonder where the *forms90* piece in the virtual path is coming from:

The name *forms90* is the name defined for Forms during installation. In other words, */forms90* creates a virtual mapping to the directory <Oracle9iDS Home>\j2ee\ Oracle9iDS\ application-deployments\ forms\ forms90web that contains the orion-web.xml file.¹¹

Defining virtual paths in Oracle9iAS

Virtual path mappings in Oracle9iAS are configured in the *forms90.conf* file¹². The *forms90.conf* file is located in the <Oracle9iAS Home>\ forms90\ server directory of the Oracle9i Application Server installation and contains all configurations required to run Oracle9iAS Forms Services.

¹⁰ Note that this needs to be provided in one single line

¹¹ A more technical explanation is that Oracle9iAS Forms Services is installed as a Web application in OC4J and runs within its own namespace. The Forms Servlet and the Forms Listener Servlet are J2EE components that handle all Forms Web communication. Both components are accessible through the namespace suffix */forms90*

¹² The forms90.conf file does also exist in the forms90/ server directory of Oracle9iDS but is not used there

The *forms90.conf* file is linked into the Oracle HTTP Server and read during application server startup. This also means that the application server needs to be restarted after changes have been added to the *forms90.conf* file for the changes to take effect.

To create a virtual mapping, for example *forms90/images*, for images used in Oracle9iAS Forms Services, open the *forms90.conf* file with a text editor and add the following line:

```
# Forms image path
AliasMatch ^/forms90/images/(.*) "D:\FormsIcons/$1"
```

The physical directory on the server machine is specified as D:\FormsIcons. Both the virtual path¹³ name and the physical icon directory can be freely chosen.

Don't forget to restart the Oracle9i Application Server for the changes to take effect.

The name of virtual directory path needs to be added as the value of the *default.icons.iconpath* parameter in the *registry.dat* file.

```
default.icons.iconpath = http://myserver:port/app1_images/
```

This configuration is useful if you want to store all images on a central server instead of locating them on all servers running a particular Forms Web application. Using this approach, no changes are required on the Oracle9iAS Forms Services machine or the Forms application modules. The virtual path to access the image icons need to be configured on the server that hosts the images.

Icons deployed in Jar files

Saving the best for last, using a Java archive file (JAR) to store and deploy image icons has some advantages over all the deployment options mentioned before:

- Deploying icons in a Java archive file works the same in Oracle9iAS Forms Services as in Oracle9iDS and Oracle9iAS;
- The configuration is the same and no HTTP server file needs to be changed;
- Jar files can be created for each application and therefore allow you to group images by applications and avoid naming conflicts;
- Jar files are downloaded the first time they are requested by a client. After this 'initial' download, the archive files are permanently cached on the client and don't need to be downloaded again.

¹³ Using */forms90/* as a prefix of the virtual path name ensures consistency in the naming with all other mappings contained in *forms90.conf* file

Jar files are only renewed if the timestamp of the archive file has been changed or the cached file is removed from the client side cache. This approach may have a performance benefit for applications that have many iconic buttons or run on networks with small bandwidth

Unlike Jar files that contain Java code, e.g. f90all_jini.jar, Jar files that contain images don't need to be signed.

Jar files that hold image icons must be copied to the forms90/ java directory in both Oracle9iDS and Oracle9iAS installations.

To create a Jar files for images, you need a Java Development Kit (JDK) installation, or a Java 2 Standard Edition Development Kit (J2SDK or SDK) installation. J2SDK is the new name for what used to be called the JDK in older Java releases.

It is important to note that you need to have a SDK or JDK installation and not just the Java Runtime Installation (JRE) to create Jar files. The JRE contains only runtime components that the "jar" command is not a part of..

Oracle9iDS and Oracle9iAS contain a JDK directory with the latest SDK in it. The bin directory of this JDK directory contains the Jar utilities that are needed to create or extract Jar files.

To create a Jar file for the icon images that are used in your Forms Web application, issue the following command from the directory that contains the images

```
jar -cfv <application_images>.jar *.gif
```

The output is a new Jar file that contains all the gif files in the current directory. The basic parameters used within this command are:

- "c" for creating a new file
- "f" to specify a filename for the output
- "v" for a verbose output written to standard out

The following command creates a new Jar file with the name applImages.jar that contains all the GIF files in the current directory.

```
jar -cvf applImages.jar *.gif
```

It is recommended to call the Jar command from the directory that contains the application image icon files. Archives can be opened with the WinZip tool. Doing this should only list the names of the image files contained in the archive without any directory names.

You may need to call the Jar command by specifying the JDK directory in the Oracle9iDS installation. The following command creates a Jar file 'app1Images.jar' in the forms90\java directory including all GIF files of the current directory

```
<Oracle9iDS Home>\JDK\bin\jar -cvf <Oracle9iDS Home>\forms90\java\app1Images.jar *.gif
```

Now that you have created the app1Images.jar files with the images required for your iconic buttons and tree item controls, the next step is to configure the formsweb.cfg file to use this Jar in Forms.

Use a text editor to open the *formsweb.cfg* file located in the forms90/ server directory of the Oracle9iDS or Oracle9iAS installation. If you are using Oracle9iAS, you also can edit the formsweb.cfg file using Oracle9i Enterprise Manager.

Forms applications are defined in named configuration sections within the formsweb.cfg files. Named configurations are located on the bottom of the formsweb.cfg file and inherit their default settings from the "System Parameter" and the "User Parameter" sections. To create a new named configuration for your Forms Services application, scroll to the bottom of the opened formsweb.cfg file and add the following entry:

```
[myForms]
```

```
form=myModule.fmx  
userid=scott/tiger@orcl
```

This application is called on the Web using the following URL

```
http://<hostname>:<port>/forms90/f90servlet?config=myForms
```

For this application to read the images for iconic buttons from the Java archive created, add the following lines to the Named User configuration:

```
[myForms]
```

```
form=myModule.fmx  
userid=scott/tiger@orcl  
archive_jini=f90all_jinit.jar,app1Images.jar  
imagebase=codebase
```

The Forms archive tag, archive_jini in this example, references the f90all Jar file and the Jar file containing the image icons.

The "imagebase" parameter is set to codebase which means that Forms looks for the *form90/java* URL when downloading images. Because Java first searches in Jar

files that are located within the codebase directory, the images are read from the app1Images.jar¹⁴ file.

TROUBLESHOOTING

I cannot find Forms default icons shown in the smart toolbar

The Forms standard icons for the smart bar are stored within the f90all_jini.jar file and are already deployed.

I cannot see my customs icons in Forms

This can have many reasons. There are several actions that can fix this common problem;

Check the icon configuration

Check the configuration of your icons path. If your Forms application is using icons that are referenced by the Forms documentbase, you should be able to access the images from the following URL

Images located in the forms90web directory:

http:// <host>:<port>/ forms90/ <image name> .gif

Images located in a directory mapped in the registry.dat file:

http:// <host>:<port>/ forms90/ <virtual path><image name> .gif

For icons stored in Jar files, make sure that there is no directory information stored within the Java archive file. Open formsweb.cfg file and make sure the imagebase parameter is set to code base and the archive_XXX parameter contains the name of the archive file holding the images. Finally verify that the image archive file is stored in forms90/ java

Verify that the correct icon name is referenced in Forms

Java is case sensitive which most often is a problem for users running on Windows system. The case used in the “icon FileName” property in Forms must be the same as shown in the image name. On Windows, select the icon name and press F2 as if to edit the icon name. This shows the “real” case of the icon name, which most often is the same as displayed in the Windows Explorer, but can differ.

Icons stored in JAR files are not shown when running in preview

The Run Form feature in Oracle9i Forms Developer allows you to run a Forms application on the Web for testing. The Web URL is constructed based in the Forms Builder setting in the Edit→Preferences→Runtime menu option. By default, the URL does not contain the config=<named configuration> parameter which means that the default imagebase setting, documentbase, is active. To show

¹⁴ Or whatever the name of your Java archive file is

images that are stored in Jar files while using Run Form, create a named configuration that contains the following entries

```
[preViewMode]
```

```
archive_jini=f90all_jinit.jar,applImg.jar  
imagebase=codebase
```

Edit the *Application Server URL* setting on the Runtime menu option and append “?config=preViewMode” to the URL shown. For example:

```
http://<hostname>:8888/forms90/f90servlet?config=preViewMode
```

If no URL is shown in the *Application Server URL* field, then press the ‘Set Default’ button to obtain this URL.

Icons stored in jar files don’t show in my Forms applications

Make sure the Java archive file is accessible from the Web

Make sure that the Java archive file is accessible from the Web. Test it by entering the URL into a browser:

```
http://<host>:<port>/forms90/java/<iconjar file>.jar
```

If this doesn’t open a download dialog in your browser then the Jar file cannot be found. If you followed the best practice tip that is mentioned earlier, replace “/java” with the virtual name you defined for images.

Check if your Forms application uses directory prefixes in icon names

If your application uses directory name prefixes in the icon names, then these directories must either be removed or added to the Jar file.

Make sure that icon names in the jar files have the right case

Icon names in Java are case sensitive. Make sure that the case used for icon names is the same in the Forms Developer and the Java archive. On Windows, select the icon name and press F2 to see if the internal icon name is the same as the one displayed in the Explorer.

SUMMARY

Because Web-based applications no longer use platform specific file formats for iconic buttons and tree controls, icons first need to be converted into GIF or JPG format. It is recommended to cleanly separate image locations from the Forms installation directories if you’re not using Jar files.



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June 2003

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