

# Oracle Applications UNIX Environment Management

*An AppsDBA Consulting White Paper*

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# Oracle Applications UNIX Environment Management

## UNIX ENVIRONMENT MANAGEMENT

### 1. Overview

When running one or more Oracle Applications installations on a UNIX machine the various scripts required to setup environment variables and paths can become an administrative nightmare. The Oracle Server tools environment must be setup (e.g. oraenv or its equivalent), the Oracle Applications environment must be set up (e.g. APPLSYS.env) and any custom or extension environment requirements must be set (e.g. APPLEXT.env for AppsDBA created systems). In addition, when maintaining the NCA server on the same machine as the Oracle Applications server, or when maintaining multiple Oracle Applications environments on the same machine, the setup of each environment in order to administer the applications can become confusing. This paper will detail a structured approach to managing these issues that will scale and maintain uniformity.

### 2. UNIX User Accounts

There will typically be two basic accounts used in an Oracle Applications system. The *oracle* account will be used for the Oracle Server software and the *applmgr* account will be used for the Oracle Applications "database tier"<sup>1</sup> software. If the NCA "application tier" will also exist on the same machine then a third *appsnc* account will be used for the NCA software. It should be noted that this implies that there are two distinct \$APPL\_TOPs, one for the database tier and one for the application tier. Since developers and users should never have direct access to these accounts, both for security and managability, there may be one or more additional accounts required if access to the machine is required (e.g. for customizations or character mode access).

If more than one Oracle Applications system will exist on the same machine then there will need to be at least as many *applmgr* accounts as systems. Usually a single *oracle* account can be used and if the NCA application server is also located on the same machine then it is recommended that separate *appsnc* accounts be created. If separate *applmgr/appsnc* accounts are not used, then all patching must be coordinated between the "different" databases since most patches contain both a file system component and a database component.

### 3. Environment Variables

Key to the navigation of Oracle products and Oracle Applications are environment variables. For the Oracle Server \$ORACLE\_HOME and for Oracle Applications \$APPL\_TOP and product top (e.g. \$GL\_TOP) environment variables provide a common method of navigation on any machine where Oracle Applications has been installed. In subsequent sections key environment variables will be identified and their settings and use defined.

### 4. Directory Structures

#### 4.1 Overview

The following section will detail the directory structure layouts of each of the UNIX accounts specified previously (e.g. *oracle*, *applmgr*, *appsnc*). For the *oracle* account this layout has been specified for many years by the OFA<sup>2</sup>. For the Oracle Applications accounts the base \$APPL\_TOP directory structures have been defined by the applications installation process, with some variations, between releases. However,

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<sup>1</sup> In the latest terminology Oracle has combined the database and the applmgr account (e.g. the AD utilities, concurrent manager and its programs, character mode client) into a "database tier" and refers to this tier as the database server. In NCA, the application server now refers to the "application tier" which consists of the Web Application Server, Forms Server and optional Metrics Server. The desktop browser and Java client applet form the "client tier".

<sup>2</sup> OFA (Optimal Flexible Architecture, originally proposed by Cary Millsap, Oracle Corporation, Sept. 7, 1991 ).

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there has never been an OFA like definition for the entire structure, and there has never been a lot of guidance from Oracle on how to manage the installed environment.

## 4.2 Oracle Account

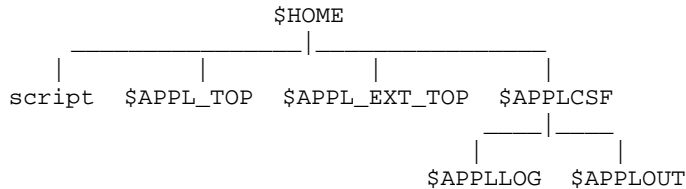
The *oracle* account should be installed following OFA guidelines and will typically have a directory structure of the following:

```
$ORACLE_BASE/product/<version>
  /admin/<sid>/adump
    /arch
    /bdump
    /cdump
    /create
    /pfile
    /udump
  /TAR
/local
```

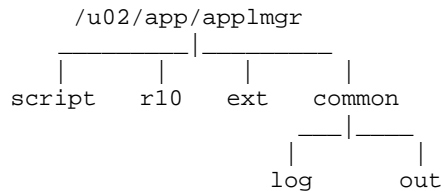
## 4.3 Applmgr Account

The following should be considered the *base* structure for the *applmgr* account. This structure allows the location of the common directory (e.g. concurrent manager log and out files) and the extensions directory to be located outside the \$APPL\_TOP directory. This facilitates the upgrade process and makes managing the size of the directories simpler. At one time Oracle recommended upgrading into the same \$APPL\_TOP directory as the previous release, one of the reasons being that each product directory is versioned, but this has never been very practical due to the size of the entire \$APPL\_TOP directory and the issues of dealing with some of the non-shared directories (e.g. \$APPL\_TOP/install). With the newer releases of Oracle Applications, Oracle specifically recommends against reusing an \$APPL\_TOP directory structure, and this is an important reason not to locate any custom code in the \$APPL\_TOP directory tree.

The following shows the recommended directory structure by environment variable nomenclature:



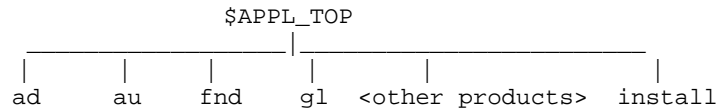
The \$HOME directory should be created following OFA guidelines (e.g. the OFA does specify an application related set of directories). An example would be: /u02/app/applmgr. The rest are common directory names that are used in many Oracle Applications installations.



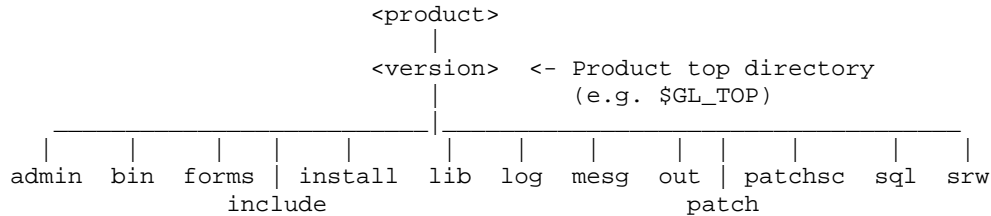
### ***APPL\_TOP Directory Structure***

The APPL\_TOP directories are considered the actual Oracle Applications code directories. APPL\_TOP is an environment variable (e.g. UNIX) that Oracle Applications programs use to identify the top of the code structure. In addition, each product or utility will also have a "top" directory (e.g. \$AP\_TOP or \$AU\_TOP). The following is the basic layout of the APPL\_TOP directory structure:

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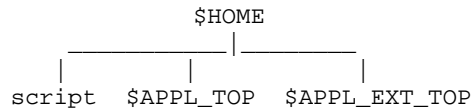
For any given product directory the following directories may or may not be present:



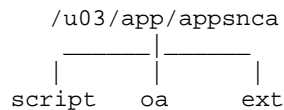
The install directory structure does not follow this layout as it contains installation executables and files, install log directories, and restart directories.

## 4.4 appsnca Account

Similar to the *applmgr* account, the following is the basic directory structure of the *appsnca* account. Like the *applmgr* account, the extensions directory is located outside the APPL\_TOP directory structure, and there are provisions for custom scripts in the script directory.

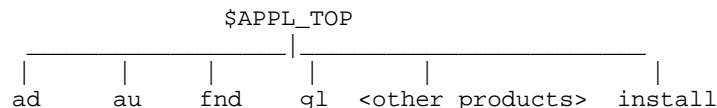


An example structure:

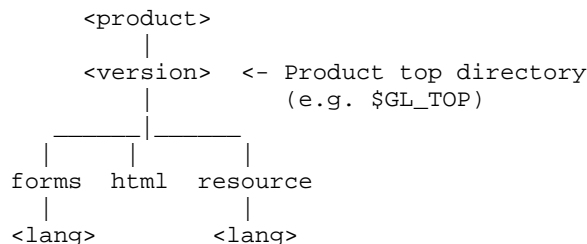


### APPL\_TOP Directory Structure

The *appsnca* account has an APPL\_TOP directory structure that is very similar to the *applmgr* account. However, since the *appsnca* account is only managing Developer/2000 Forms files, PL/SQL libraries, and message files the sub-directory structure is quite a bit simpler. The following shows the basic directory structure layout:



For any given product directory the following directories may or may not be present:



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The following outlines the directory usages in the *appsnc* account:

```
$HOME/APPL_TOP/<product>/<version>      <- Product top (e.g. $GL_TOP)
    /forms/<lang>                       <- product .fmx files
    /mesg                               <- product message files
    /patch/<version>/driver             <- product patch
                                        driver files
    /au/<version>/forms/<lang>          <- all .fmb files
    /html                               <- delivered .html files
    /resource                           <- all .pll/.plx files
    /resource/<lang>                   <- .mmb/.mmx files (FNDMENU)
/ad/10.7/bin <- AD executables
/lib <- AD libraries
```

It should be noted that all .fmb files are located in the \$AU\_TOP/forms/US, where US is the installed language. All PL/SQL libraries are installed in \$AU\_TOP/resource and the menu is installed in \$AU\_TOP/resource/US, where US is the installed language. In addition, \$AD\_TOP is special in that only the Applications administration utilities/code are installed there.

## 5. Additional Directories

### 5.1 Concurrent Manager Directories

The concurrent manager processes write two “result” files as part of their job processing. A log file of the job processing is written to a log directory (e.g. \$APPLLOG) and a report file, not always created, which is the result of the report/job is written to the out directory (e.g. \$APPLOUT). There are two methods of defining where these log and out directories will be written to by the concurrent processes. They can be written to each application’s directory (e.g. \$AP\_TOP) or to a “common” directory (e.g. \$APPLCSF). It is strongly recommend that a *common* directory be setup and located outside the \$APPL\_TOP directory structure. This is done for two reasons. The first is the size of this directory can become quite large and easily overwhelm the space allocated for the \$APPL\_TOP directory. The second is that it makes upgrades much easier since these files don’t have to be migrated to a new directory structure. It should be noted that creating a symbolic link to another location is permissible, but can add unnecessary confusion.

When administering multiple product file environments it can be convenient to setup a single common directory location and then assign log and out directories on a per environment basis with the format of <env>\_log and <env>\_out for the log and out file directory names.

```
Example:      $APPLCSF/$APPLLOG -> /u05/app/common/OAPRD_log
              $APPLCSF/$APPLOUT -> /u05/app/common/OAPRD_out
```

### 5.2 Extensions Directory

The extensions directory (e.g. Oracle Applications customizations), if it exists and it always seems to, should be located outside of the \$APPL\_TOP directory structure. Typically the extensions top directory is named *ext* or *custom* and is located in the *applmgr/appsnc* home directory. It should be noted that creating a symbolic link to another location is permissible.

#### *Script Directory*

The *script* directory is used to locate environment specific scripts for UNIX environment setup, concurrent manager startup and shutdown, and printing invocation.

### 5.3 Custom Script Files

Custom script files are located in the “script” directory for both the *applmgr* and *appsnc* accounts. The following scripts are used for environment setup and basic administration. The exception to this is the *fnsetup* script which is located in the \$ORACLE\_BASE/local directory for common access (e.g. both UNIX users and if multiple Oracle Applications environments are being supported).

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Their relationship is outlined below:

Scripts	Account	Directory
<code>fnsetup</code>	<code>oracle</code>	<code>\$ORACLE_BASE/local</code>
-> <code>OAPROD</code>	<code>applmgr</code>	<code>\$HOME</code>
-> <code>orasetup</code>	<code>oracle</code>	<code>\$ORACLE_BASE/local</code>
<code>APPLSYS.env</code>	<code>applmgr</code>	<code>\$APPL_TOP</code>
<code>APPLEXT.env</code>	<code>applmgr</code>	<code>\$APPL_EXT_TOP</code>

## Oracle Applications Environment Script - `fnsetup`

The `fnsetup` script is a custom korn shell script that should be called by all character mode users and `applmgr/appsnc` accounts that access the Oracle Applications environment. This script provides a single common method of controlling access to all Oracle Applications setup scripts for a given installation. In other words, if a test and development environment exist on one machine `fnsetup` will create alias' for both environment setup scripts such that a single user can invoke either environment. This script should be located in the `$ORACLE_BASE/local` directory, and can be linked to `/usr/local/bin` if desired, as these directories present common areas available and known to all users. It should be invoked at login time for users needing access to the applications environment.

## Oracle Applications Setup Script(s) - `OA<env>/OA<env>NCA`

A separate setup script should be created for each Oracle Applications environment. These scripts will be invoked through an alias and should be named appropriately for the type of environment being supported (e.g. `OAPROD/OAPRODNCA` or `OADEV/OADEVNCA`). These scripts should set the Oracle Server environment (e.g. `orasetup`<sup>3</sup> for AppsDBA Consulting intalled databases or `oraenv` if using Oracle supplied scripts), run the appropriate Applications environment script (e.g. `APPLSYS.env`), and run the appropriate extensions environment script (e.g. `APPLEXT.env`). These scripts should be located in `applmgr's $HOME/script` directory.

## Oracle Applications Environment Script - `APPLSYS.env`

All of the Oracle Applications environment variables are created by a script known as `APPLSYS.env`. This script exists both on the database tier and the NCA server (e.g. application tier). The `APPLSYS.env` script is initially created by the autoinstall process (e.g. `adaimgr`) based on the products installed and options chosen. It can, and often is, rewritten by the `adaimgr` and `adadmin` utilities, and customizations to this file are not preserved and should not be made.

## Oracle Applications Extensions Script - `APPLEXT.env`

In order to set up the environment variables for any "extensions" code that has been written a separate script should be created. As mentioned previously, the temptation to put these commands in the `APPLSYS.env` file should be resisted as these changes will not be preserved when the `APPLSYS.env` file is re-written. It is recommended that the script be called `APPLEXT.env` and placed in the extensions top directory (e.g. `$APPL_EXT_TOP`).

The issue of extensions and their setup will not be addressed directly by this paper, but in general the extensions directories should follow the same basic structure as the associated `$APPL_TOP` directories.

## Oracle Applications NCA Extensions - `APPLNCA.env`

The NCA server has a different directory structure and environment variable requirement than the database tier and so the `APPLEXT.env` file cannot be used for both. The `APPLNCA.env` file defines the extensions top directories and adds the extensions forms directories to the `FORMS45_PATH` environment variable.

<sup>3</sup> `orasetup` is an enhanced version of the Oracle scripts `oraenv/dbhome` and can be found at [www.appsdba.com](http://www.appsdba.com)

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## 6. Sample Scripts

### 6.1 fndsetup

```
#!/bin/ksh
#
# Author:      Andy Rivenes, arivenes@appsdba.com, www.appsdba.com
# Date:       unknown
#
# Description: FND setup script
#             This script should be run by all users to provide
#             access to the various Oracle Applications
#             environments located on the machine.
#
# Location:   <oracle $HOME>/local
#             Set permissions to 755
#
# Modifications:
#
alias OAPROD=". /u02/app/applmgr/script/OAPROD"
alias OAPRODNCA=". /u03/app/appsna/script/OAPRODNCA"
echo " "
echo " "
echo "Type OAPROD to setup Oracle Applications Rel. 10.7"
echo "Type OAPRODNCA to setup Oracle Applications Rel. 10.7 NCA"
echo " "
# echo "OAPROD and OAPRODNCA are temporarily unavailable due to upgrade."
echo " "
```

### 6.2 OAPROD

```
#!/bin/ksh
#
# Author:      Andy Rivenes, arivenes@appsdba.com, www.appsdba.com
# Date:       unknown
#
# Description: Oracle Applications environment setup script
#
# Location:   <applmgr $HOME>/script
#             Set permissions to 755
#
# Modifications:
#
#
# Applications specific environment setup
PATH=${PATH}:/u02/app/applmgr/script; export PATH
#
# PostScript printing
# LPDEST=hp5it;export LPDEST
# PRINTER=hp5it;export PRINTER
#
# Setup up Ghostscript variables
# PATH=${PATH}:/opt/AEgs/bin; export PATH
# GS_FONTPATH=/usr/openwin/lib/X11/fonts/Type1/outline:/opt/AEgs/share/fonts; export
GS_FONTPATH
#
GS_LIB=/usr/openwin/lib/X11/fonts/Type1:/usr/openwin/lib/X11/fonts/Type3:/opt/AEgs/s
hare/fonts; export GS_LIB
#
# Setup COBOL variables
# PATH=${PATH}:/opt/cobol/bin; export PATH
#
echo " "
echo "*** Connecting to Database <SID>"
echo " "
. /u01/app/oracle/local/orasetup <SID>
```

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```
# Concurrent Managers should run with dedicated SQL*Net connections
# TWO_TASK=oaprd_ded; export TWO_TASK
#
echo " "
echo "*** Connecting to Oracle Applications <OA env> Database"
echo " "
. /u02/app/applmgr/r10/APPLSYS.env
echo " "
echo "*** Connecting to Custom Applications"
echo " "
. /u02/app/applmgr/ext/APPLEXT.env
echo " "
echo "Type found to invoke Oracle Applications <OA env> Database"
#echo "Oracle Applications is temporarily unavailable"
echo " "
```

### 6.3 OAPRODNCA

```
#!/bin/ksh
#
# Author:      Andy Rivenes, arivenes@appsdba.com, www.appsdba.com
# Date:       unknown
#
# Description: Oracle Applications NCA environment setup script
#
# Location:   <appsna $HOME>/script
#             Set permissions to 755
#
# Modifications:
#
#
echo " "
echo "*** Connecting to Database OADEV"
echo " "
. /u01/app/oracle/local/orasetup oadev
#
echo " "
echo "*** Connecting to Oracle Applications Rel. 10.7"
echo " "
. /u03/app/appsna/r10/APPLSYS.env
#
echo " "
echo "*** Connecting to Custom Applications"
echo " "
. /u03/app/appsna/ext/APPLNCA.env
```

### 6.4 APPEXT.env

```
#!/bin/ksh
#
# Author:      Andy Rivenes, arivenes@appsdba.com, www.appsdba.com
# Date:       unknown
#
# Description: Script to set the custom application
#             environment variables. Called by the
#             environment setup script (e.g. OADEV).
#
# Location:   <applmgr $HOME>/<EXT>
#             Set permissions to 755
#
# Modifications:
#
#
APPL_EXT_TOP=/applmgr/ext
export APPL_EXT_TOP

APEX_TOP="$APPL_EXT_TOP/apex"
export APEX_TOP
```

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```
AREX_TOP="$APPL_EXT_TOP/arex"
export AREX_TOP

#
# Create custom function variable
#
EXT_FUNCTIONS="$APPL_EXT_TOP/functions"
export EXT_FUNCTIONS
#
# Invoke the custom env files
#
#. $APEX_TOP/APEXENV
#. $AREX_TOP/arexenv
```

## 6.5 APPLNCA.env

```
#!/bin/ksh
#
# Author:      Andy Rivenes, arivenes@appsdba.com, www.appsdba.com
# Date:       unknown
#
# Description: Script to set the custom NCA application environment
#             variables. Called by the environment setup script
#             (e.g. OADEV).
#
# Location:   <appsna $HOME>/<EXT>
#             Set permissions to 755
#
# Modifications:
#
#
APPL_EXT_TOP=/applmgr1/ext
export APPL_EXT_TOP

APEX_TOP="$APPL_EXT_TOP/apex"
export APEX_TOP

AREX_TOP="$APPL_EXT_TOP/arex"
export AREX_TOP

#
# Add custom forms to FORMS45_PATH
#
FORMS45_PATH="$FORMS45_PATH:$APPL_EXT_TOP/forms:$APPL_EXT_TOP/resource"
export FORMS45_PATH
```

## 7. References

1. Oracle Applications, Release 10.7 for UNIX, Installation Manual, Part No. A47542-1
2. Oracle Applications Concepts, Release 11 for UNIX, Part No. A63418-01
3. OFA, Optimal Flexible Architecture, Cary Millsap, Oracle Corporation
4. Oracle Applications NCA Installation Guide, Part No. A58726-01

## 8. About The Author

Andy Rivenes has been an Oracle DBA working with Oracle Applications since 1992. He has worked for Oracle Corporation as a Principal Consultant specializing in Oracle Applications technical architecture and currently is available through AppsDBA Consulting. Mr. Rivenes has presented several talks/papers at

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various Oracle user groups and also maintains an Oracle Applications DBA web site at [www.appsdba.com](http://www.appsdba.com) and can be reached at [arivenes@appsdba.com](mailto:arivenes@appsdba.com).