Prospect

IBM

Version 8.0.7

Server Preparation Guide

Note

Before using this information and the product it supports, read the information in Notices on page 89.

Table of Contents

What's New in This Guide

The following table documents changes that were made to the *Server Preparation Guide* in this release.

Table 1:   What's new in this guide

Section	Description
Generate the Database Creation Scripts	Oracle auto-extend feature for data files can be turned on or off using SQL.
Create the Oracle Database Instance	For a hybrid install, a new TRAFFIC_JUMBOPLUS tablespace must be added to the database.

1   About This Documentation

The *Server Preparation Guide* contains the basic instructions for installing and setting up Solaris and Oracle software as the foundation for IBM Prospect software. This guide is customized to support IBM Prospect 8.0 (8.0.7).

This document is located on the IBM Prospect Documentation CD in Adobe Portable Document Format (PDF) and is named `ServerPrep.pdf`.

This guide was last updated July 2, 2010.

Please see the current release notes on this product for a list of revision dates for all IBM Prospect publications.

1.1   Audience

This guide is intended for experienced system administrators, database administrators, installers, or supervisors who are responsible for setting up and configuring the IBM Prospect system. In general, the reader of this guide is referred to as "*you*." By contrast, "*we*" refers to the IBM Prospect development and technical staff who support this product.

1.2   Required Skills and Knowledge

The *Server Preparation Guide* requires that you have the following knowledge:

- Sun Microsystems' hardware
- Local area network (LAN) and wide area network (WAN) connectivity
- Sun Microsystems' Solaris UNIX operating system, as a system administrator
- A UNIX editor (such as `vi` or `emacs`)
- Oracle database software, as a database administrator.

1.3   Document Conventions

This document uses the typographical conventions shown in the following table:

Table 1:   General document conventions

Format	Examples	Description
ALL UPPERCASE	• GPS • NULL • MYWEBSERVER	Acronyms, device names, logical operators, registry keys, and some data structures.
Underscore	See Document Conventions	For links within a document or to the Internet. Note that TOC and index links are not underscored. Color of text is determined by browser settings.
Bold	• **Note**: The busy hour determiner is...	Heading text for Notes, Tips, and Warnings.
SMALL CAPS	• The STORED SQL dialog box... • ...click VIEW... • In the main GUI window, select the FILE menu, point to NEW, and then select TRAFFIC TEMPLATE.	Any text that appears on the GUI.
Italic	• A *busy hour* is... • A web server *must* be installed... • See the *User Guide*	New terms, emphasis, and book titles.
Monospace	• `./wminstall` • `$ cd /cdrom/cdrom0` • `/xml/dict` • `http://java.sun.com/products/` • `addmsc.sh` • `core.spec` • Type `OK` to continue.	Code text, command line text, paths, scripts, and file names. Text written in the body of a paragraph that the user is expected to enter.

Monospace Bold	`[root] # pkginfo | grep -i perl`
	`system Perl5 On-Line Manual Pages`
	`system Perl 5.6.1 (POD Documentation)`
	`system Perl 5.6.1`
		For contrast in a code example to show lines the user is expected to enter.

`<Monospace italics>`	`# cd <oracle_setup>`	Used in code examples: command-line variables that you replace with a real name or value. These are always marked with arrow brackets.
`[square brackets]`	`log-archiver.sh  [-i][-w][-t]`	Used in code examples: indicates options.

1.4 User Publications

IBM Prospect software provides the following user publications in HTML or Adobe Portable Document Format (PDF) formats.

Table 2: IBM Prospect User Documentation

Document	*Description*
Administration Guide	Helps an administrator configure and support IBM Prospect core server software to analyze network performance and perform other network or database management tasks.
Administrator's Quick Reference Card	Presents the principal tasks of a IBM Prospect core server administrator in an easy-to-use format.
Expressions Technical Reference	Provides detailed information about expressions used in special calculations for reports.
Installation Guide	Instructions for installing and configuring the IBM Prospect software.
Open Interface API Guide	Describes how the Open Interface tool enhances your access to information about database peg counts and scenarios.
Performance Data Reference	Provides detailed information including entity hierarchies, peg counts, primitive calculations, and forecast expressions specific to your organization.
Release Notes	Provides technology-specific and late-breaking information about a given IBM Prospect release and important details about installation and operation.
Server Preparation Guide	Provides instructions for installing and setting up Solaris and Oracle software before you install IBM Prospect software.
Server Sizing Tool Guide	Helps an administrator use the sizing tool to calculate the system space needed for the IBM Prospect software and database.
User Guide	Provides conceptual information and procedures for using IBM Prospect software for performance and trending analysis.

1.4.1 Viewing the Desktop Client Help Publications

To view the desktop client Help publications, select a guide from the HELP menu of the IBM Prospect graphical user interface or press F1 for context-sensitive Help. To update the Help files, click the HELP menu on the IBM Prospect Explorer, and select UPDATE ALL HELP FILES.

When Help files are updated, they are downloaded automatically from the IBM Prospect server to the IBM Prospect client. A message box notifies you when this download occurs.

1.4.2 Viewing the Publications in PDF

All of the user publications are available in Adobe Portable Document Format (PDF). To open a PDF, you need the Adobe Acrobat Reader. You can download Adobe Acrobat Reader free of charge from the Adobe Web site. For more details about the Acrobat Reader, see the Adobe Web site http://www.adobe.com/ .

1.4.3 Viewing the Publications in IBM Information Center

All of the IBM Prospect publications, including Release Notes, are available online from the IBM Information Center website as follows:

http://publib.boulder.ibm.com/infocenter/tivihelp/v8r1/index.jsp?topic=/
com.ibm.netcool_pm.doc/IBM_Prospect_060308.htm

2   Server Preparation Process

Before you can install the IBM Prospect server, you must install the foundation software—Solaris and Oracle—plus system components, such as Perl, that are required by the IBM Prospect server. The following is an overview of the server preparation process:

1. Plan hardware and software requirements.

    See Hardware Requirements and Software Requirements.

2. Configure the server operating system.

    See Installing and Configuring Solaris.

3. Install Oracle.

    See Installing Oracle.

4. Configure Oracle and the database.

    See Configuring Oracle.

5. Install the system components that are prerequisite to installing the IBM Prospect server software.

    See Preparing to Install Prospect Server.

Note: Using the `wmpreparation` script, you can automate some of the above steps. For more information, see Automating the Preparation of the Server Environment.

The sections that follow provide instructions on steps that you need to take to ensure that all the supporting software is installed and configured correctly.

Topics

Check Server Guidelines
Access to Server through a Firewall

2.1   Check Server Guidelines

There are several guidelines for the installation and setup of the IBM Prospect server, including the following:

- The installation and setup is described in <u>Create the IBM Prospect UNIX Userid Account</u>.

- The documented procedures are to be used on a dedicated system that has not yet been configured, that is, Solaris only:

  - No Oracle software or configuration

  - No IBM Prospect software or configuration

  - No third-party or shareware kits, and so on.

- The procedures do not address network administration details that are site-specific. The baseline system configuration does not use NIS, NIS+, DNS, network-defined service names, and so on.

- All name service resolution should first use local files, especially for accounts, including

  ```
  /etc/passwd
  /etc/group
  /etc/shadow
  ```

  The `/etc/nsswitch.conf` file must have one of the following name service configuration entries:

  - For stand-alone configurations:

    ```
    passwd: files
    group: files
    ```

  - For NIS+ configurations:

    ```
    passwd: files nisplus
    group: files nisplus
    ```

See <u>Making Administrative Changes at Your Installation Site (Optional)</u>.

When creating user accounts, especially `flexpm` and `oracle`, follow the instructions carefully. This includes setting the UID:GID settings.

There are several principles to note:

- Pre-existing files—if they exist with previous UID:GID assignments—should be re-assigned and mapped to the correct and standard flexpm:`dba` or `oracle:dba` assignments, for example:

  ```
  $ find / -local -user 1234 -exec chown flexpm:dba "{}" \;
  $ find / -local -user 4567 -exec chown oracle:dba "{}" \;
  ```

  This corrects any problems with pre-existing files.

2.2 Access to Server through a Firewall

Client computers use two ports to connect to the IBM Prospect server:

- FX port — Most queries from the IBM Prospect client, status monitor, auto downloader, and DSMonitor use this port. (DSMonitor is a process that registers for updates from the DataServer.) By default, the FX port number is the base port plus four (4). For example, if the base port is 6440, the FX port number would be 6444.

- Event port — IBM Prospect Alarm receives alarm updates through this port. By default, the Event port number is the base port plus three (3).

If a firewall exists between client computers and the IBM Prospect server, then you need to make sure that both the FX and Event ports are opened in the firewall; otherwise, the client may not function correctly.

You can find additional information about port numbers in the *Administration Guide*.

3   Installing Oracle and Prospect Servers on Different Machines

A typical Prospect configuration involves the installation of both the Oracle database server and Prospect Server on the same Solaris machine. However, there are two possible scenarios for splitting an Oracle/Prospect Core installation, as follows:

- A new Prospect Server can be installed on a different machine from the one hosting the Oracle database (fresh install) (see Performing a Fresh Install of Prospect Server on a New Machine).
- If the Prospect Server and Oracle database are installed on the same machine, the server or database can be moved to a different machine. (see Moving an Existing Prospect Server to a New Machine).

On the machine hosting the Oracle database, all the existing steps in this guide must be performed, including database creation. On the Prospect Server machine, the Oracle client must be installed and configured to connect to the remote Oracle database.

3.1   System Requirements and Planning

This section provides instructions on how to configure the Oracle database and Prospect middleware servers. These instructions assume the following:

- The Oracle database has already been moved to the intended hardware. The database move is not in the scope of these instructions.
- Both the Oracle and Middleware servers are on either the Solaris 9 (also known as SunOS 5.9) or Solaris 10 UNIX operating system. Note that the servers do not need to be running the same version.
- The database is Oracle 10.2.0.4. Ensure that the server has only one instance of Oracle 10.2.0 running, where the schema resides, and that the database name is flexpm. No other Oracle instances, including Oracle 8i, should be running.
- The Prospect file system structure and naming convention on the new servers will be the same as on the existing production server. Adequate planning has taken place prior to the server split, including review of this document by UNIX System Administrators and Oracle DBAs.

- *Solaris machine for hosting the database server:* File systems and directories required are as described in Chapter 6, <u>Software Requirements</u>.
- *Solaris machine for hosting the Prospect Server:*
  - The hardware class should be identical to that of the database server.
  - Set up the file system `/u01`.
  - The directory structure should be the same as the database machine, to avoid any confusion.

It is recommended that you have dual/stand-by network connectivity between the back-end database server and the Prospect Server.

Read through the appropriate section in its entirety before starting the server split. Careful planning can reduce the risk of extended downtime.

3.2   Performing a Fresh Install of Prospect Server on a New Machine

Complete all the steps in this guide for preparing the database server.

Prepare the Prospect Server, by installing the Oracle client and configuring TNS, taking special note of the following steps:

Note: The following procedure includes example settings for a Nortel MTX configuration. Substitute the appropriate values as required.

1. Follow the steps in Chapter 7, <u>Installing and Configuring Solaris</u>. In Section 7.4.3, specify `/u01`.

2. Follow the steps in Chapter 8, <u>Installing Oracle</u>. In Section 8.1.3, for Step 5, select ORACLE CLIENT INSTALL.

   a. Select CUSTOM.

   b. Deselect the following options:
      - ORACLE ENTERPRISE MANAGER PRODUCTS
      - ORACLE INTERNET DIRECTORY
      - ORACLE DOCUMENTATION

   c. Select all other options.

   d. Continue with TNS configuration. Select the following options:
      - For CONFIGURATION, select TYPICAL.
      - Select ADD SERVICE NAME.
      - Select ORACLE 8I OR LATER.
      - For SERVICE NAME, select FLEXPM.
      - For PROTOCOL, select TCP.

- For HOSTNAME, specify the hostname (including domain) of the database server.

- For PORT ADDRESS OF LISTENER AT THE DATABASE SERVER, specify 1521.

- Perform a test.

- Change your login: Provide a valid database user ID/password (for example, System/manager). The login should be successful. Start the listener and open the database in the database server.

- For NET SERVICE NAME, specify FLEXPM.

- Click NEXT, then click FINISH.

  OR

  Make a copy of the tnsnames.ora file from the database server and make the same changes as above. Test the SQLPlus connectivity from the Prospect Server to the database server. For example, run the following query from any schema in the Prospect Server (note that the password change_on_install may have been changed by the user):

  ```
  sqlplus sys/change_on_install@flexpm as sysdba
  ```

3. Section 8.1.5, "Install Oracle 10g Patches" is not required.

4. Chapter 9, "Configuring Oracle", is not required.

5. Follow the steps in Chapter 10, <u>Preparing to Install Prospect Server</u>.

6. Before installing the Prospect Server, mount the $FLEXPM_HOME directory, because the configuration tool within the Prospect directory needs to create Oracle "directories" during the "make" process. In other words, share the directory under which you are going to start the Prospect Server installation, for example: /u01/apps/WatchMark/FlexPM.

   Note: The exported path on the Prospect Server must be the same directory as mounted on the database server.

7. *On the Prospect Server*, ensure that the proper NFS daemons are started by issuing the following command:

   ```
   share -F nfs -o rw=<DBserverIPAddress> /u01/apps/WatchMark/FlexPM/<vendor>
   ```

   For example:

   ```
   $pwd
   /u01/apps/WatchMark/FlexPM
   $mkdir split
   $su root
   $[provide password]
   #share -F nfs -o rw=192.168.10.108 /u01/apps/WatchMark/FlexPM/split
   ```

8. *On the database server*, run the following command:

   ```
   mount -F nfs <PserverIPAddress>:/u01/apps/WatchMark/FlexPM/<vendor>
     /u01/apps/WatchMark/FlexPM/<vendor>
   ```

   Note: For Nortel, <vendor> would likely be NorCDMA or NortelMTX.

   This directory can be unmounted (using the umount command) after installation. However, this directory must be re-mounted when installing any Nortel patches or upgrades.

For example:

```
$mkdir split
$su root
$[provide password]
#mount -F nfs 102.168.10.111: /u01/apps/Watchmark/FlexPM/Split /u01/apps/
WatchMark/FlexPM/split
```

Perform the Prospect Server installation as described in the *Installation Guide*.

3.3   Moving an Existing Prospect Server to a New Machine

This section details the server configuration requirements that support splitting the Oracle database and Prospect middleware components onto two separate servers (that is, moving the Prospect server). For the latest information pertaining to your network configuration, please refer to the Release Notes for your Prospect installation.

Note: The following procedure includes example settings for a Nortel MTX configuration. Substitute the appropriate values as required.

3.3.1   Configuring the Oracle Database Server

Accessing Prospect External Libraries

External library files that reside in the Prospect installation directories must be readable by the Oracle administrator UNIX account (typically "oracle"). Access to these libraries is required to support advanced reporting functions in the Prospect report generation process. This can be accomplished by mounting the Prospect file system to the Oracle database server via the autofs service, or by copying the directories which contain the external libraries to the Oracle database server. This section describes the method of copying the files to the Oracle database server.

To copy and transfer Prospect external library files

1. On the new Oracle database server, create a new directory to hold the Prospect external library files. The selected location must allow read access for the Oracle administrator UNIX user.

    As "oracle", enter:

    ```
    $ cd ~oracle
    $ mkdir Prospect_ExtLib
    ```

2. On the existing Prospect server, create a compressed tar file of the Prospect external library files.

    As the UNIX user "flexpm", enter:

    ```
    $ cd $PM_HOME/pm
    $ gtar -cvzf Prospect_Ext_Lib.tgz lib
    ```

3. Transfer the compressed tar file to the new directory `Prospect_ExLib` on the Oracle database server.

```
$ ftp <new database server IP or hostname>
Name: oracle
Password: <oracle password>
ftp> cd Prospect_ExtLib
ftp> bin
ftp> put Prospect_Ext_Lib.tgz
```

4. Uncompress and untar the Prospect external libraries files on the new Oracle database server.

As the UNIX user "oracle", enter:

```
$ cd ~oracle/Prospect_ExLib
$ gzip -d Prospect_Ext_Lib.tgz
$ tar -xvf Prospect_Ext_Lib.tar
```

Creating a Soft Link to the TNS File Location on the New Oracle Database Server

To create the required soft links

As the Oracle administrative UNIX user, enter:

```
[oracle] $ cd /u01/apps/oracle
[oracle] $ ln -s $ORACLE_HOME/network network
```

Creating or Modifying Listeners on the New Oracle Database Server

You can copy the listener and tnsnames files from the existing production server onto the new database server. You will need to modify the host information in the files to reflect the new database server. Otherwise, use the following procedure to create or modify listeners for Prospect.

To create or modify listeners

1. Log on as the oracle user and go to `${ORACLE_BASE}/network/admin`. This is the normal location for the `listener.ora` and tnsnames.ora files.

   ```
   $ cd ${ORACLE_BASE}/network/admin
   ```

2. Create the following files in this directory. As examples, use the sample files located at the end of this section as templates.

   • `set_tns`—This file consists of one line, which names the full path to the new listener directory. Create the set_tns file by following the instructions in step 4.

   • `listener.ora`—This file lists host names, dedicated services, and trace and log output.

   • `tnsnames.ora`—This file provides the ability to reference oracle databases by a simple alias .

3. Create the `set_tns` file by modifying the following `set_tns` example file to contain the correct directory name. You will use this to change the environment when you start and stop the listener process. The following is a sample `set_tns` file.

```
TNS_ADMIN=/u01/apps/oracle/network/admin/

export TNS_ADMIN
```

4. Modify the files `listener.ora` and `tnsnames.ora`, substituting appropriate values for the HOSTNAME, PORTNUM, SCHEMA, and FLEXPM_HOME tags. Modify the ENVS variable to use the Prospect installation path. The PORTNUM tag must be unused, and unique among the listeners on the system.

5. Verify that you can read the libraries listed in the ENVS variable of the `listener.ora` file.

6. Set the listener environment to your local directory.

```
$ . ./set_tns
```

7. If you created a listener, then start it. If you have modified an existing listener, then stop and re-start it. For example:

```
$ lsnrctl

LSNRCTL> start listener
```

Sample Oracle Configuration Files

Use the following samples as templates. Wherever you see a term in italics and angle brackets (for example, <SCHEMA>), substitute an appropriate value for your system. Do not enter the angle brackets in the file.

Example set_tns

```
TNS_ADMIN=/u01/apps/oracle/network/admin

export TNS_ADMIN
```

Example listener.ora

Note: The indents in this file are critical for successful file processing. If you copy and paste the template from this document, you may lose the fidelity of the indents. Moreover, some of the lines in this document wrap, which may also cause problems when the file is processed.

```
# @(#) listener.ora = Oracle 'listener' configuration for FLEXPM

# NOTES:

#   can be 'generated' by Oracle Net8 Assistant

#

# @(#) %M% ; %I%.%B% %E% %U%


LOG_DIRECTORY_LISTENER = /u01/apps/oracle/network/log

LOG_FILE_LISTENER = listener.log
```

```
TRACE_LEVEL_LISTENER = NONE


LISTENER =

    (ADDRESS_LIST =

        (ADDRESS = (PROTOCOL = TCP)(HOST = <hostname|IP> )(PORT = 1521))

        (ADDRESS = (PROTOCOL = IPC) (KEY = EXTPROC))


    )


SID_LIST_LISTENER =

    (SID_LIST =

        (SID_DESC =

            (GLOBAL_DBNAME = flexpm )

            (ORACLE_HOME = /u01/apps/oracle/product/10.2.0 )

            (SID_NAME = flexpm )

    )

    (SID_DESC =

        (ORACLE_HOME = /u01/apps/oracle/product/10.2.0 )

        (ENVS =

"LD_LIBRARY_PATH=/u01/apps/WatchMark/FlexPM/NortelMTX/pm/lib/wm:/u01/apps/
Watch

Mark/FlexPM/NortelMTX/pm/lib/tp:/u01/apps/WatchMark/FlexPM/NortelMTX

/pm/lib/ln/ora")

            (SID_NAME = PLSExtProc)

            (PROGRAM = extproc)

        )

    )
#.
```

Example tnsnames.ora

Note: The indents in this file are critical for successful file processing. If you copy and paste the template from this document, you may lose the fidelity of the indents. Moreover, some of the lines in this document wrap, which may also cause problems when the file is processed.

```
# @(#) tnsnames.ora = Oracle 'tnsnames' configuration for FLEXPM

# NOTES:

#   can be 'generated' by Oracle Net8 Assistant

#

# @(#) %M% ; %I%.%B% %E% %U%


EXTPROC_CONNECTION_DATA =

   (DESCRIPTION =

      (ADDRESS_LIST =

         (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC))

      )

      (CONNECT_DATA = (SID = PLSExtProc))

   )


FLEXPM =

  (DESCRIPTION =

     (ADDRESS_LIST =

       (ADDRESS = (PROTOCOL = TCP)(HOST = <hostname|IP> )(PORT = 1521))

     )

     (CONNECT_DATA =

       (SID = flexpm )

     )

  )

 #.
```

3.3.2 Configuring the New Prospect Middleware Server

Create the UNIX User Accounts

To create the Oracle UNIX user account using the command line interface

1. Use a shell with root permissions on the database server host. For example:

    ```
    $ su root
    ```

    Modify the name services configuration file as follows:

    ```
    [root] # cp -p /etc/nsswitch.conf /etc/nsswitch.conf.bak
    [root] # edit /etc/nsswitch.conf
       passwd: files
    ```

```
group: files
```

2. Set up a variable for the login home directory. If Oracle will be installed in a different directory, the variable's value should be changed accordingly.

```
[root] # export ORACLE_BASE ; ORACLE_BASE="/u01/apps/oracle/"
```

Add the definition for the dba group (the following uses a sample value of 600):

```
[root] # /usr/sbin/groupadd \
-g "600" "dba" \;
```

Add the definition for the oracle account (the following uses sample values of 600 and 10021):

```
[root] # /usr/sbin/passmgmt -a \
   -c "Oracle R-DBMS Admin" \
   -h "${ORACLE_BASE}" \
   -s "/bin/ksh" \
   -u "10021" -g "600" "oracle";
```

Add the login password (the following uses a sample password of manager):

```
[root] # passwd -r files oracle
Password: oracle
```

Create the login home directory:

```
[root] # mkdir -p "${ORACLE_BASE}"
[root] # chown oracle:dba "${ORACLE_BASE}"
```

To configure the Prospect UNIX account using the command line interface

The Prospect system requires the following installation directory to be associated with the Prospect UNIX user ID logon account:

```
/u01/apps/WatchMark/FlexPM
```

Note: The following examples use `flexpm` as the Prospect UNIX user ID logon.

1. Set up the entries for the Prospect UNIX userid logon using the following commands:

```
[root] # export FLEXPM_HOME ; \
FLEXPM_HOME="/u01/apps/WatchMark/FlexPM"
```

2. Add the definition for the Prospect UNIX userid account (the following uses sample values of `flexpm`, `600`, and `100210`):

```
[root] # /usr/sbin/useradd \
-c "Prospect User" \
-d "${FLEXPM_HOME}" \
-s "/bin/ksh" \
-u "10020" -g "600" "flexpm";
```

```
[root] # /bin/pwconv
```

3. Add the logon password (the following uses a sample password of manager):

```
[root] # passwd flexpm
Password: manager
```

Create the logon home directory. The following uses a sample user ID of flexpm and group ID of dba:

```
[root] # mkdir -p "${FLEXPM_HOME}"
[root] # chown flexpm:dba "${FLEXPM_HOME}"
```

4. Restore the name services configuration file as follows:

```
# cp -p /etc/nsswitch.conf.bak /etc/nsswitch.conf
```

Install the Oracle 10g Client (version 10.2.0.4)

Version 10.2.0.4 of the Oracle client must be installed. When installing the Oracle 10*g* client, use the following directories:

```
ORACLE_BASE -> /u01/apps/oracle
ORACLE_HOME -> /u01/apps/oracle/product/10.2.0
```

Note: Perform the installation using oracle user permissions. Do not run the Oracle Universal Installer (OUI) as root.

Start the Installer

The installer is a Java-based interface that uses the X Window system. Use a workstation with an X Window display, not a console. Start the Installer according to the following procedure.

To start the Installer

1. Use the following commands on the X session host to enable access to the X Window server.

```
% xhost +
```

Note: Please make sure that the xhost command is available in your PATH environment variable.

2. Use telnet or rlogin to log on to the database server host. Use the Prospect Oracle logon account:

```
% rlogin 'hostname` -l oracle
```

Substitute the appropriate server name for *hostname*.

3. Set the DISPLAY variable so that the Installer can access the X Window server:

```
[oracle] $ export DISPLAY ; DISPLAY= `hostname`:0.0
```

Substitute the appropriate display *hostname*.

4. Set two variables for installation parameters:

```
[oracle] $ export ORACLE_BASE ; ORACLE_BASE='/u01/apps/oracle'
[oracle] $ export ORACLE_HOME ; ORACLE_HOME='/u01/apps/oracle/product/
10.2.0'
```

5. There are two discs in the Oracle Enterprise Edition CD-ROM set: Disk 1 and Disk 2. Start the Installer if you are using the CD-ROM image. Locate the CD-ROM mount-point directory. Use that directory as the working directory:

```
[oracle] $ cd /cdrom/cdrom0
```

6. Run the Installer in the background by using the ampersand (&).

```
[oracle] $ /cdrom/cdrom0/runInstaller &
```

This enables the command shell to accept additional commands.

7. Follow the system prompt to eject Disc 1 and replace it with Disc 2.

Select Default Installation Parameters

Select default installation parameters such as product components, component locations, and authentication methods.

To select default installation parameters

1. After the WELCOME dialog box opens, click NEXT. the INVENTORY LOCATION dialog box opens. Enter the inventory base directory in the text box:

```
Location: /u01/apps/oracle/oraInventory
```

This directory is `${ORACLE_BASE}/oraInventory`.

The installer creates the following:

`/var/opt/oracle` – directory

`/var/opt/oracle/oraInst.loc` – text file

`/u01/apps/oracle/oraInventory` – directory

2. The UNIX GROUP NAME dialog box opens.

Enter `dba` in the text box. Click NEXT.

The installer builds a program and prompts you to run it.

Use a terminal window (`dtterm` or `xterm`) and root permissions. Run the following commands:

```
$ su root
[root] # /tmp/orainstRoot.sh
```

3. The FILE LOCATIONS dialog box opens. Enter or verify path names in the text boxes. The default value for the NAME text box is `Home1`; use the default value.

```
Source: /cdrom/oracle10g/stage/products.jar
Destination: /u01/apps/oracle/product/10.2.0
```

The destination path is `${ORACLE_HOME}`.

Click NEXT.

4. The LOADING PRODUCT INFORMATION dialog box opens, reads the product file, and loads product definitions.

    Check the products listed. Click INSTALL to start the installation activity.

    Note: If Oracle products are currently installed on this system, the installer bypasses the following two steps because the file `/var/opt/oracle/oraInst.loc` exists.

5. The AVAILABLE PRODUCT COMPONENTS dialog box opens.

    Select the Oracle client install. Deselect:

    ```
    Oracle Enterprise Manager products

    Oracle Internet Directory

    Oracle Documentation
    ```

6. Cancel TNS configuration. The `tnsnames.ora` file from the existing Prospect Server will be copied to the new Prospect middleware server later in this section.

7. Complete the Oracle client installation.

Copy the tnsnames.ora File from the Existing Prospect Server to the New Prospect Middleware Server

To copy the tnsnames.ora file

1. Log into the existing Prospect server as the UNIX user "oracle".

2. Change directories to the TNS files directory.

    ```
    [oracle] $ cd /u01/apps/oracle/network/admin
    ```

3. FTP the `tnsnames.ora` file to the Prospect Server.

    ```
    [oracle] $ ftp <new middleware server>
    Name: oracle
    Password: <oracle password>
    ftp> bin
    ftp> cd product/10.2.0/network/admin
    ftp> put tnsnames.ora
    ```

Copy the Prospect File System from the Existing Prospect Server to the New Prospect Middleware Server

The following file system from the existing Prospect Server should be moved to the new Prospect middleware server:

```
/u01/apps/WatchMark/FlexPM/NortelMTX
```

The method used to move the file system depends on the storage system on which it resides. Please work with the server system administrator to plan and execute the move of this file

system to the new Prospect middleware server. File permissions and ownership must be the same following the transfer to the new server.

Create Links to Set the Environment for the UNIX User "flexpm" on the New Prospect Middleware Server

The `.profile` provided to properly set the environment for the UNIX user "flexpm" is located in the installation directory for Prospect. To automatically source the .profile, make sure a soft link exists in the home directory to the `.profile` in the Prospect installation directory. If a link does not exist, create one using the steps provided below.

To check to see if the soft link exists

As the UNIX user "flexpm", enter:

```
$ cd ~flexpm
$ ls –la .profile.
```

You should see something similar to:

```
lrwxrwxrwx 1 flexpm dba 10 Jun 23 2006 .profile -> NortelMTX/.profile
```

If no link exists, use the following steps:

To create the links for the environment files

1. As the UNIX user "flexpm", enter:

   ```
   $ cd ~flexpm
   $ ln –s NortelMTX/.profile .profile
   ```

2. Verify the environment files are read at login by logging back in and reviewing the output of the `env` command.

   ```
   $ su – flexpm
   password: <pw>
   $ env | more;
   ```

Copy the crontab from the Existing Prospect Server to the New Prospect Middleware Server

Note: The following command sequence enables you to copy and recreate the crontab for the UNIX user "flexpm". If the original table is empty (that is, if a user other than "flexpm" was used to add entries to the crontab), or if "flexpm" is not authorized to use the command, you must adjust the sequence accordingly.

To copy the crontab entries

1. On the existing Prospect server, save the crontab out to a file.

As the UNIX user flexpm, enter:

```
$ crontab –l > flexpm_cron.out
```

2. Move the `flexpm_cron.out` file to the new Prospect middleware server.

```
$ ftp <new middleware server>
Name: flexpm
Password: <flexpm password>
ftp> bin
ftp> put flexpm_cron.out;
```

3. On the new Prospect middleware server, create a new crontab for the UNIX user "flexpm".

   As the UNIX user "flexpm", enter:

```
$ crontab flexpm_cron.out;
```

Configure Perl on the New Prospect Server

The Prospect Server requires Perl 5.6.1. Perl 5.6.1 is included for installation with Solaris 9. To configure Perl for use with the Prospect Server, perform the following steps.

To configure Perl for the Prospect Server

1. Determine whether Perl is installed:

```
[root] # pkginfo | grep -i perl
```

   When Perl is installed, the following message is displayed:

```
system SUNWpl5m Perl5 On-Line Manual Pages
system SUNWpl5p Perl 5.6.1 (POD Documentation)
system SUNWpl5u Perl 5.6.1
```

2. Make sure the correct version of Perl is accessible to Prospect Server by entering the following command:

```
[root] # /usr/local/bin/perl –v
```

   After you enter this command, the following information is displayed:

```
[root] # perl –v
This is perl, version 5.6.1 built for sun4-solaris Copyright 1987-1999,
Larry Wall Perl may be copied only under the terms of either the Artistic
License or the NU General Public License, which may be found in the Perl 5.0
source kit.
Complete documentation for Perl, including FAQ lists, should be found on
this system using 'man perl' or 'perldoc perl'. If you have access to the
Internet, point your browser at http://www.perl.com/, the Perl Home Page.
```

3. Create the symbolic link:

```
[root] # ln -s /usr/bin/perl \
/usr/local/bin/perl ;
```

4. If Perl is not installed, or it is not version 5.6.1, then you can use the Perl package included on the Prospect Server CD-ROM disc. Install the package with root permissions by using `pkgadd`.

Note: Make sure that `perl-5*.pkg` is installed on the CD in the `/third-party/kits` directory.

```
[root] # cd /cdrom/cdrom0/third-party/kits

[root] # ls -lad perl-5.*.pkg

[root] # pkgadd -d perl-5.*.pkg

[root] # /usr/local/bin/perl –v
```

4 Installing Multiple Schemas on a Single Server

This section provides instructions on how to create multiple schemas in a single Oracle database instance. For example, it is possible to configure a server that has three different versions (that is, three different applications) of Prospect installed on it. All three applications share the same Oracle database – they're simply using different schemas within the single database.

4.1 Considerations

Following are some important considerations when installing multiple schemas on a single Oracle database:

- Sharing of system resources: Having more than one Prospect instance running on the same machine limits the resources available to each installation. In particular, customers must manage scheduled processes to avoid interactions (partmaint, summations, busy hours, etc.).

- Impact to availability: Planned (and unplanned) outages impact every system. For example, the installation of an Oracle or Solaris patch impacts every Prospect instance using the database or the operating system.

- Prospect upgrade: Depending on the features added to a new Prospect version, having more than one instance installed on the same box can imply that all instances must be upgraded at the same time. For example, the support of a new Oracle version or a different platform can imply the need to migrate all the instances together.

4.2 Prerequisites

These instructions assume that you are either starting a clean, new installation or that you are installing multiple schemas on a server that already has a Prospect package already installed on it.

Before installing the schemas, make sure that you have completed the following.

1. Increase the disk space to accommodate the increase in tablespace for multiple schemas. Refer to the *Server Sizing Tool* for each schema for an estimate of disk space required.

2. Ensure that the server memory and CPU are adequate. For server CPU and memory requirements, refer to the *Server Sizing Tool* for each of the individual schemas.

3. The installation must be performed on a Solaris 9 or 10 platform using Oracle 10.2.0.4.0. Refer to <u>Overview of Steps</u> for instructions on installing the server platform.

4. Ensure that the server has only one instance of Oracle 10.2.0.4.0 running, and the database name is `flexpm`. No other Oracle instances should be running.

   If your server already has a Prospect software package installed, begin with <u>Install Subsequent Applications</u>

4.3 Overview of Steps

The complete multi-schema installation of Prospect software is performed in the following order:

1. Prepare the server for the installation, by installing the Solaris and Oracle software and configuring them for Prospect, using the instructions in this guide.

2. Install the initial Prospect server package. Refer to the *Installation Guide*, Section 2.3, "Install the Prospect Server Application".

3. Install subsequent server applications. Refer to the *Installation Guide*, Section 2.4, "Install Additional Prospect Server Applications", and the sections <u>Prepare the Tablespace Size</u> and <u>Check Existing Database Users</u> in this guide.

4. Set up the multi-schema profiles. Refer to the *Installation Guide*, Section 2.4.4, "Setting Up a Multi-Schema Profile".

5. Configure the server. Refer to the *Installation Guide*, Chapter 3, "Configuring the Prospect Server".

4.4 Prepare the Server for the Installation

Configure the server that the Prospect software will be installed onto, using Chapter 7, <u>Installing and Configuring Solaris</u>.

Install the Oracle software, using Chapter 9, <u>Configuring Oracle</u>.

After the server has been prepared, make sure that the following steps have been taken to support the multiple schemas:

<u>Configure User Logon Accounts</u>

<u>Configure Oracle Environments</u>

4.4.1 Configure User Logon Accounts

To add support for the multiple schemas, the Prospect Server requires the following installation directories to be associated with the logon account `flexpm`:

```
~flexpm -> /u01/apps/WatchMark/FlexPM
```

To configure user logon accounts, as `root`, change the home directory for the `flexpm` user to `/u01/apps/WatchMark/FlexPM` using your preferred method of updating user login details.

4.4.2 Configure Oracle Environments

Installing the Oracle software should have been completed during the pre-installation phase, following the instructions in Chapter 9, Configuring Oracle.

The additional Oracle configuration detailed below includes configuring environments, as follows:

Configure the Oracle Extent Size

Set the Database sys Password

Configure the Oracle Extent Size

Each Prospect application may recommend different Oracle extent sizes for the "Traffic" tablespaces depending on the size of the application and the quantity of data expected to be loaded.

The following are common values used for the minimum, initial, and next extent sizes for the following tablespaces:

- `traffic_small`: 64K
- `traffic_medium`: 256K
- `traffic_large`: 1024K
- `traffic_jumbo`: 8192K
- `traffic_jumboplus`: 16384K

Note: The `traffic_jumboplus` tablespace is not required for all Prospect applications.

To see the recommended tablespace sizes, required tablespaces and extent sizes for each Prospect application, please consult the `results` worksheet from the *Server Sizing Tool* of each application you intend to install on the server. Column D of the `results` worksheet should show the extent size in bytes.

Use the recommended tablespace extent sizes from each *Server Sizing Tool* you intend to install on a server to derive the best value for your database. Generally, this would be the largest value.

For a multi-schema installation, ask your database administrator to monitor the performance of the different Prospect schemas..

Set the Database sys Password

As of Prospect 8.0.6, when upgrading your installation, you can set your own database sys password, or use the default password.

4.5 Install the Initial Prospect Application

To install the initial Prospect application, follow the instructions in the *Installation Guide* provided with that application. These instructions will take you through installing the Prospect software using default values.

To use non-default values for this initial installation, refer to the *Installation Guide*, Section 2.4.1, "Install Using Non-Default Values", for details on how to override the default values.

4.6 Install Subsequent Applications

To install more than one application onto a server, the default values used by the installer must be overridden to avoid multiple applications being installed into the same schema within the database.

The following steps should be performed:

Prepare the Tablespace Size

Check Existing Database Users

Install Using Non-Default Values]

4.6.1 Prepare the Tablespace Size

Increase the size of the tablespaces based on the requirements detailed in the *Server Sizing Tool* for the Prospect software to be installed.

4.6.2 Check Existing Database Users

You should check to see the database user names that are already in use within the system, to avoid using a name that is already in use.

To find a list of the existing users:

1. Log in to the database that the new installation will be using:
   ```
   $ sqlplus /nolog
   SQL> connect <username>/<password>@<dbsid>
   ```

2. Select a list of all currently installed user names:
   ```
   select username from dba_users;
   ```

4.6.3 Install Using Non-Default Values

For details on overriding the default values when installing subsequent applications, refer to the *Installation Guide*, Section 2.4.1, "Install Using Non-Default Values".

4.7   Set Up the Multi-Schema Profiles

To set up the multi-schema profiles, refer to the *Installation Guide*, Section 2.4.4, "Setting Up a Multi-Schema Profile".

4.8   Configure the Prospect Server

To configure the Prospect Server, refer to the *Installation Guide*, Chapter 3, "Configuring the Prospect Server".

5   Hardware Requirements

This chapter describes the minimum hardware required for installing IBM Prospect software.

Before you can install the IBM Prospect software, you need to configure your hardware and operating system according to the recommendations in the Server Sizing tool. Please refer to the *Server Sizing Tool Guide* for more information about using the Server Sizing tool.

5.1   Hardware Requirements for the IBM Prospect Server

For the minimum hardware requirements for the IBM Prospect server, please refer to the *IBM Prospect Server Sizing Tool Guide.*

The following table lists the minimum peripheral requirements for the IBM Prospect server:

Table 3:   Minimum peripheral requirements for the IBM Prospect Server

Minimum Peripherals
One CD-ROM drive
At least one 10 Base-T network interface card (NIC); (a 10/100 Base-T dual-speed interface is recommended).

Important: The use of redundant array of independent disks (RAID) technology is recommended, but not required, for a minimum configuration. RAID levels 0, 1, 0 +1, 3 and 5 are compatible with IBM Prospect databases. For more information on RAID, please refer to the *Server Sizing Tool Guide*.

If you plan to support eight or more switches with this installation, contact your customer support representative for custom sizing information. Custom sizing might be required for optimal performance. Custom sizing for larger systems is necessary to accurately determine hardware specifications and Oracle configuration setting (such as optimal extent sizes).

6   Software Requirements

This section of the guide reviews the software requirements for the IBM Prospect product.

Topics

6.1   Server Software Requirements

The following software is required by the IBM Prospect server.

- Solaris UNIX operating system: either SunOS 5.9 (Solaris 9) or SunOS 5.10 (Solaris 10).
- Sun StorEdge RAID Manager (if you plan to use disk arrays), or other disk management software.
- Sun Solstice DiskSuite for Solaris or other disk management/configuration software — if you plan to have multiple internal disk drives that you want to stripe, or if you want to use other RAID technologies on your system disks.
- A Web browser/communications software package for Solaris.
- Adobe Acrobat Reader (current version).
- Oracle database software, as described in the following sections. The Prospect software supports Oracle 10*g*.
- Perl 5.6.1 (installed with Solaris 9 and 10).

  Make sure that `gtar` and `gzip` are in the path.
- Java Runtime Environment version 1.4.2.
- `gtar`, `gzip`, and `gunzip` binaries. For Solaris 9, this requirement can be met with patch 118191-01.
- `gtar`, `gzip`, and `gunzip` GNU/FSF archive file utilities.

  Make sure that `/usr/bin` and `/usr/sfw/bin` are in your path. Enter the following commands to locate `gtar` and `gunzip`:

  ```
  which gtar
  which gunzip
  ```

These commands return the path to `gtar` and `gunzip` on your system. If these utilities are not found, add `/usr/sfw/bin` to the path in your `.profile` file.

- Microsoft Excel - one of the following versions: 2002, 2003, 2007

6.1.1 Oracle 10g Requirements

For Oracle Enterprise Edition, version 10.2.0.1.0 database software, including partition licenses and patch 10.2.0.4.

6.2 Backup Software

It is advisable to perform periodic backups of the IBM Prospect data you want to protect. The backup software you choose can be installed at any time during the IBM Prospect system installation process. However, it is usually more convenient to install the backup software before installing the IBM Prospect server application software.

7 Installing and Configuring Solaris

It is recommended that you use an interactive installation of Solaris.This installation method enables you to tailor the installation process to your specific needs and to choose where to locate co-packaged software.

Topics

Install Solaris
Set Up the System Disk
Configure UNIX
Configure the IBM Prospect Server
Install Required Applications for Viewing Documentation
Check System Requirements for Oracle

7.1 Install Solaris

Installing Solaris requires you to perform several installation steps. The first step is to establish operating system startup configurations. Refer to Configure UNIX for instructions on configuring the operating system to meet your specific requirements.

Perform a standard interactive installation of Solaris.

7.2 Set Up the System Disk

The following table shows system disk partitioning recommendations for the IBM Prospect server based on a 9.2-GB internal system disk. These recommended disk-partitioning parameters apply only to the system disk. The database disk allocation is done separately by using data that the Server Sizing tool has generated. If you choose to use mirroring for your system disk, you need at least two 9.2-GB system disks, and you need to install Solstice DiskSuite or other volume-management software.

Note: If this IBM Prospect installation needs to support eight or more switches, contact your customer support representative for custom sizing information. Custom sizing may be required for optimal performance of the IBM Prospect system. Custom sizing for larger systems is neces-

sary to accurately determine hardware specifications and Oracle configuration setting (such as optimal extent sizes).

Table 4: System disk configuration example

File System	Recommended Size for 9.2 GB Disk	Remarks
/	500 MB	Root
/tmp	700 MB	Do not undersize the /tmp file system.
overlap	9.2 GB	Associated with sector s2. Do not change.
swap	1 GB (Minimum)	Sizing for swap is normally 50 to 100 percent of the amount of installed RAM. However, the IBM Prospect system requires at least 1 GB of swap, or three times the amount of RAM, whichever is larger.
/u01	4.7 GB	Oracle and the IBM Prospect application are installed in this file system. **Note:** Please use the recommended size for disk space as specified in the Sizing Tool.
/opt	900 MB	Sizing for /opt is based on a complete installation of Solaris, including AnswerBooks and Common Desktop Environment (CDE).
/usr	1024 MB	Solaris requires more space in the /usr file system.

7.3   Configure UNIX

After you have completed the primary installation steps for the Solaris operating system and rebooted, you need to complete the secondary UNIX configuration steps. These include installing patches, configuring the network, and possibly setting up user accounts.

7.3.1 Install Latest Solaris Patch Cluster

Sun Microsystems periodically updates its list of recommended patches for Solaris. Sun provides these patches in a distribution called a patch cluster. For more information about current and recommended patches, see Sun's Web site at http://docs.sun.com/ or http://store.sun.com/. Install the most recent recommended patch cluster.

You need to install the following Daylight Savings Time-related patches:

- Solaris 9 - 113225-03 or later and 112874-33 or later.
- Solaris 10 - 122032-01 or later and 119689-07 or later.

You need to install the following patches to support Oracle 10.2.0.4:

- Solaris 9 - 112874-39 or later.
- Solaris 10 - 127111-02 or later.

7.3.2 Configure Your Network

If you are using Domain Name System (DNS) or Network Information Service Plus (NIS+) systems, you need to add the IBM Prospect host to the databases of these systems.

7.3.3 Set Up Solaris User Accounts

Log on as `root` when you first install Solaris. Create additional user accounts if needed after you complete the initial installation steps.

Related Topics

Configuring UNIX User Accounts

7.4   Configure the IBM Prospect Server

This section describes the preliminary steps you must take before you install the IBM Prospect and Oracle software.

7.4.1 Install Solaris Patches Required by RAID Manager

Solaris patches must be installed before you install the Solaris RAID Manager software. To determine which patches you need to install, identify the version of Solaris you are using and compare it to the patch lists in the RAID *Manager Release Notes.*

7.4.2 Install RAID Manager Software

Unless you have a very small network, use disk arrays, which require software to manage them. If you are using Sun StorEdge Disk arrays, use Sun StorEdge RAID Manager. If you are using other disk arrays, use that manufacturer's software. You must follow several important steps to properly install the RAID Manager software. You should refer to the *Sun StorEdge RAID Manager Installation and Support Guide for Solaris* document for complete installation instructions, or the instructions for your specific type of disk array software.

After you install the RAID Manager software, use the RAID Manager graphical user interface (GUI) icons to create logical units (LUNs) for your file systems. You also choose the RAID level for each logical unit.

7.4.3 Create the Oracle and IBM Prospect File Systems

Although RAID and Volume Management capabilities are required for production systems at most IBM Prospect sites, a simpler approach is to use disks and file systems.

In this case, create file systems on individual disks. Set up the file systems that are to contain Oracle tablespace, rollback segments, and data and control files.

Creating the IBM Prospect File Systems

The following file systems are required:

```
/u01, /u02, /u03, /u04, /u05, /u06
```

For information on managing Solaris 10 zones, refer to the Sun Microsystems document located at: `http://www.sun.com/software/solaris/howtoguides/ContainersLowRes.pdf`. To add file systems to the zone (for example, `/u01` or `/u02`), use the `add fs` command. See page 10 of the above document for details on the use of this command.

For detailed descriptions of the IBM Prospect server file systems, see the *Server Sizing Tool Guide*.

Note: If your system contains an Oracle installation and a IBM Prospect (**flexpm**) database instance, skip the following procedure and go to <u>Preparing to Install Prospect Server</u>.

To create the IBM Prospect file systems

1. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

   Example
   ```
   $ su root
   [root] # exec ksh
   ```

2. Assign a device for each of the file systems.

   Example:
   ```
   /u01 /dev/oracle
   /u02
   ```

   The `/u01` disk is different from the others in that it is usually created first, and because the Oracle and IBM Prospect software are installed on it.

3. Make UFS file systems using `newfs -v <dev name>`:

4. Examine the file systems before mounting using `fsck -y <dev name>`.

5. For a setup not using `forcedirectio` (see <u>Using forcedirectio to Increase Performance</u>), add mount table entries in `/etc/vfstab` for each file system.

   Example:
   ```
   /dev/dsk/c0t0d0s7 /dev/rdsk/c0t0d0s7 /u01 ufs 2 yes -
   ```

6. Mount the file systems and check disk space availability using the mount **<file system>** and the `df -k <file system>` commands:

Using forcedirectio to Increase Performance

Sun Microsystems best practices for Solaris and Oracle installations recommends using the `forcedirectio` mount option for file systems that store Oracle data files. The `forcedirectio`

option forces input/output (I/O) operations to bypass Solaris file buffering and caching. The bypass enables you to combine the performance benefits of raw file systems with the manageability and flexibility of traditional file systems. The `forcedirectio` option typically results in 10 percent to 15 percent faster sequential reads.

Caution: Use the `forcedirectio` option on Solaris UNIX file systems. Other third-party file systems provide similar functionality. If you are using a third-party file system, such as Veritas, consult the company documentation for instructions on turning off file system buffering.

To set up the forcedirectio option on existing IBM Prospect servers

1. Edit the `/etc/vfstab` file to include the `forcedirectio` option. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

    Example
    ```
    $ su - root
    [root] # exec ksh
    ```

2. The seventh column in `/etc/vfstab` is the mount option column. In this column, change the value from `-` to `forcedirectio` for the file systems containing Oracle data files. For standard installations, these are file systems `/u02` through `/u06`.

    Example
    ```
    /dev/dsk/c2t0d0s6 /dev/rdsk/c2t0d0s6 /u02 ufs 3 yes -
    ```
    becomes
    ```
    /dev/dsk/c2t0d0s6 /dev/rdsk/c2t0d0s6 /u02 ufs 3 yes forcedirectio
    ```

Caution: For standard installations, enable `forcedirectio` on file systems `/u02` through `/u06` only. Do not enable `forcedirectio` on file system `/u01`—the `/u01` file system does not contain Oracle data files.

3. The `forcedirectio` setup changes occur during the next system reboot. These changes are only a performance improvement; if they are the only changes requiring a reboot, schedule the reboot for the next available maintenance period. For information about scheduled maintenance, see the *Administration Guide*.

4. Add the `forcedirectio` option, to the table entries in `/etc/vfstab`:
    Example:
    ```
    /dev/dsk/c2t0d0s6 /dev/rdsk/c2t0d0s6 /u02 ufs 3 yes forcedirectio
    ```

7.4.4 Configuring UNIX User Accounts

This section describes the procedures for configuring UNIX user accounts.

Create the UNIX User Account for Oracle

You can use the command line interface or the Solaris Admintool GUI. The following procedure describes how to create the user accounts using the command line interface.

Note: If your system already has Oracle installed, skip the following procedures and go to Create the IBM Prospect UNIX Userid Account on page 49. The example in step 2 uses `oracle` as the UNIX user account for Oracle.

To create user accounts using the command line interface

1. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

   Example
   ```
   $ su - root
   [root] # exec ksh
   ```

   Modify the name services configuration file as follows:
   ```
   [root] # cp -p /etc/nsswitch.conf /etc/nsswitch.conf.bak
   [root] # edit /etc/nsswitch.conf
      passwd: files
      group: files
   ```

2. Set up the entries for the UNIX user account for Oracle using the following commands:

   Set up a variable for the home directory. If Oracle is installed in a different directory, the variable's value should be changed accordingly.
   ```
   [root] # export ORACLE_BASE ; ORACLE_BASE="/u01/apps/oracle/"
   ```

   Add the definition for the `dba` group (the following uses a sample value of `600`):
   ```
   [root] # /usr/sbin/groupadd \
      -g "600" "dba" \
      ;
   ```

   Add the definition for the UNIX user account for Oracle (the following uses sample values of `600` and `10021`):
   ```
   [root] # /usr/sbin/useradd \
      -c "Oracle R-DBMS Admin" \
      -d "${ORACLE_BASE}" \
      -s "/bin/ksh" \
      -u "10021" -g "600" "oracle" \
      ;
   [root] # /bin/pwconv
   ```

   Add the password (the following uses a sample password of `manager`):
   ```
   [root] # passwd oracle
   Password: manager
   ```

Create the logon home directory:

```
[root] # FLEXPM_BASE="/u01/apps/WatchMark/FlexPM"
[root] # export FLEXPM_BASE
[root] # mkdir -p "${ORACLE_BASE}"
[root] # chown oracle:dba "${ORACLE_BASE}"
```

3. Restore the name services configuration file as follows:

```
[root] # cp -p /etc/nsswitch.conf.bak /etc/nsswitch.conf
```

Refresh the Name-Services cache daemon as follows:

```
[root] # /etc/init.d/nscd stop
[root] # /etc/init.d/nscd start
```

Using an Existing Installation of Oracle

IBM Prospect installation and configuration procedures depend on the Oracle logon account settings described in the preceding procedure. If the Oracle home directory, group ID, or user ID does not match the settings shown, make the following adjustments:

To adjust the Oracle home directory, group ID, or user ID

1. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

Example

```
$ su - root
[root] # exec ksh
```

2. To use an alternative home directory for Oracle, create a symbolic link.

```
[root] # rmdir /u01/apps/oracle
[root] # mkdir -p /u01/apps
[root] # ln -s ~oracle /u01/apps/oracle
```

In this case, the following commands select the same directory:

```
[root] # cd ~oracle ; pwd
[root] # cd /u01/apps/oracle ; pwd
[root] # cd ${ORACLE_BASE} ; pwd
```

It is assumed that `ORACLE_BASE` is set by the logon profile and, in this case, is equivalent to the following:

```
ORACLE_BASE=`echo ~oracle`
ORACLE_BASE="/u01/apps/oracle"
```

3. To change to an alternative group ID number for `dba`, make the change after performing the procedure Create the IBM Prospect UNIX Userid Account.

Create the IBM Prospect UNIX Userid Account

The IBM Prospect system requires the following installation directory to be associated with the IBM Prospect UNIX userid logon account:

```
    ~IBM Prospect UNIX userid -> /u01/apps/WatchMark/FlexPM
```

Note: The following examples use flexpm as the IBM Prospect UNIX user ID.logon.

To configure UNIX accounts

1. Set up the entries for the IBM Prospect UNIX userid logon using the following commands:

    Set up a variable for the logon home directory:
    ```
    [root] # export FLEXPM_HOME ; \
      FLEXPM_HOME="/u01/apps/WatchMark/FlexPM"
    ```

    Add the definition for the IBM Prospect UNIX userid account (the following uses sample values of **flexpm**, 600 and 10020):
    ```
    [root] # /usr/sbin/useradd \
      -c "IBM Prospect User" \
      -d "${FLEXPM_HOME}" \
      -s "/bin/ksh" \
      -u "10020" -g "600" "flexpm" \
      ;
    [root] # /bin/pwconv
    ```

    Add the logon password (the following uses a sample password of manager):
    ```
    [root] # passwd flexpm
    Password: manager
    ```

    Create the logon home directory. The following uses a sample user ID of flexpm and group ID of dba:
    ```
    [root] # mkdir -p "${FLEXPM_HOME}"
    [root] # chown flexpm:dba "${FLEXPM_HOME}"
    ```

Making Administrative Changes at Your Installation Site (Optional)

Some system administrators may have local policies for network and user account configuration that are different from those described in this guide. If required, you can incorporate changes to user account parameters at this point in the system configuration.

7.5   *Install Required Applications for Viewing Documentation*

Unless you have an alternative way to view documentation, you need to install the following applications. Obtain these from the respective vendors:

- A current version of Adobe Acrobat Reader.

    Download the file from Adobe's Web site: http://www.adobe.com.

- A Web browser/communications software package for Solaris.

7.6   *Check System Requirements for Oracle*

In preparation for installing Oracle, refer to the installation disc and consult the Oracle installation guide; for example:

```
[root] # cd /cdrom/cdrom0
[root] # netscape doc/unixdoc/solaris.920/index.htm
```

1. Follow the recommended procedure in Oracle's installation guide. Check the Solaris system requirements carefully, especially the kernel patch revision.

```
[root] # uname -v
```

2. Verify that the following system packages are installed. Review the resulting output from the following command, and see that each of the packages is listed:

```
[root] # pkginfo -i | sort | grep system.*SUNW
```

system	SUNWarc	Archive Libraries
system	SUNWbtool	CCS tools bundled with SunOS
system	SUNWhea	SunODS Header Files
system	SUNWlibm	Sun WorkShop Bundled libm
system	SUNWsprot	Solaris Bundled tools
system	SUNWtoo	Programming Tools

These packages are on the Solaris installation discs.

Important: Make sure you install these packages before proceeding—you cannot install the Oracle database management system without them.

8   Installing Oracle

This chapter describes the procedure for installing and running Oracle software when it is used with the IBM Prospect server on a Solaris server platform.

For additional background, detailed requirements and analysis, and the complete set of Oracle software installation instructions, see the *Oracle Installation Guide* on the CD-ROM.

Note: The IBM Prospect software can support Oracle 10*g*.

Topics

Install Oracle 10g

8.1   *Install Oracle 10g*

Install Oracle 10g (Version 10.2.0.4, 64 bit) database software, including partition licenses and appropriate Oracle patches as described in <u>Install Oracle 10g Patches</u> on page 56.

When installing Oracle, use the following directories:

```
ORACLE_BASE    ->   /u01/apps/oracle
ORACLE_HOME    ->   /u01/apps/oracle/product/10.2.0
```

Note: Perform the installation using `oracle` user permissions. Do not run the Oracle Universal Installer (OUI) as `root`.

To install Oracle products, perform the following procedures:

1. Start the Installer.

2. Select Default Installation Parameters

3. Complete the Installation

4. Install Oracle 10g Patches

8.1.1 Before You Begin

This installation procedure assumes that you have already prepared the server as described in the preceding sections:

- Install the appropriate version of Solaris and its patches

- Set up /u*x* partitions (/u01, u02, etc.)

- During the installation, some scripts need to be run as the `root` user. If you do not have access to `root`, have someone from your IT department available during the installation to run these scripts.

The installation of Oracle 10g needs certain UNIX kernel parameters to accommodate the shared memory requirements of the Oracle server. To do so, follow the steps documented at Configure the Kernel Parameters for Oracle on page 57.

8.1.2 Start the Installer

The Installer is a Java-based interface that uses the X Window system. Use a workstation with an X Window display, not a console. Start the Installer according to the following procedure.

To start the Oracle Installer

1. Use the following commands on the X session host to enable access to the X Window server.

   ```
   $ xhost +
   ```

   Note: Please make sure that the `xhost` command is available in your PATH environment variable. For Solaris, include `/usr/openwin/bin` in the PATH.

2. Use `telnet` or `rlogin` to log on to the database server host. Use the IBM Prospect Oracle logon account:

3. Set the `DISPLAY` variable so that the Installer can access the X Window server:

   ```
   $ export DISPLAY ; DISPLAY= 'hostname':0.0
   ```

   Substitute the appropriate display `hostname`.

4. Copy the install package `10gr2_db_sol.cpio.gz` into a temporary directory, not the one that oracle is going to be installed in. For example, `/u01/oinstall`

5. Source the `env_vars` file:

   ```
   . ./env_vars
   ```

Sourcing the file will export `ORACLE_BASE`, `ORACLE_HOME`, `ORACLE_SID`, `LD_LIBRARY_PATH` and `PATH`.

6. Unpack the install package

    `gunzip 10gr2_db_sol.cpio.gz; cpio -ivd < 10gr2_db_sol.cpio`

7. Run the Installer in the background by using the ampersand (`&`).

    `./runInstaller &`

    This enables the command shell to accept additional commands.

    After running some initial checks, the Java client launches, which configures and begins the installation.

A typical Oracle installation takes about an hour.

8.1.3 Select Default Installation Parameters

Select default installation parameters such as product components, component locations, and authentication methods.

To select default installation parameters

1. On the first screen of the installation, deselect the option to create a starter database. Click NEXT.

2. On the second installation screen, click NEXT to select all the default options.

3. At the third installation screen, the installer checks the system and kernel parameters. Investigate any errors on the server setup before proceeding.

4. At the next installation screen, SELECT CONFIGURATION OPTION, select the option to install database software only.

5. The following screen, INSTALL SUMMARY, displays a list of the products to be installed. Click INSTALL.

    The installation begins.

6. During the installation, dialog boxes pop up, with a set of scripts that need to be run as `root`. If you don't have access to root, have your IT department run these.

7. Exit the installer

8.1.4 Complete the Installation

Complete the installation using the following procedures.

To finish the installation

1. The WELCOME dialog box opens. Click EXIT.

2. A confirmation dialog box opens. Click YES.

The installation of Oracle 10.2.0 is complete.

8.1.5 Install Oracle *10g* Patches

The following patches are required for Prospect to operate correctly. The patches are available from the Oracle Metalink Web site. To install the Oracle patches, follow the instructions provided by Oracle that are included with the patch set.

Note: To install the patch `10gr2_companion_sol_cpio.gz` CD, in the SELECT A PRODUCT TO INSTALL window, choose option 1, Oracle Database10g Products 10.2.0.1.0 - Oracle JDBC dev drivers, Oracle SQLJ, Database Examples, Oracle Text Knowledge Base, JAccelerator (NCOMP), Intermedia Image Accelerator, Oracle Ultra Search, and Oracle Workflow.

Download the following patches, in order:

- `10gr2_companion_sol.cpio.gz`
- `p6810189_10204_Solaris-64.zip`

In addition, if you are upgrading from Oracle9*i* to Oracle 10*g*, you need to install additional patches. See Upgrade to Oracle 10g and Install Oracle Patches for a list of the required patches.

9   Configuring Oracle

The procedures in this chapter are performed to complete the configuration parameters for the Oracle database. These procedures include setting up accounts, configuring environments and changing the Solaris kernel parameters.

Topics

9.1   Configure the Kernel Parameters for Oracle

You need to set the UNIX kernel parameters properly to accommodate the shared memory requirements of the Oracle server. The Oracle database cannot start if the IBM Prospect server has inadequate shared memory allocated.

To configure the kernel parameters for Oracle

1. Log on as `flexpm` to the computer on which you are installing the IBM Prospect server.

2. Change to the following directory:
    ```
    $ cd /cdrom/cdrom0
    ```

3. Run `oracle_setup.ksh`, which copies the oracle_setup directory from the CD to a directory on the local computer.

    You are prompted for a destination on the local computer.

    Important! Record the path to the destination directory on the local computer. This path *<oracle_setup/2.0>* is used in a number of tasks.

4. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

   Example

   ```
   $ su – root
   [root] # exec ksh
   ```

5. Locate the files needed for configuring Oracle, and use the setup program as follows:

   ```
   [root] # export DB_CONNECT=flexpm/flexpm@flexpm
   [root] # cd <oracle_setup/2.0>
   [root] # ./setup-oracle-db -system
   ```

   Note: Ignore "`.profile not found`" message.

   This command creates a new file `/etc/system.wm` and saves the old file as `/etc/system.00` before updating `/etc/system`. Use `/etc/system.00` or `/etc/system.wm` to revert to the old file if needed.

   The setup program updates the kernel parameters required by Oracle. For example:

   - `shmsys:shminfo_shmmax`
   - `shmsys:shminfo_shmmin`
   - `shmsys:shminfo_shmmni`
   - `shmsys:shminfo_shmseg`
   - `semsys:seminfo_semmni`
   - `semsys:seminfo_semmsl`
   - `semsys:seminfo_semmns`
   - `semsys:seminfo_semopm`
   - `semsys:seminfo_semvmx`

   Oracle cannot run without the shared memory configuration.

6. The setup program adds two entries to `/etc/hosts` to guarantee that the host name and alias are defined locally. These entries need to be added to the network services databases, such as DNS or NIS+. Consult the network administrator to make sure that the additions are made.

   Note: If you remove these entries, certain host name references in this guide might be incorrect. Think of the entries as symbolic rather than actual host names.

7. Restart the Solaris kernel to use the new parameters. Reboot the system using the following:

   ```
   [root] # /etc/reboot
   ```

9.2   Configure TNS, Listener, and Oracle Auto-Start

Now you need to configure Oracle Transparent Network Substrate (TNS), Listener, and Oracle Auto-Start. Perform the following procedure.

To configure TNS, Listener, and Oracle Auto-Start

1. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

    Example
    ```
    $ su - root
    [root] # exec ksh
    ```

2. Create a symbolic link if Oracle was not installed in `/u01/apps/`.

    If Oracle is not installed in `/u01/apps/oracle`, you must create a symbolic link from `/u01/apps/` to the actual location. For example, if Oracle was installed in the `/u02/apps/oracle` directory, you would type the following commands:
    ```
    [root] # cd /u01/apps/
    [root] # ln -s /u02/apps/oracle /u01/apps/oracle
    ```

3. Source the `env_vars` file:
    ```
    . ./env_vars
    ```

    Sourcing the file will export `ORACLE_BASE`, `ORACLE_HOME`, `ORACLE_SID, LD_LIBRARY_PATH` and `PATH`.

4. Locate the files needed for configuring Oracle, and use the setup program as follows:
    ```
    [root] # cd <oracle_setup/2.0>
    [root] # ./setup-oracle-db -server
    ```

    The program installs several files to configure Oracle services and to enable Oracle Auto-Start:

    Oracle 10*g*
    ```
    /var/opt/oracle/oratab
    /etc/init.d/dbora
    /etc/rc*.d/K10dbora
    /etc/rc*.d/S99dbora
    /u01/apps/oracle/product/10.2.0/network/admin/tnsnames.ora
    /u01/apps/oracle/product/10.2.0/network/admin/listener.ora
    /u01/apps/oracle/product/10.2.0/bin/dbstart
    /u01/apps/oracle/product/10.2.0/dbs/*flexpm.ora
    ```

    If you use more than one database instance, modify the file `/var/opt/oracle/oratab` for the instances needed.

9.3 Configure Disks for Oracle Tablespace

Sizing of the file systems (or disk volumes) that contain Oracle tablespace, data and control files is determined by calculations made during system planning.

Caution! Using the setup program in this step removes any previous database files in the `/u0*/flexpm/` directories, including files `*.dbf` and `*.ctl`. This is required when creating a new database instance, but it destroys the existing `flexpm` database instance.

Use the setup program to create directories where the `flexpm` database files are created and maintained.

```
$ su - root
[root] # exec ksh
```

Source the `env_vars` file:

```
. ./env_vars
```

Sourcing the file will export `ORACLE_BASE`, `ORACLE_HOME`, `ORACLE_SID`, `LD_LIBRARY_PATH` and `PATH`.

Run the setup program:

```
[root] # cd <oracle_setup/2.0>
```

Then, enter the following command:

```
[root] # ./setup-oracle-db -drives
```

To examine these directories you can use the `df` and `ls` commands:

```
[root] # df -k /u0[1-6]/flexpm
[root] # ls -ld /u0[1-6]/flexpm
```

In this case, `flexpm` is the database instance name.

9.4   Configure the Oracle Database Instance

You are provided a file (`results.txt`) containing parameters that determine the sizing and structure of the Oracle database instance. This file is used in the following procedure.

9.4.1 Before You Begin

Transfer the `results.txt` file to the `/tmp` directory on the server where IBM Prospect is to be installed.

9.5   Generate the Database Creation Scripts

Use the following procedure to generate the database creation scripts.

To generate the database creation script

1. Log on as `flexpm` to the computer where IBM Prospect server is to be installed.

2. Generate the database creation scripts using the parameters generated by the Server Sizing tool by typing the following commands:

   ```
   $ cd <oracle_setup/2.0>
   $ export ORACLE_BASE=/u01/apps/oracle
   $ export ORACLE_HOME="${ORACLE_BASE}/product/10.2.0"
   $ export DB_CONNECT=flexpm/flexpm@flexpm
   $ ./setup-oracle-db -sizing
   ```

   This procedure creates the following files in **<**`oracle_setup/2.0`**>**`/flexpm`:

   - `./pfile/initflexpm.ora`
   - `./pfile/configflexpm.ora`
   - `./create/create_DB_flexpm.sql`
   - `./create/create_RBS_TS_flexpm.sql`
   - `./create/catalog_scripts.sql`

   Important! Check the listing for available disk space and space required. The procedure in Create the Oracle Database Instance fails if the sizing for new tablespace data files exceeds the available disk space.

   Note that the script `CR_RBS_TS_flexpm.sql` uses the Oracle Auto-extend feature for data files. The auto-extend feature for a data file can be either turned on or off at any time using the following SQL command as an example:

   ```
   sql> alter database datafile '/u04/flexpm/wm_flexpm01.dbf' autoextend on;
   sql> alter database datafile '/u04/flexpm/wm_flexpm01.dbf' autoextend off;
   ```

3. Update the Oracle configuration.

   Log on with `root` permissions, then invoke the Korn shell.

   Source the `env_vars` file:

   ```
   . ./env_vars
   ```

Sourcing the file will export ORACLE_BASE, ORACLE_HOME, ORACLE_SID, LD_LIBRARY_PATH and PATH.

Type the following commands:

```
[root] # cd <oracle_setup/2.0>
[root] # ./setup-oracle-db -config
```

This installs the newly created files in their respective directories:

```
/u01/apps/oracle/admin/flexpm/create/
/u01/apps/oracle/admin/flexpm/pfile/
/u01/apps/oracle/product/10.2.0/dbs/ (Oracle10g)
```

4. The previous step should set ownership on the Oracle configuration files. You can do this manually where necessary, for example:

```
[root] # cd /u01/apps/oracle/admin/flexpm
[root] # chown -R oracle:dba .
```

Note: If you have not implemented archive logs, the command chown returns an error message for arch files. In such a case, you can ignore the error message.

9.6   Setting initflexpm.ora Parameters

Once the initflexpm.ora file is created, a database administrator should evaluate these parameters and increase them as required.

The first parameter, shared_pool_size, is recommended to be 200 MB. This size should be sufficient regardless of the number of network elements loading into the IBM Prospect server or the amount of memory configured in the server. The related parameter shared_pool_reserved_size should be 1 MB.

The compatible parameter should be set to the currently supported, installed Oracle version, which should be 10.2.0 (for Oracle 10*g*).

The log_checkpoint_interval parameter defaults to 1048579. This is sufficient unless the redo logs on the server exceed 512 MB. A much safer recommendation is to set this parameter to 0, which is suitable for all sizes of redo logs.

9.7   New Oracle 10g Parameter Settings

In 10*g*, Oracle has introduced two new parameter settings: SGA_MAX_SIZE and SGA_TARGET. It is recommended that these settings be applied on 10*g* servers running Prospect, because this enables Oracle to have more flexibility with memory management.

Below are suggested initial values for these parameters. You may need to monitor the v$sga_target_advice view and update the settings as necessary:

- SGA_MAX_SIZE

  If you have at least 8GB of physical memory, then set SGA_MAX_SIZE to be 40% of physical memory.

  For example, on a 16GB system, set this value to 6.4GB. Since the parameter must be an integer, set this to 6554M.

- SGA_TARGET

  If you have more than 16GB of physical memory, then set SGA_TARGET to be 75% of the SGA_MAX_SIZE.

  If you have 16GB or less physical memory, then set this to be 95% of the SGA_MAX_SIZE.

  For example, on a 16GB system, set this to be 95% of 6554M, which is approximately 6226M.

Note: SGA_TARGET must be less than SGA_MAX_SIZE.

9.8   Setting PGA_AGGREGATE_TARGET

The database parameter PGA_AGGREGATE_TARGET is set in order to use the new "Automatic Program Global Area (PGA) Memory Management" introduced in version 9.2 of Oracle.

An initial value of 32M for PGA_AGGREGATE_TARGET is used to activate this new feature. Once the value is non-zero, the WORKAREA_SIZE_POLICY is automatically set to AUTO.

The value 32M is not suitable for production systems and should be changed based on Oracle's recommendations. Refer to Oracle software's Note: 223730.1 Automatic PGA Memory Management in 9*i* for details on tuning this parameter.

We recommend that PGA_AGGREGATE_TARGET has a minimum value of 512M.

9.9   Create the Oracle Database Instance

Use the following procedure to create the Oracle database instance.

1. Log on as oracle to connect to the host.

2. Source the env_vars file:

    ```
    . ./env_vars
    ```

    Sourcing the file will export ORACLE_BASE, ORACLE_HOME, ORACLE_SID, LD_LIBRARY_PATH and PATH.

3. Use the setup program as follows. This step creates the flexpm database control files, tablespace, and other files:

    ```
    [oracle] $ cd <oracle_setup/2.0>
    [oracle] $ ./setup-oracle-db -create
    ```

If the available disk space is not sized properly, the processing may abort or stall. Database creation might take several minutes.

Log files are retained and each action is recorded. Any problems that occurred are noted in the log files:

```
${ORACLE_BASE}/admin/flexpm/create/create_DB_flexpm.log
${ORACLE_BASE}/admin/flexpm/create/create_RBS_TS_flexpm.log
${ORACLE_BASE}/admin/flexpm/create/catalog_scripts.log
```

4. Use the setup program to show information about the disk volumes and files:

```
[oracle] $ cd <oracle_setup/2.0>
[oracle] $ ./setup-oracle-db -review system/manager@flexpm
```

You can use these commands at any time for monitoring space during normal IBM Prospect operations. The setup program shows information about the disk volumes and files, and uses SQL queries to monitor tablespace usage.

The command results are retained in temporary files that are available for future reference. For example:

```
$ ls -l /var/tmp/${DBUSER}/*monitor*
$ ls -l /var/tmp/${DBUSER}/*.mm-dd-HH-MM*
```

The actual time and date should be used in place of *mm-dd-HH-MM*.

When you issue this command, a new file called spfile<ORACLE_SID>.ora is created in the location $ORACLE_HOME/dbs. For more information on spfile, refer to Create the SPFILE.

9.9.1 Confirm Environment Variables

The IBM Prospect software requires that a variable WM_ORACLEVERSION be set. Valid values for this environment variable are:

- ORACLE10

- ORACLE10g

9.10 Configure External Procedures

IBM Prospect software uses Oracle external procedure calls with the Oracle Listener to establish a connection between the user and the Oracle database. Enabling external procedures with the Listener is a two fold task: configuring the external procedures, and testing the Listener to ensure the external procedures are configured correctly.

In this section of the guide, you configure the external procedures. You then test the Listener only after you have installed IBM Prospect software on the server. For testing instructions, see the *Installation Guide*.

Note: The service being defined at this point in the server preparation process will not be registered with the Oracle Listener until after the Oracle PMON process has been started, i.e., after Oracle DB startup. Once started, the PMON will register the defined service with the Oracle

Listener. As the Oracle Listener and the Oracle PMON are independent processes, the registration may take a little time to occur after startup.

9.10.1 Single Schema

In a single schema configuration, the existing `listener.ora` and `tnsnames.ora` are nearly complete. Please use the sample files located at the end of this section as a guide to the required modifications for your existing files. In particular, verify that your `EXTPROC`, `PLSExtProc` and the `ENVS` values are set. Your files should be a close match to the examples provided.

Note: The exception is the `_<SCHEMA>` tag, which is used for the multiple schema configuration outlined below.

9.10.2 Multiple Schemas

This section provides the procedures to configure Oracle listeners to support a multiple-schema environment for Oracle external procedures. The need for multiple listeners and environments is due to a restriction that Oracle software has on the `EXTPROC_CONNECTION_DATA` service name. Each schema installed requires a separate version of the external libraries. This allows them to be updated independently.

Notes:

1. If your Oracle configuration is not standard, then the following instructions could require modification. If assistance is required, please contact your customer support representative.

2. These steps must be performed for each schema on the server. If you start your Oracle database using `dbora, dbstart,` or `dbshut,` please adjust the scripts to support the new listener.

Modify Listeners

Follow this procedure to create or modify listeners.

Note: The listeners will have already been created during database creation for a multi schema instance under the path: `${ORACLE_BASE}/network/admin/flexpm`.

To modify listeners

1. Log on as the `oracle` user and go to `${ORACLE_BASE}/network/admin/flexpm`.

2. Modify the files `listener.ora` and `tnsnames.ora`, substituting appropriate values for the `HOSTNAME, PORTNUM, SCHEMA,` and `FLEXPM_HOME` tags. Modify the `ENVS` variable to use the Prospect installation path. The `PORTNUM` tag must be unused, and unique among the listeners on the system.

3. Verify that you can read the libraries listed in the ENVS variable of the listener.ora file.

4. Set the listener environment to your local directory.

```
$ . ./set_tns
```

5. If you have modified an existing listener, then stop and re-start it. Use the full listener_<*SCHEMA*> name. For <*SCHEMA*>, substitute the appropriate value for your system, for example:

```
$ lsnrctl
LSNRCTL> start listener_flexpm
```

Sample Oracle Configuration Files

Use the following samples as templates. Wherever you see a term in italics and angle brackets (for example, <*SCHEMA*>), substitute an appropriate value for your system. Do not enter the angle brackets in the file.

Example set_tns

```
TNS_ADMIN=/u01/apps/oracle/network/admin/<SCHEMA>
export TNS_ADMIN
```

Example listener.ora

Note: The indents in this file are critical for successful file processing. If you copy and paste the template from this document, you may lose the fidelity of the indents. Moreover, some of the lines in this document wrap, which may also cause problems when the file is processed.

Some of the lines in the following example apply only to one version of Oracle; see the comment in parentheses at the end of the line to determine which to use.

```
LOG_DIRECTORY_LISTENER_<SCHEMA> = /u01/apps/oracle/network/log
LOG_FILE_LISTENER_<SCHEMA> = listener_<SCHEMA>.log

#TRACE_LEVEL_LISTENER_<SCHEMA>  = ADMIN
#TRACE_FILE_LISTENER_<SCHEMA> = listener.trc

LISTENER_<SCHEMA> =
 (DESCRIPTION_LIST =
    (DESCRIPTION =
            (ADDRESS = (PROTOCOL = TCP)(HOST = <HOSTNAME>)(PORT = <PORTNUM>))
            (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC_<SCHEMA>))
     )
  )

SID_LIST_LISTENER_<SCHEMA> =
    (SID_LIST =
        (SID_DESC =
```

```
            (GLOBAL_DBNAME = flexpm)
            (ORACLE_HOME = /u01/apps/oracle/product/10.2.0) (Oracle10g)
            (SID_NAME = flexpm)
        )
        (SID_DESC =
            (SID_NAME = PLSExtProc_<SCHEMA>)
                      (ORACLE_HOME = /u01/apps/oracle/product/10.2.0) (Oracle10g)
(ENVS="EXTPROC_DLLS=<FLEXPM_HOME>/pm/lib/wm/
libWmExtProc.so,LD_LIBRARY_PATH=<FLEXPM_HOME>/pm/lib/wm:<FLEXPM_HOME>/pm/lib/
tp:<FLEXPM_HOME>/pm/lib/ln/ora")
            (PROGRAM = extproc)
        )
    )
#.
```

Example tnsnames.ora

Note: The indents in this file are critical for successful file processing. If you copy and paste the template from this document, you may lose the fidelity of the indents. Moreover, some of the lines in this document wrap, which may also cause problems when the file is processed.

```
EXTPROC_CONNECTION_DATA =
        (DESCRIPTION =
                (ADDRESS_LIST =
                        (ADDRESS = (PROTOCOL = IPC)(Key = EXTPROC_<SCHEMA>))
                )
        (CONNECT_DATA =
                (SID = PLSExtProc_<SCHEMA>)(PRESENTATION = RO)
        )
        )

FLEXPM =
        (DESCRIPTION =
                (ADDRESS_LIST =
                        (ADDRESS = (PROTOCOL = TCP)(HOST =<HOSTNAME>)(PORT =
<PORTNUM>))
                )
                (CONNECT_DATA =
                        (SID = flexpm )
                )
        )
```

9.11 Example dbora File

This sample dbora file starts both the listener and listener_<*SCHEMA*> processes, and stops
them. The example file uses listener_flexpm as listener_<*SCHEMA*>. Except for substituting
your schema name for <*SCHEMA*>, everything else must be identical.

```
##   startup database listener processes

    Program="${ORACLE_HOME}/bin/lsnrctl"
    Process="TWO_TASK='' ORACLE_SID='${ORACLE_SID}' ${Program} start"

    if   test ! -f "${Program}"
    then echo "?($0) missing program: \"${Program}\"" 1>&2 ; exit 1
    fi

    echo ": ${Process}" ; echo ":"

    case ${INVOKE_USER} in
    oracle) sh                  -c "${Process}" ;;
    root|*) su - ${ORACLE_USER} -c "${Process}" ;;
    esac

    RC="$?" ; echo ": Status='$RC'" ; echo ":"
##   startup database listener_flexpm processes

    Program="${ORACLE_HOME}/bin/lsnrctl"
    Process="TWO_TASK='' ORACLE_SID='${ORACLE_SID}' ${Program} start
listener_flexpm"

    if   test ! -f "${Program}"
    then echo "?($0) missing program: \"${Program}\"" 1>&2 ; exit 1
    fi

    echo ": ${Process}" ; echo ":"

    case ${INVOKE_USER} in
    oracle) sh                  -c "${Process}" ;;
    root|*) su - ${ORACLE_USER} -c "${Process}" ;;
    esac

    RC="$?" ; echo ": Status='$RC'" ; echo ":"
    ;;

stop   )
```

```
##   shutdown database listener processes


     Program="${ORACLE_HOME}/bin/lsnrctl"
     Process="TWO_TASK='' ORACLE_SID='${ORACLE_SID}' ${Program} stop"


     if   test ! -f "${Program}"
     then echo "?($0) missing program: \"${Program}\"" 1>&2 ; exit 1
     fi


     echo ": ${Process}" ; echo ":"


     case ${INVOKE_USER} in
     oracle) sh                 -c "${Process}" ;;
     root|*) su - ${ORACLE_USER} -c "${Process}" ;;
     esac
##   shutdown database listener processes


     Program="${ORACLE_HOME}/bin/lsnrctl"
     Process="TWO_TASK='' ORACLE_SID='${ORACLE_SID}' ${Program} stop
listener_flexpm"


     if   test ! -f "${Program}"
     then echo "?($0) missing program: \"${Program}\"" 1>&2 ; exit 1
     fi


     echo ": ${Process}" ; echo ":"


     case ${INVOKE_USER} in
     oracle) sh                 -c "${Process}" ;;
     root|*) su - ${ORACLE_USER} -c "${Process}" ;;
     esac
```

10 Preparing to Install Prospect Server

The IBM Prospect server installation package is delivered on the IBM Prospect server installation CD-ROM disc. It contains all of the IBM Prospect system components. You must install and configure Solaris and Oracle before installing the IBM Prospect system components.

Important! Refer to the Release Notes included with the software for any late-breaking information related to your release.

Topics

10.1 Before You Begin

You need to have the following installed on your system in order to complete the installation:

- `gtar`, `gzip`, and `gunzip` GNU/FSF archive file utilities.

  Make sure that `/usr/bin` and `/usr/sfw/bin` are in your path. Enter the following commands to locate `gtar` and `gunzip`:

  ```
  which gtar
  which gunzip
  ```

  These commands return the path to `gtar` and `gunzip` on your system. If these utilities are not found, add `/usr/sfw/bin` to the path in your `.profile` file.

- Make sure that you have `/usr/perl5/5.6.1` on your server.

- Viewing the user publications requires a browser that supports dynamic HTML and a PDF viewer that supports Acrobat version 5.0.5 or later.

10.2 Disable Automatic Statistics Collection in Oracle 10g

The automatic statistics collection done by Oracle 10g causes issues with Prospect and must be disabled using the following procedure:

1. Start up `sqlplus` and connect as `sys`:

    ```
    $sqlplus /nolog
    SQL> connect sys/change_on_install as sysdba
    ```

2. Verify that the job is enabled:

    ```
    SQL> SELECT state FROM dba_scheduler_jobs WHERE job_name =
    'GATHER_STATS_JOB';


    STATE
    ---------------
    SCHEDULED
    ```

3. Disable the job:

    ```
    SQL> EXEC dbms_scheduler.disable('GATHER_STATS_JOB');
    ```

4. Verify that the job is now disabled:

    ```
    SQL> SELECT state FROM dba_scheduler_jobs WHERE job_name =
    'GATHER_STATS_JOB';


    STATE
    --------------
    DISABLED
    ```

10.3 Create a Job to Flush Database Statistics in Oracle 10g

Due to a known issue in Oracle 10g for which there is no patch, IBM Prospect requires an Oracle job to flush the database statistics every 15 minutes. IBM Prospect runs also without this job but with report performances negatively impacted. It is recommended that you create this job.

1. Start up `sqlplus` and connect as `sys`:

    ```
    $sqlplus /nolog
    SQL> connect sys/change_on_install as sysdba
    ```

2. Create a job in the Oracle schedule that flushes statistics:

    ```
    SQL> exec dbms_scheduler.create_job-
    (job_name=>'FLUSH_STATS_WORKAROUND_JOB',-
    job_type=>'STORED_PROCEDURE',-
    job_action=>'dbms_stats.flush_database_monitoring_info',-
    start_date=>cast(trunc(sysdate,'HH24')+1/96 as timestamp with time zone),-
    repeat_interval=>'FREQ=MINUTELY; INTERVAL=15;',-
    enabled=>FALSE);
    ```

3. Enable the job:

```
SQL> exec dbms_scheduler.enable( 'FLUSH_STATS_WORKAROUND_JOB' );
```

4. Verify that the job is scheduled:

```
SQL> select job_name, state, next_run_date
 from dba_scheduler_jobs
where job_name = 'FLUSH_STATS_WORKAROUND_JOB';


JOB_NAME                         STATE
---------------------------- ---------------
NEXT_RUN_DATE
-------------------------------------------------------------------------
-
FLUSH_STATS_WORKAROUND_JOB     SCHEDULED
12-FEB-08 11.45.00.000000 AM -08:00
```

10.4 Install Java 2 SDK (JDK)

The Java 2 SDK, Standard Edition is a development environment for running and building applications, applets, and components using the Java programming language. If you either do not have the SDK installed on your system, or if it is not version 1.4.2, then you need to install the Java 2 SDK, Standard Edition, version 1.4.2. This version is required because of changes to Daylight Saving Time in 2007.

- To determine whether the Java SDK is installed on your computer, use the following command:

```
$ javac
```

   If the Java SDK is installed and in your current path, the system prints a help message. If the SDK is not installed, the system prints a "not found" message.

- To determine the Java version, use the following command:

```
$ java -version
```

   The response should be:

```
java version "1.4.2"
```

To install the SDK, download the software from http://java.sun.com/products/archive/.

10.5 Install Oracle XDK (XML Development Kit)

Run the following query:

```
SQL> select comp_name, version, status from dba_registry;
```

1. If any status is invalid, then run the dbua tool according to the post install instructions for the 10.2.0.x to 10.2.0.4 upgrade, as described in the readme file for patch 5337014.

2. Verify that JVM is installed correctly. Using the previous `dba_registry` query, verify that you see something similar to:

```
COMP_NAME                               VERSION         STATUS
--------------------------------------- --------------- -----------
JServer JAVA Virtual Machine            10.2.0.4.0      VALID
```

If the component is not installed or is invalid, then consult the following metalink articles:

- *276554.1 How to Reload the JVM in 10.1.0.X and 10.2.0.X*

- *397770.1 How to Check if the Oracle JVM Is Installed Correctly in the Database*

These documents are available from the Oracle MetaLink site (https://metalink.oracle.com).

3. Verify that the XML database is installed correctly. Using the previous `dba_registry` query, verify that you see something similar to:

```
COMP_NAME                              VERSION        STATUS
-------------------------------------- -------------- -----------
Oracle XML Database                    10.2.0.4.0     VALID
```

If the component is not installed or is invalid, then consult the following article on the Oracle MetaLink site (https://metalink.oracle.com):

- *243554.1 How to Deinstall and Reinstall XML Database (XDB)*

4. Verify that XDK is installed correctly. Using the previous `dba_registry` query, verify that you see something similar to:

```
COMP_NAME                               VERSION         STATUS
--------------------------------------- --------------- -----------
```
Oracle XDK   10.2.0.4.0   VALID

If the component is not installed or is invalid, then consult the following article on the Oracle MetaLink site (https://metalink.oracle.com):

- *435999.1 How To Install XDK 10.2.0.x*

If you continue to have problems installing the XDK, consult Oracle technical support. Re-running the `dbua` command from Step 1 may help, because sometimes the Oracle system packages do not completely validate during installation.

After running the `dbua` command, the database will be in upgrade mode. Restart the database before proceeding with the installation.

10.6 Prepare to Install the IBM Prospect System

To prepare the IBM Prospect system installation, perform the following steps.

To prepare the IBM Prospect system installation

1. Log on to the computer on which you are installing the IBM Prospect server with `root` permissions, then invoke the Korn shell.

   Example
   ```
   $ su - root
   [root] # exec ksh
   ```

2. Insert and mount the IBM Prospect server installation disc.
   ```
   [root] # cd /cdrom/cdrom0
   [root] # ls -al
   ```

3. Review the file listing received in step 2, and confirm that the IBM Prospect server installation disc contains the following files:

   • These files provide detailed information about installing and configuring IBM Prospect.
   ```
   ReleaseNotes.pdf
   Documentation/InstallGuide.pdf
   ```

   • These files assist in system planning:
   ```
   SizingTool/SizingTool.pdf
   SizingTool/SizingTool.xls
   ```

   • The IBM Prospect installer:
   ```
   wminstall
   ```

4. Use the following commands to view the documentation files:
   ```
   [root] # acroread ./ReleaseNotes.pdf
   [root] # acroread ./Documentation/InstallGuide.pdf
   ```

Both Acrobat Reader and Netscape Navigator should already be installed on your system. If you need to install them, see Install Required Applications for Viewing Documentation on page 51. If these tools are not currently available on the Solaris system, use another system or Windows computer to view the PDF documents from the IBM Prospect CD-ROM discs.

Appendix A: Upgrading Oracle9i to 10g

This section describes how to upgrade an existing Oracle database from version 9.2.0 (with the 9.2.0.8 patch set) to 10.2.0.

Prerequisites

Oracle upgrades should be performed by an Oracle Database Administrator (DBA). This section assumes that expertise.

Before starting the Oracle upgrade, it is recommended that you read the *Oracle 10g Upgrade Guide* on the Oracle Metalink Web site. You can use the Database Upgrade Assistant (dbua), but it is useful to read the manual to gain an awareness of the issues involved.

The system should contain enough disk space to allow for a full backup of the database. If the backup is done by means of the Database Upgrade Assistant (dbua), then the space needed for the backup is equal to the current size of the database datafiles. To save space, you can also manually back up the database before the upgrade.

Topics

Perform Pre-Upgrade Tasks
Upgrade to Oracle 10g
Install Oracle Patches
Upgrade to 10g Using dbua
Create the SPFILE
Additional Considerations
Final Tasks

A.1 Perform Pre-Upgrade Tasks

The following tasks involve backing up the Oracle database and Prospect files, then installing Oracle 10*g*.

A.1.1 Set Up the Prospect Server

Make sure you have followed the instructions in the chapter Installing and Configuring Solaris, including disk setup, user creation, and system patches.

A.1.2 Shut Down IBM Prospect and Oracle

Before you can perform a backup, you must first shut down the IBM Prospect software and the Oracle instance.

To shut down the IBM Prospect software

1. Log on to the IBM Prospect server as `flexpm`.

2. Enter the following command:

    ```
    ps-mgr halt
    ```

3. Stop all the loaders using the following command:

    ```
    ps -ef | grep perl | grep $prodname | cut -c10-14 | xargs kill -9
    ```

To stop Oracle

1. Log on using the `oracle` account.

2. Connect to Oracle as `sysdba`.

    ```
    [oracle] $ sqlplus /nolog
    SQL> connect sys/<password> as sysdba
    ```

    where *<password>* is the password for the `sys` user.

3. Shut down the Oracle instance.

    ```
    SQL> shutdown immediate;
    SQL> exit;
    ```

4. Stop the Oracle listener.

    ```
    [oracle] $ lsnrctl stop
    ```

A.1.3 Back Up the Oracle9i Database and IBM Prospect Files

To perform the backup

1. Back up the Oracle9i database.

    *   When Oracle is in `NOARCHIVELOG` mode, back up the database in cold backup mode.
    *   When Oracle is in `ARCHIVELOG` mode, back up the database in either cold backup or hot backup mode.

2. Back up the Prospect home directory.

    Back up the files under `$FLEXPM_HOME`.

A.1.4 Set Up Profiles

The first step in updating Oracle to 10g is to set up the profiles: first for Oracle 9i, then for Oracle 10g. You need to know the IP address for your display for the following procedures.

To set up a profile for Oracle 9i

1. Log on as the oracle user.

2. Create a file called `.9i.profile` in `/u01/apps/oracle`.
   ```
   cd /u01/apps/oracle
   vi .9i.profile
   ```

3. Add these lines to the file:
   ```
   export ORACLE_BASE=/u01/apps/oracle
   export ORACLE_HOME=/u01/apps/oracle/product/9.2.0
   export ORACLE_SID=flexpm
   export ORACLE_VERS=920
   export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch:$PATH
   ```

4. Save the file and exit.

To set up a profile for Oracle 10g

1. Create a file called `.10g.profile` in `/u01/apps/oracle`.
   ```
   cd /u01/apps/oracle
   vi .10g.profile
   export
   LD_LIBRARY_PATH=$ORACLE_HOME/lib32:$LD_LIBRARY_PATH
   export TNS_ADMIN=$ORACLE_BASE/network/admin
   ```

2. Add these lines to the file:
   ```
   export ORACLE_BASE=/u01/apps/oracle
   export ORACLE_HOME=/u01/apps/oracle/product/10.2.0
   export ORACLE_VERS=1020
   export ORACLE_SID=flexpm
   export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch:$PATH
   export LD_LIBRARY_PATH=$ORACLE_HOME/lib32:$LD_LIBRARY_PATH
   export TNS_ADMIN=$ORACLE_BASE/network/admin
   ```

3. Save the file and exit.

Source the appropriate profile.

A.1.5 Oracle 10*g* Naming Conventions

The Prospect client expects the installation to follow the Optimal Flexible Architecture (OFA) standards concerning naming conventions. The software also expects Oracle to be installed into the directory `/u01/apps/oracle/product/10.2.0`. If it is installed in another location, you must create a symbolic link from `/u01/apps/oracle/product/10.2.0` to the directory.

A.2   Upgrade to Oracle 10g

The Oracle 10.2.0.4 upgrade involves three major steps as follows:

1. Installing the Oracle 10.2.0.1 software.

2. Applying patches.

    All patches recommended in this guide should be applied before running `dbua`.

3. Running the `dbua` tool (the database upgrade utility that converts your database from a 9i database to a 10g database).

It is recommended that you perform the upgrade in this order; however, your setup may have special requirements.

Consult the *10g Upgrade Companion*, document 466181.1, on the Oracle Metalink Web site for the latest information provided by Oracle.

A.3   Install Oracle Patches

Download the following patches, in order:

- `10gr2_companion_sol.cpio.gz`
- `p6810189_10204_Solaris-64.zip`

Note: To install the patch `10gr2_companion_sol_cpio.gz` CD, in the SELECT A PRODUCT TO INSTALL window, choose option 1, Oracle Database10g Products 10.2.0.1.0 - Oracle JDBC dev drivers, Oracle SQLJ, Database Examples, Oracle Text Knowledge Base, JAccelerator (NCOMP), Intermedia Image Accelerator, Oracle Ultra Search, and Oracle Workflow.

The `dbua` tool requires these additional patches to be applied:

- `p5755471_10203_SOLARIS64.zip`
- `p5871314_10203_SOLARIS64.zip`
- `p5892355_10203_SOLARIS64.zip`

Example

1.   Set your current directory to the directory where the patch is located, and apply the patch.

    ```
    $ cd 3748430
    $ opatch apply
    ```

     Note: If you do not see the following response to the previous command, **STOP** and do not proceed. It is a fatal error if you do not receive the following response:

    ```
    Invoking OPatch 10.2.0.4.0
    ```

    This is the only valid system response.

2. Click `Y` for `Do you want to proceed`. The patch responds: `OPatch successful.`

A.4   Upgrade to 10g Using dbua

The following procedure includes a step that backs up your current database. If you want the database upgrade utility to back up your database, be prepared to supply a directory capable of holding a full backup of your database.

Note: The following procedure is just an example. Choose your own preferred upgrade method.

Note: If you are upgrading your database from 9.2.0.8 to 10.2.0.4, you may get the following warning: "The instance version does not match with the dictionary version which is possible when the database is not patched to the release." You can ignore this message.

1. Log on as `oracle`. Source the profile.

    `. ./.10g.profile`

2. Run the database upgrade utility at the UNIX prompt.

    `dbua &`

3. Follow the on-screen instructions.

4. From the list of available databases for upgrade, select $DBUSER and click NEXT.

    Note: If you do not see the `flexpm` database when you run the `dbua` tool, make sure that the `/var/opt/oracle/oratab` has the `flexpm` database listed. Many of the patches listed in Install Oracle Patches on page 80 overwrite this file so it is important to check this.

5. The next screen displays a number of warnings about `dblink` passwords and stale optimiser statistics. You can ignore these warnings. Click OK to continue with the upgrade.

6. The SYSAUX screen is displayed. Increase the INCREMENT field from 1 to 10 MB, then accept all the other defaults. Click NEXT.

7. At the screen RECOMPILE INVALID OBJECTS, use the defaults to recompile invalid objects at the end of the upgrade. Depending on your hardware, you might need to select a higher number of CPUs. Click NEXT.

8. The BACKUP dialog box is displayed. If you have not already backed up your database, then you should do so now.

    To back up the database, select I WOULD LIKE THIS TOOL TO BACK UP MY DATABASE.

    You must then supply a directory that is capable of holding a full backup of the database; that is, it must be a directory with a size greater than the current database.

    If you decide to back up your database now, you can either enter the full path to the backup directory in the text box, or select it by means of the BROWSE button.

    Click NEXT. The screen MANAGEMENT OPTIONS is displayed.

9. Clear the first check box. (Prospect for Lucent does not use the Enterprise Manager.) Click NEXT. The screen NETWORK CONFIGURATION is displayed.

10. Accept the default setting REGISTER THIS DATABASE WITH ALL THE LISTENERS and click NEXT.

11. The next screen displays the summary of the upgrade tasks. Verify the entries and select FINISH to start the upgrade.

    The next screen displays the progress of the upgrade. When the upgrade utility finishes, it displays the message:

    ```
    Progress Complete
    ```

    Note the location of the upgrade log files.

12. Click OK. The upgrade results are displayed.

    If you see a warning about the JAccelerator, you can ignore it.

13. You can reset the database passwords by selecting CONFIGURE DATABASE PASSWORDS. This step is optional and can be left out. Click CLOSE twice.

    On the command line in the directory where you launched dbua, the following message is displayed:

    ```
    Database upgrade has been completed successfully, and the database is
    ready to use.
    ```

    You can now open a browser to display the *Oracle 10g Release Notes* from the file:

    ```
    /u01/apps/oracle/product/10.2.0/assistants/dbua/doc/help/
    DefaultBehaviorChangesin10g.html
    ```

    Click EXIT.

A.5 Create the SPFILE

An `spfile` is a server parameter file, which is Oracle's new method of maintaining database parameters dynamically, using the "alter system" commands. The `spfile` replaces the `init.ora` file.

The following procedure creates the `spfile`, which Oracle will then use as the initialization file when starting up the database.

To create an spfile from a pfile

1. Edit `$ORACLE_HOME/dbs/initflexpm.ora`. Verify that the following lines are in the file; if not, add them.
   ```
   NLS_DATE_FORMAT='YYYY-MM-DD HH24:MI'
   COMPATIBLE=10.2.0.4.0
   log_archive_format="LOG_%t_%s_%r.arc"
   ```

2. Connect to Oracle as `sysdba`.
   ```
   [oracle] $ sqlplus /nolog
   ```

```
SQL> connect sys/<password> as sysdba
```

where *<password>* is the password for the `sys` user.

Note: If you do not see the message '`connected to an idle instance`' then issue the following command: `SQL>shutdown immediate;`

---

3. Create the `spfile`, and then restart (bounce) the database using one of the following:

```
SQL> CREATE SPFILE='$ORACLE_HOME/dbs/spfileflexpm.ora' FROM
     PFILE='$ORACLE_HOME/dbs/initflexpm.ora';
```

or

```
SQL> CREATE SPFILE='$ORACLE_HOME/dbs/spfileflexpm.ora' from pfile;
SQL> startup;
SQL> exit;
```

Note: The `spfile` is a binary file; attempts to edit it can corrupt it.

---

4. Reconnect as SYSDBA.

```
SQL> connect sys/<password> as sysdba;
```

Warning: If you encounter an error (`ORA-12547:TNS:lost contact`) when bouncing the database after an `spfile` has been created, reconnect as SYSDBA and use the STARTUP command.

Verify the settings referenced in <u>New Oracle 10g Parameter Settings</u> on page 62 and <u>Setting PGA_AGGREGATE_TARGET</u> on page 63.

A.6   Additional Considerations

Disable the automatic statistics collection done by Oracle 10g as documented in <u>Disable Automatic Statistics Collection in Oracle 10g</u> on page 72, and create a new job in the Oracle schedule to flush statistics every 10 minutes as documented in <u>Create a Job to Flush Database Statistics in Oracle 10g</u> on page 72.

A.7   Final Tasks

Log on as the oracle user, and source the `.10g.profile` file:

```
$ . ./.10g.profile
```

Log on to Oracle as `sysdba`:

```
sqlplus '/ as sysdba'
```

Re-enable `AQ`:

```
ALTER SYSTEM SET aq_tm_processes=1 SCOPE=BOTH;
```

Increase the maximum number of cursors for the oracle database to 1000:

```
ALTER SYSTEM SET open_cursors=1000 SCOPE=BOTH;
```

Disable recycle bin:

```
SQL> alter system set recyclebin = off scope=both;
```

Apply a workaround for `connect_by`:

```
SQL> alter system set "_optimizer_connect_by_cost_based" = false scope= both;
```

Shut down the database:

```
SQL> shutdown abort
SQL> startup
SQL> shutdown immediate
SQL> quit
```

Make sure that the listener is stopped:

```
$ lsnrctl stop
```

Log in as `oracle`.

```
cd /u01/apps/oracle
rm network
ln -s ./product/10.2.0/network network
```

Copy the `tnsnames.ora` and `listener.ora` from the 9i to 10g directory structure while logged in as `oracle`.

```
cp $ORACLE_BASE/product/9.2.0/network/admin/listener.ora \
$ORACLE_BASE/product/10.2.0/network/admin
cp $ORACLE_BASE/product/9.2.0/network/admin/tnsnames.ora \
$ORACLE_BASE/product/10.2.0/network/admin
```

Log on as the `oracle` user, copy the `$ORACLE_BASE/network/admin/listener.ora` file to `listener.ora.9i`, then edit the `listener.ora` file so that the LISTENER and SID_LIST_LISTENER sections looks like this; replace *<hostname>* with the name of your server and *<FLEXPM_HOME>* with the correct value for your environment:

```
LISTENER =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = <hostname>  )(PORT = 1521))
      (ADDRESS = (PROTOCOL = IPC) (KEY = EXTPROC32))
    )
SID_LIST_LISTENER =
    (SID_LIST =
      (SID_DESC =
          (GLOBAL_DBNAME = $DBSID )
          (ORACLE_HOME = /u01/apps/oracle/product/10.2.0 )
          (SID_NAME = $DBSID )
```

```
        )
        (SID_DESC =
            (SID_NAME = PLSExtProc)
            (ORACLE_HOME = /u01/apps/oracle/product/10.2.0 )
            (PROGRAM = extproc32)
  (ENVS = "EXTPROC_DLLS=ANY,LD_LIBRARY_PATH=<FLEXPM_HOME>/pm/lib/tp:/u01/
  apps/oracle/product/10.2.0/lib32:<FLEXPM_HOME>/pm/bin:
  <FLEXPM_HOME>/pm/lib/wm")
    )
  )
```

Make sure that oracle is not running:

```
$ ps -ef | grep ora | grep flexpm
```

If this returns any processes, stop them using the `kill -9` command.

While logged on as the `oracle` user, edit the `oratab` file in `/var/opt/oracle`. Comment out the line with 9i, and in the line with 10g, change the flag from N to Y.

Example of what is in `oratab` before the edit:

```
*:/u01/apps/oracle/product/9.2.0:N
$ORACLE_SID:/u01/apps/oracle/product/10.2.0:N
```

Ensure that after edit the two lines look like this:

```
#*:/u01/apps/oracle/product/9.2.0:N
$ORACLE_SID:/u01/apps/oracle/product/10.2.0:Y
```

Restart the listener:

```
$ lsnrctl start
```

Restart the database:

```
$ sqlplus '/ As sysdba'
SQL> startup
SQL> quit
```

Log on as `flexpm`.

As user `flexpm`, update the system to reference the 10g profiles:

```
cd $FLEXPM_HOME
cp .profile.oracle10g .profile.oracle
cp .profile~oracle10g .profile~oracle
```

Log off and log back in as user `flexpm`.

Update the system to use the Oracle 10g binaries:

```
cd $FLEXPM_HOME
make bldfix
```

Start the system:

```
ps-mgr init
```

After all these tasks are completed, then the upgrade of Oracle from 9.2.0 to 10.2.0 has been successful.

Notes:

1. If an error occurs and you had previously selected the CREATE BACKUP option through the `dbua`, you are given the option to return the database to its pre-upgrade state. Select this option and notify IBM Support of the problem.

2. If you have errors and have not selected a backup as part of the upgrade, use your previous manual backup. Contact your DBA for information on this.

3. If you need to manually restore data from the backup created by `dbua`, follow these steps:

   a. Log on as `oracle`.

   b. Shut down the database.

   c. `cd` to the backup directory you selected in `dbua`.

   ```
   lsnrctl stop
   ./flexpm_restore.sh
   ```

   d. Edit `/var/opt.oracle/oratab` to point to the 9.2.0 directories.

   e. Start the database.

   f. Start the listener.

4. Edit the `~oracle/.profile` file and set the environment variables to the same as in the `.10g.profile` file.

   The restore is complete.

Appendix B: Automating the Preparation of the Server Environment

This section describes the use of the `wmpreparation` script to help perform the steps required for preparing the server environment. For each step, this script checks if the step has already been run. If so, the execution of the step is skipped. Otherwise, the step is run automatically (if possible). If it is not possible to run the step automatically (for example, if Oracle is not installed), you are prompted to execute the step manually.

The `wmpreparation` script checks the following:

- If the required file systems (`/u01, /u02, /u03, /u04, /u05, /u06`) exist. If not, you are prompted to create them.
- If an Oracle account exists. If not, the user "oracle" is created.
- If the "flexpm" user exists. If not, the user and the logon home directory are created.
- If Oracle software is installed. If not, the script ends and prompts you to install the Oracle software manually.
- If each step of the `setup-oracle-db` script has been run.
- If the database exists. If not, you are prompted to either install the database or exit the script.

Usage

The usage of the `wmpreparation` script is as follows:

```
wmpreparation.sh [-dbcreate] [-forcesetup] [-h] "
```

The following table describes each script option:

Option	Description
`dbcreate`	Runs the database creation.
`forcesetup`	Forces the running of all the `oracle_setup` steps (even if some of them have already been run).
`h`	Displays the script's usage.

The log file `wmprep.log` is created in the same directory from which the script is launched.

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