

ORACLE 9I APPLICATION SERVER RELEASE 2 - BASIC ADMINISTRATION

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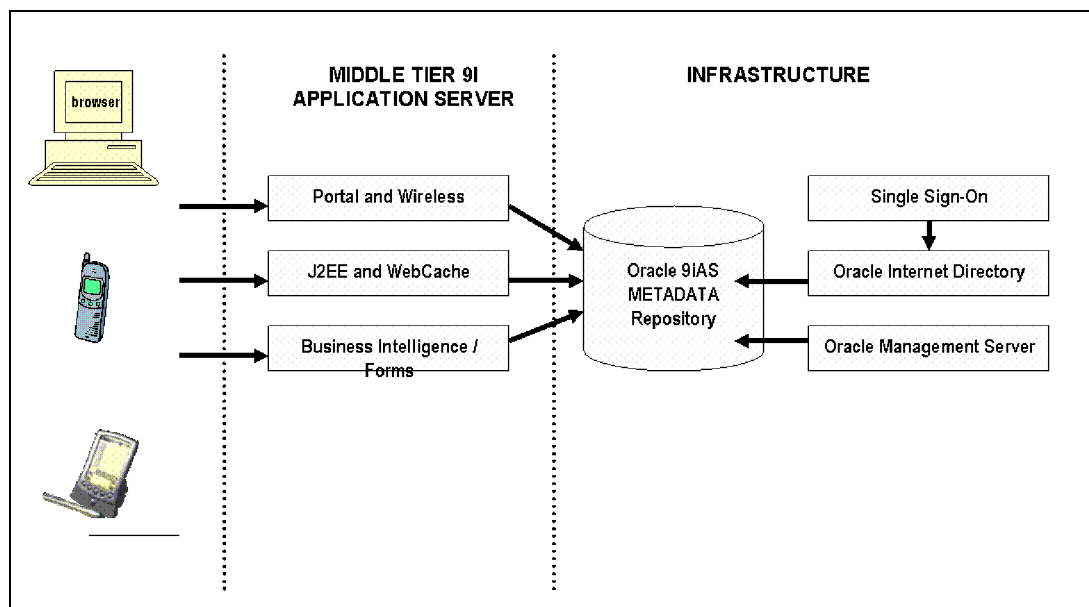
INTRODUCTION

Following Oracle Corporation's focus on web technologies, companies are opting to web-enable their existing applications as part of the traditional upgrade process. Other companies are purchasing vendor-supplied web applications built with Oracle products. An essential component to Oracle's web-enabled applications is the Oracle 9I Application Server Release 2 (9iAS Rel2). Support, maintenance, and problem resolution are often falling into the responsibility of the database administrator or other operational support personnel. Frequently, the person responsible for support has little or no web server support experience. This paper will provide an introduction to the architecture of 9iAS Release 2, tools available for administration and basic troubleshooting. Additionally, the paper will cover deployment of simply java, pl/sql and html applications.

9iAS RELEASE 2 ARCHITECTURE

In a traditional internet computing model, there are multiple tiers. The first tier is the client, which is the client's web browser, PDA or cell phone. The user can be anywhere in the world, mobile or LAN, internet or intranet.

9iAS Release 2 executes the application and serves web pages and content to the clients. It resides on the middle tier.



9iAS Release 2 includes Oracle Portal and Wireless, J2EE, and business intelligence application development/deployment.

9iAS Release 2 also utilizes an infrastructure tier. For the applications running from the middle tier, the infrastructure provides single sign-on capabilities, a management repository for 9iAS Release 2 components in a dedicated Oracle database, and a management server. Many of the middle tier applications will retrieve data from or write data to an

Oracle database.

Multiple application server installations can exist on one or more servers. Each application server can leverage a single infrastructure.

INSTALLATION

As with leading-edge technology products, installation of 9iAS Release 2 can be quite cumbersome, requiring multiple attempts, and causing a few gray or lost hairs until a working product installation is obtained. Following a few recommendations before beginning any installation of 9iAS Release 2 can save time and reduce stress.

- ?? Read the Release Notes including Addendum. For example, in the current (9iAS Release 2) Release Notes, there are changes in hardware requirements, changes in post-configuration steps for products, known issues, and steps to avoid errors post-installation.
- ?? Read the Installation Guide in advance. The Installation Guide not only walks you through installation, but also includes operating system patch requirements, hardware requirements, database compatibility, and a wealth of information you will need to be aware of before beginning installation.

INSTALLATION OPTIONS

For the current 9iAS Release 2 installation, there are initially three options when running the installer. These are:

- ?? Oracle 9iAS Infrastructure
- ?? 9i Application Server
- ?? 9iAS Developer Kits

Many of the products in the 9i Application Server installation require that an Oracle 9iAS Infrastructure be installed. This will be covered in more detail in the next section. Because of the high dependencies between individual products at each installation level, the 9iAS installation does not offer a 'CUSTOM' option.

The Oracle 9iAS Infrastructure installation will install Oracle Enterprise Manager, an HTTP server, Oracle Internet Directory, and an Oracle database. Note that it is not possible to run multiple infrastructure installations on the same server.

If you are planning to only install 9i Application Server J2EE and WebCache, an infrastructure is not required.

9i APPLICATION SERVER OPTIONS

There are four options when you select 9i Application Server at the beginning of installation. These are:

- ?? J2EE and WebCache
- ?? Portal and Wireless
- ?? Business Intelligence and Forms
- ?? Unified Messaging

As previously indicated, J2EE and WebCache do not require an infrastructure. The installation options are layered. This means that if you elect to install Business Intelligence and Forms, you also will install Portal and Wireless, and J2EE and WebCache. To install all products, you will select Unified Messaging. All products will be configured automatically at the end of the software installation through a series of configuration assistants.

POST-INSTALLATION

Following installation, you should review the install.log file to ensure that all products installed without errors. Additionally, you should access the main web page of the application server. The default location on unix is <http://servername.com:7778> and <http://servername.com> on Windows2000. This will bring you to a Welcome Page to the 9i Application Server. It provides a quick method to accessing product demonstrations, release notes, and logging into enterprise manager. You can verify functionality of the application server components you installed by

accessing the demonstrations page. Note the installation level of the application server you selected. For example, if you selected 'Portal and Wireless', your forms and business intelligence demonstrations will not work.

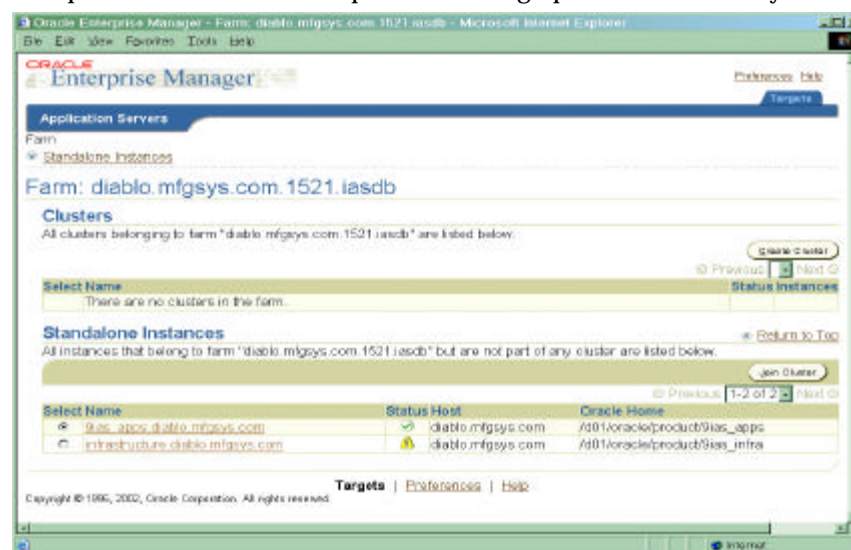
You can also access a list of ports that were assigned to the 9iAS release 2 services during installation. If after installation you change the port of a component, this change is not reflected in the port list.

MANAGING 9IAS RELEASE 2

ENTERPRISE MANAGER

In the current 9iAS, Enterprise Manager is configured automatically during installation of the infrastructure. Most administration tasks can be completed effectively through the web interface.

Enterprise Manager is a secure, web interface to managing all your middle tier application server installations. Real-time performance metrics are presented in a graphic format for easy determination of problems. After installation,



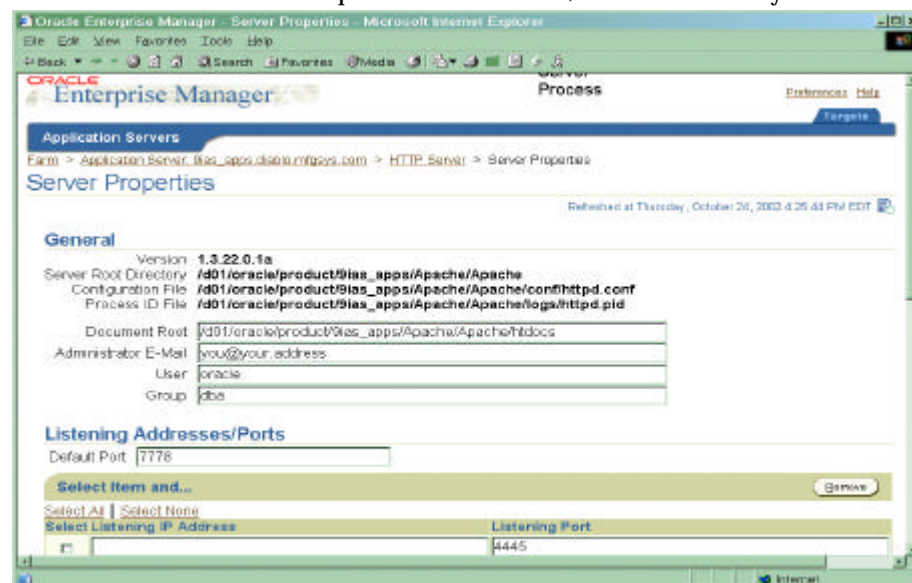
access the enterprise manager website at <http://servername:1810>. From the main page of Enterprise Manager, you can perform typical administration tasks. Note that each installation of 9iAS Release 2 is an 'Instance'. To manage your middle tier application server, you will click the corresponding 'Instance Name'.

The main Enterprise Manager page has a 'Status' indicator next to each instance. A green check mark indicates that all processes are running.

Once you have clicked the Instance you wish to maintain, you will be brought to a page presenting all the components

which make up that instance.

Each component can be individually managed and maintained. Below is the HTTP server component management screen. From the Server Properties screen below, there are a variety of maintenance operations that can be



performed. For example, modifying the email of the administrator, changing the port on which the HTTP server listens, configuring additional 'virtual hosts'.

KEY URLS

There are several key URLs that you can use to verify that components are working correctly. Below is a list:

- Oracle Enterprise Manager <http://servername.com:1810>
- HTTP Server (midtier and infrastructure)
 - <http://servername.com:port>
 - Default unix midtier: <http://servername.com:7778>
 - Default unix single-sign on (infrastructure): <http://servername.com:7777>
- Demos: <http://servername.com:port/iASDemos.htm>
- Single Sign-on <http://servername.com:port/pls/orasso>
- Portal <http://servername.com:port/pls/portal>

CONFIGURATION FILES

When changes are made to 9iAS Release 2 components through Enterprise Manager, configuration files are dynamically changed also. You can view these files directly from your file system through a traditional text editor. Also, if you must work with Oracle Support to resolve an issue, you may be requested to upload the files to your support analyst for evaluation.

./APACHE/APACHE/CONF/HTTPD.CONF

The httpd.conf file is used by the HTTP server. The HTTP server is built on an Apache web server. This file contains directives, which are parameters read on startup of the HTTP server and during processing. You will note that the httpd.conf file contains three sections. The first section contains directives that affect all HTTP server processes and installation. In the second section are directives that define the default apache server process. The last section contains information on virtual hosts. Virtual host configuration enables a single HTTP server to run multiple web sites.

./APACHE/MODPLSQL/CONF/DADS.CONF

The dads.conf file contains database access descriptor information for mod_plsql applications including portal..

DCMCTL UTILITY

It is possible to manage 9iAS Release 2 through the Distributed Configuration Management (DCM) utility. The command to run is 'dcmctl'. DCMCTL can be utilized as an alternative to Enterprise Manager for stopping and starting the application server, registering new applications, and managing components.

This DCMCTL Utility is thoroughly documented in Oracle's 9i Application Server Administrator's Guide Release 2.

STARTING 9iAS RELEASE 2

For environments where both a middle tier and infrastructure are running, it is imperative that components are started in a proper order. Below are the steps to start up 9iAS Release 2. The steps reflect a unix environment, but the same processes should be started in order on a Windows 2000 environment also.

START INFRASTRUCTURE

- 1 Set the environment to the ORACLE_HOME of the infrastructure and the ORACLE_SID to the infrastructure database.
- 2 Startup the tns listener.
- 3 Startup the infrastructure database.
- 4 Start Oracle Internet Directory. This includes both the OID monitoring process and the OID server:


```
oidmon start
Starting the Monitor process.
```

```
$ oidctl server=oidldapd instance=1 configset=1 start
```

- 5 Start Oracle Enterprise Manager.

```
$ emctl start
Waiting for EM to initialize ...Started
```

- 6 You will next start all components in the infrastructure. Run Oracle Enterprise Manager through your web browser. Click the infrastructure instance. Click 'Start All'

START THE MIDDLE TIER COMPONENTS

- 7 Run Oracle Enterprise Manager through your web browser. Click the middle tier instance. Click 'Start All'.

STOPPING 9iAS RELEASE 2

For environments where both a middle tier and infrastructure are running, components should also be stopped in a proper order. Below are the steps to shutdown 9iAS Release 2. The steps reflect a unix environment, but the same processes should be started in order on a Windows 2000 environment also.

STOP THE MIDDLE TIER

- 8 Run Oracle Enterprise Manager through your web browser. Click the middle tier instance. Click 'Stop All'.
- 9 In unix, verify that all middle tier processes have stopped running using 'ps -ef'. In Windows2000, verify that the appropriate services have stopped.

STOP THE INFRASTRUCTURE

- 10 Run Oracle Enterprise Manager through your web browser. Click the infrastructure instance. Click 'Stop All'.
- 11 In unix, verify that all middle tier processes have stopped running using 'ps -ef'. In Windows2000, verify that the appropriate services have stopped.
- 12 If Oracle Internet Directory is still running, use the following commands to stop OID:

```
$ oidctl server=oidldapd instance=1 configset=1 stop
$ oidmon stop
Monitor Process Terminated
```

- 13 Stop Enterprise Manager 'emctl stop'
- 14 Verify that all infrastructure processes, except the database and listener, have stopped. If not, in unix, you should use the 'kill' command to clean up those remaining processes.
- 15 Stop the TNS listener.
- 16 Shutdown the Oracle database.

BASIC APPLICATION DEPLOYMENT

DEPLOY AN HTML WEB SITE

9iAS Release 2 contains the HTTP Server, a powerful web server, which serves web pages to internet or intranet web browsers. In order to better understand URL constructs and simple HTML applications, we can deploy an HTML application to our 9iAS Release 2 environment.

- 17 Through the HTTP Server Component configuration in Enterprise Manager, identify the 'Document Root' of the HTTP Server.
- 18 Create a subdirectory on the server beneath 'Document Root' directory.
- 19 Copy all html and image files, such as .jpg or .gif, to the new directory.

- 20 Stop and restart the HTTP Server component through Enterprise Manager.
- 21 Verify that the application is accessible through your web browser. For example:
http://www.your_domain.com/MyNewApp/start.html

DEPLOY A SIMPLE JAVA APPLICATION

Developers can use a multitude of development tools to build java applications, such as Oracle's Jdeveloper. J2EE applications may be packaged as Web ARchive (WAR) files or Enterprise ARchive (EAR) files. EAR files can contain WAR files.

Enterprise Manager provides an easy GUI interface to WAR and EAR file deployment.

- 22 In the middle tier instance management area, select 'Create OC4J Instance'.
- 23 You will first name the OC4J instance, then click 'Create'. This will create an additional component in your middle tier component list.
- 24 Click the new OC4J instance to actually deploy the WAR file. This will bring you to a 'Deploy Web Application' screen. You can use the 'Browse' button to find the WAR file on your local PC. You will need to name the application and provide a 'virtual path' to your application.
- 25 Next, you will need to start the new application from the component list in Enterprise Manager.
- 26 Run your new application from a web browser.

DEPLOY A SIMPLE PL/SQL APPLICATION

A web application can be built with PL/SQL packages and procedures utilizing the PL/SQL web toolkit. The web toolkit is built into later releases of the Oracle database by default. In order to run a web pl/sql application, the middle tier must have client/server connectivity to the database where the pl/sql packages exist. Additionally, you want to verify that the web toolkit also exists. In this example, we will use the following simple stored procedure in our Oracle database. If this procedure compiles successfully, you have verified that the toolkit is installed in your database.

```
connect scott/tiger
create or replace procedure hello_oracle is
begin
    http.print ('<h1>Hello oracle</h1>');
end;
/
```

- 27 Using Oracle Enterprise Manager, access the middle tier instance.
- 28 Click 'HTTP Server'
- 29 Click 'PL/SQL Properties'
- 30 Click 'Create' in the DAD Status area of the web page. We need to define the database access descriptor in the middle tier.
- 31 For traditional pl/sql web applications, Create a DAD of type 'General'.
- 32 You must enter the DAD name. This will be part of the URL. For example, MyDemo
- 33 Enter the username, password, and connect string to your target database and pl/sql procedure.
- 34 Select 'Basic' authentication mode
- 35 Restart the HTTP Server process.
- 36 Test your application from your browser. In our example, the url would be:
http://servername:7778/MyDemo/hello_oracle

TROUBLESHOOTING

Typical problems reported by users of application would include: 'I Can't Connect' .

Below is a list of questions to analyze during the troubleshooting process.

- Can you connect from your browser to the middle tier http server? `http://hostname:port/` Is network connectivity available to the server? `'ping servername'`
- Does sql*net connectivity exist between the middle tier and infrastructure? Test with `tnsping` from the middle tier.
- Is Oracle Internet Directory running?

```
$ ps -ef | grep oid
oracle 21914      1  0   Oct 04 ?           0:05
/d01/oracle/product/9ias_infra/bin/oidmon start
oracle 21979 21914  0   Oct 04 ?           0:07 oidldapd  -p 4032  -i 1 -conf 0
          -s port 4031 -sslenable 2 key=1436210937
```
- Can you connect to the infrastructure database? Attempt a client/server connection to the database verifying the listener is listening for incoming requests. Connect to the database using `sql*plus`.
- For Win2000, are your middle tier and infrastructure services running?

Additionally, Oracle Support provides the Remote Diagnostic Agent for all commonly used platforms. This is an excellent utility to gather both hardware, operating system and Oracle-specific information. Oracle Support may request that you run the utility and forward the output to them to resolve an open TAR. However, this utility can be used to provide you with a good snapshot of system performance. The tool is available for download from metalink.oracle.com

ABOUT THE AUTHOR

Tracie A. Thomas is the Director of dbGuardian Services for MFG Systems Corporation; a New Jersey based consulting firm specializing in Oracle solutions. Ms. Thomas has over 8 years of Oracle database administration experience. Her areas of expertise include web application architecture, data warehousing, high availability solutions, and project lead. Tracie has lately been focused on Oracle 9i Application Server and Oracle Portal. You can contact Tracie Thomas at:

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