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# *OpenWorks® Software Installation Procedures*

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Broader Understanding., Depth Team, Depth Team Explorer, Depth Team Express, Depth Team Extreme, Depth Team Interpreter, DepthTeam, DepthTeam Explorer, DepthTeam Express, DepthTeam Extreme, DepthTeam Interpreter, Desktop Navigator, DESKTOP-PVT, DESKTOP-VIP, DEX, DIMS, Discovery, Discovery 3D, Discovery Asset, Discovery Framebuilder, Discovery PowerStation, DMS, Drillability Suite, Drilling Desktop, DrillModel, Drill-to-the-Earth-Model, Drillworks, Drillworks ConnectML, Drillworks Predict, DSS, Dynamic Frameworks to Fill, Dynamic Reservoir Management, Dynamic Surveillance System, EDM, EDM AutoSync, EDT, eLandmark, Engineer's Data Model, Engineer's Desktop, Engineer's Link, ESP, Event Similarity Prediction, ezFault, ezModel, ezSurface, ezTracker, ezTracker2D, FastTrack, Field Scenario Planner, FieldPlan, For Production, FrameBuilder, Frameworks to Fill, FZAP!, GeoAtlas, GeoDataLoad, GeoGraphix, GeoGraphix Exploration System, Geometric Kernel, GeoProbe, GeoProbe GF DataServer, GeoSmith, GES, GES97, GESXplorer, GMPlus, GMI Imager, Grid3D, GRIDGENR, H. Clean, Handheld Field Operator, HHFO, High Science Simplified, Horizon Generation, I<sup>2</sup> Enterprise, iDIMS, Infrastructure, Iso Core, IsoMap, iWellFile, KnowledgeSource, Landmark (*as a service*), Landmark (*as software*), Landmark Decision Center, Landmark Logo and Design, Landscape, Large Model, Lattix, LeaseMap, LithoTect, LogEdit, LogM, LogPrep, MagicDesk, Make Great Decisions, MathPack, MDS Connect, MicroTopology, MIMIC, MIMIC+, Model Builder, NETool, Nexus (*as a service*), Nexus (*as software*), Nexus View, Object MP, OpenBooks, OpenJournal, OpenSGM, OpenVision, OpenWells, OpenWire, OpenWire Client, OpenWire Server, OpenWorks, OpenWorks Development Kit, OpenWorks Production, OpenWorks Well File, PAL, Parallel-VIP, Parametric Modeling, Permedia, PetroBank, PetroBank Explorer, PetroBank Master Data Store, PetroWorks, PetroWorks Asset, PetroWorks Pro, PetroWorks ULTRA, PlotView, Point Gridding Plus, Pointing Dispatcher, PostStack, PostStack ESP, PostStack Family, Power Interpretation, PowerCalculator, PowerExplorer, PowerExplorer Connect, PowerGrid, PowerHub, PowerModel, PowerView, PrecisionTarget, Presgraf, PressWorks, PRIZM, Production, Production Asset Manager, PROFILE, Project Administrator, ProMAGIC, ProMAGIC Connect, ProMAGIC Server, ProMAX, ProMAX 2D, ProMax 3D, ProMAX 3DPSDM, ProMAX 4D, ProMAX Family, ProMAX MVA, ProMAX VSP, pSTAX, Query Builder, Quick, Quick+, QUICKDIF, Quickwell, Quickwell+, Quiklog, QUIKRAY, QUIKSHOT, QUIKVSP, RAVE, RAYMAP, RAYMAP+, Real Freedom, Real Time Asset Management Center, Real Time Decision Center, Real Time Operations Center, Real Time Production Surveillance, Real Time Surveillance, Real-time View, Reference Data Manager, Reservoir, Reservoir Framework Builder, RESev, ResMap, RTOC, SCAN, SeisCube, SeisMap, SeisModel, SeisSpace, SeisVision, SeisWell, SeisWorks, SeisWorks 2D, SeisWorks 3D, SeisWorks PowerCalculator, SeisWorks PowerJournal, SeisWorks PowerSection, SeisWorks PowerView, SeisXchange, Semblance Computation and Analysis, Sierra Family, SigmaView, SimConnect, SimConvert, SimDataStudio, SimResults, SimResults+, SimResults+3D, SIVA+, SLAM, SmartFlow, smartSECTION, smartSTRAT, Spatializer, SpecDecomp, StrataAmp, StrataMap, StrataModel, StrataSim, StratWorks, StratWorks 3D, StreamCalc, StressCheck, STRUCT, Structure Cube, Surf & Connect, SurfNet, SynTool, System Start for Servers, SystemStart, SystemStart for Clients, SystemStart for Servers, SystemStart for Storage, Tanks & Tubes, TDQ, Team Workspace, TERAS, T-Grid, The Engineer's DeskTop, Total Drilling Performance, TOW/cs, TOW/cs Revenue Interface, TracPlanner, TracPlanner Xpress, Trend Form Gridding, Trimmed Grid, Turbo Synthetics, Unconventional Essentials, VESPA, VESPA+, VIP, VIP-COMP, VIP-CORE, VIPDataStudio, VIP-DUAL, VIP-ENCORE, VIP-EXECUTIVE, VIP-Local Grid Refinement, VIP-THERM, vSpace, vSpace Blueprint, vSpace Onsite, WavX, Web Editor, Well H. 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`$OWHOME/docs/third_party.pdf/third_party.pdf`      *Linux*

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# *Introduction*

## **About the OpenWorks® 5000.8.1.0 Software**

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The OpenWorks® database instance created with the OpenWorks® software is a repository for geoscience project data for the oil and gas industry. The integrated applications from Landmark® software and third-party applications built with the OpenWorks® Development Kit can access and manage the data in the OpenWorks® database instance.

### ***Supported Platforms***

This guide will help you install and configure the OpenWorks® software and its database instance on the following operating systems:

- Red Hat Enterprise Linux 4.x and 5.x, 32-bit and 64-bit
- Windows XP, 32-bit Service Pack 3 and 64-bit Service Pack 2
- Windows Server 2008, 64-bit Service Pack 2
- Windows Server 2003, 32-bit and 64-bit Service Pack 2
- Windows Vista, 64-bit Service Pack 2
- Windows 7, 64-bit

### ***New Installations of the OpenWorks® Software***

The procedures for installing the OpenWorks® software are delineated in the chapters following this one. They are divided into Windows and Linux procedures.

The OpenWorks® software has two basic installation components:

- **Database Installation:** Includes the database server software and the OpenWorks® database schemas to create an OpenWorks® database instance.
- **Software Installation:** Includes the utilities and managers of the OpenWorks® software as well as the data importers and exporters of the GeoDataLoad™ software. The GeoDataLoad™ software requires a license acquired separately from the OpenWorks® software.

## Database Software Installation: 64-bit versus 32-bit

The database server software included in the database installation is the Oracle 11g database software and runs in a 64-bit operating system, Windows or Linux.

If you want to install the OpenWorks® database schemas in an already installed Oracle 10g or 11g database server, or if you want to install the database server in a 32-bit operating system, the Oracle software must be acquired and installed separately from the OpenWorks® software.

## Installing on an Existing Oracle Database

You can install the OpenWorks® schemas on an existing Oracle database server. See “OpenWorks® Schemas on an Existing Oracle Database” on page 87.

After you install the OpenWorks® schemas, you install the OpenWorks® software on the server and on the client.

## Upgrading from Oracle 10g to 11g

The OpenWorks® software can use the Oracle 10g (10.2.0.5) database server and client, or the Oracle 11g (11.2.0.2) database server and client. Information about upgrading an Oracle database server and its software is in “Upgrade the Oracle Software: 10g to 11g” on page 105.

### **Do Not Mix Oracle Versions**

When the OpenWorks® server uses the Oracle 11g database server, only Oracle 11g clients should access the database server.

Likewise, when the OpenWorks® server uses the Oracle 10g database server, only Oracle 10g clients should access the database server.

## Upgrading Projects

You can upgrade projects from the following OpenWorks® releases:

- 1998.x
- 2003.x
- 5000.x

Project upgrades can be performed through Project Administration, or Database Administration. Project Administration and Database Administration are available in the Command Menu or Start Menu.

For software upgrades from previous release 5000.x versions, see “Upgrade the OpenWorks® Software” on page 95. The OpenWorks® software does not support in-place OpenWorks® software upgrades from releases before version 5000.0.2.5. You will need to install this version of the OpenWorks® software in a different location from a previous version.

If you are upgrading from an OpenWorks® 2003.x environment, you can use the Project Administration backup/restore functionality or an Oracle full database export/import process to migrate your projects to this version of the OpenWorks® software. For upgrades from OpenWorks® R2003.x, see “Upgrade OpenWorks® R2003.12 Database” on page 139.

## System Requirements

This section contains the platform and software specifications for the OpenWorks® software.

### Requirements: Running Other Landmark Applications with the OpenWorks® Software

The requirements in this section are only for running the OpenWorks® software and its database. If you are running other software (such as the DecisionSpace® Desktop software), look to the documentation of that software for additional requirements.

### Platform/Hardware Specifications

The OpenWorks® software supports the Linux and Windows platforms.

Platform	Operating System	Processor <sup>a</sup>	Server Minimum/Recommended		Client Minimum/Recommended	
			RAM	Swap <sup>b</sup>	RAM	Swap
Linux 64-bit	Red Hat Enterprise Linux 5.x ( <i>primary Linux version</i> )  Red Hat Enterprise Linux 4.x ( <i>The OpenWorks® software will not run with RHEL 4.5 using AMD processors</i> )	X86_64	2 GB/ 8 GB	4 GB/ 16 GB	1 GB/ 2 GB	2 GB/ 4 GB
Linux 32-bit	Red Hat Enterprise Linux 4.x Red Hat Enterprise Linux 5.x	IA32	2 GB/ 8 GB	4 GB/ 16 GB	1 GB/ 2 GB	2 GB/ 4 GB
Windows 32-bit	Microsoft Windows XP Microsoft Windows Server 2003	IA32, X86_64	2 GB/ 8 GB	4 GB/ 16 GB	1 GB/ 2 GB	2 GB/ 4 GB
Windows 64-bit	Microsoft Windows XP Microsoft Windows Vista Microsoft Windows 7 Microsoft Windows Server 2003 Microsoft Windows Server 2008	X86_64	2 GB/ 8 GB	4 GB/ 16 GB	1 GB/ 2 GB	2 GB/ 4 GB

a. Processor

**IA32** = Intel Pentium IV, Xeon

**X86\_64** = Intel: Xeon EM64T. AMD: Opteron, Athlon 64, and Athlon 64FX

b. Swap: If the machine is an Oracle server, the swap space must be at least two times that of the machine's memory.

**Notice to Solaris platform users**

With version 5000.0.3.0, the OpenWorks® software is no longer supported on Solaris. Landmark® Customer Support will continue to provide support for Solaris products through March 31, 2011.

**Hard Drive Space**

Besides the swap space requirements mentioned above, an installation has other hard drive space requirements.

**Server Disk Space**

The following are the minimal disk space requirements for the OpenWorks database server:

Type	Minimum Space	Comments
Database Software Files	4.4 GB <i>Linux</i> 8.1 GB <i>Windows</i>	Installation files of the Oracle software.
Data Files of Database	1.7 GB	Additional space may be required depending on the amount of data in the database.
Fast Recovery Area of Database	160 GB	The amount of free space needed by the processes and files of the ArchiveLog mode.
OpenWorks Software	1.7 GB	Installation files of the OpenWorks software.

**Client Disk Space**

The following are the minimal disk space requirements for an OpenWorks client installation:

Type	Minimum Space	Comments
Oracle Client Software Files	1.4 GB <i>Linux</i> 730 MB <i>Windows</i>	Installation files of the Oracle software.
OpenWorks Software	1.7 GB	Installation files of the OpenWorks software.

## Graphics Card

The OpenWorks® software runs on systems with the NVIDIA QuadroFX family of graphics cards.

## Software Specifications

All platforms require a browser and software from Oracle and Adobe. The Oracle software is included in the database installer of OpenWorks. Adobe Reader should be obtained from Adobe. Windows platforms also require Open Text Exceed.

### All Platforms

Oracle client software:

- The client software is available on the Landmark Software Manager (<https://esd.halliburton.com/download/download.jsp>). The Oracle client must be version 11.2.0.2.
- If the OpenWorks® schemas and software will be used with the Oracle 10g database and client must be version 10.2.0.5.0. The software must be acquired and installed separately from the OpenWorks® software.

Some of the documentation for the OpenWorks® software is provided in Portable Document Format (PDF). To view these files, all platforms require Adobe Reader 7.x, or later.

A browser is required on all platforms:

- Linux: Mozilla Firefox 3.0 or higher
- Windows: Internet Explorer 6.0.x or higher; or Mozilla Firefox 3.0 or higher

### Windows Only

Open Text Exceed is required unless you are installing only the OpenWorks® Basic software. For more information about configuring Open Text Exceed, see “Exceed Configuration Instructions” in the *5000 Release Notes*.

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## Licensing

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The Landmark® Application Manager (LAM) is the license system used to control access to applications from Landmark® software. LAM is based on FLEXnet Publisher from Aceso Software. A new LAM version is required for Release 5000.x. You should install the latest LAM server software, version 5000.0.3.x.

You must obtain new licenses for all Release 5000 products. Contact Landmark® Support or your account manager for updated licenses.

For instructions on how to install LAM and to obtain licenses, refer to the *Landmark Application Manager User's Guide* (LAM\_UserGuide.pdf) for complete details.

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## Third-Party Applications: License Agreements

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The applications from Landmark® software use various third-party applications. Information about third-party applications is available for all products. The Release Notes detail the third-party information or define where the information is located. In addition, most applications from Landmark® software have included a file titled Third\_Party.pdf which includes attribution and license information for all third-party products used in Landmark® software.

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# OpenWorks® Documentation

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The online help and online manuals for OpenWorks® documentation require a Web browser and Adobe Reader.

## **Online Help**

Some of the OpenWorks® documentation is available in a platform-independent HTML format. A Web browser meeting the specifications listed earlier in this chapter is required to view the *OpenWorks® Online Help* (Linux: `$OWHOME/docs/onlinehelp.htm`; Windows: `%OWHOME%\docs\onlinehelp.htm`).

## **Documents in PDF Format**

Some of the documentation for the OpenWorks® software is in PDF format. The documentation for the OpenWorks® software Release 5000.x.x.x is created for, and tested with, Adobe Reader 7.x on all of the operating systems on which the OpenWorks® software can be installed.

## **Downloading Adobe Reader**

You can download the Adobe Reader free of charge from the Adobe web site. ([www.adobe.com](http://www.adobe.com)).

## **Installing Adobe Reader on Linux**

The Adobe installation program asks you to accept a default installation location or enter the path where Adobe Reader will install its files. The path is used by the OpenWorks® help system to find Adobe Reader. Therefore, it is recommended that you accept the default location for the Adobe Reader files.

If you install Adobe Reader in another location, edit the `startAcrobat` script in `$OWHOME/bin`, or make a link to `acroread` (the Adobe Reader executable) in `/usr/bin`.



## **Installing Adobe Reader on Windows**

Download the reader from the Adobe Web site. No configuration is necessary when the reader is downloaded prior to installing the OpenWorks® software.



# Windows Procedures

## Scope

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This section includes the procedures for installing Oracle 11g, the OpenWorks® database, and the OpenWorks® and GeoDataLoad™ software on servers and clients running on Windows 64-bit operating systems.

For the installations of the OpenWorks schemas on other supported versions of the Oracle software, see the *OpenWorks® Software Installation Procedures* manual for version 5000.8.0.0 (OW\_5000.8\_installprocedures.pdf, which is available on Landmark Software Manager). After the installation of the OpenWorks schemas, return to “Install the OpenWorks® Software” on page 26 in this chapter to install the OpenWorks software.

### **Do Not Mix Oracle Versions**

When the OpenWorks® server uses the Oracle 11g database server, only Oracle 11g clients should access the database server.

Likewise, when the OpenWorks® server uses the Oracle 10g database server, only Oracle 10g clients should access the database server.

Procedures described in this section are:

- Database server installation tasks
  - Creating an Oracle user with administrative privilege
  - Installing the Oracle software on the server as well as the OpenWorks® database and schemas
- Oracle client installation tasks
  - Installing the Oracle Client software on the client machine
- Installing the OpenWorks® software
- Performing post-OpenWorks®-installation tasks

## Assumptions

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The procedures in this chapter assume the following:

1. You are installing OpenWorks® software on systems that do not have prior installations of the OpenWorks® software.

**Warning: Do not use the installation program for the database instance (schemas) on an existing OpenWorks® database instance**

Do not attempt to upgrade an existing OpenWorks® database instance with a new release of an OpenWorks® database installation program. Such an action will destroy vital information in the OpenWorks® database instance.

When you upgrade the OpenWorks® software, and then upgrade (or extend) the projects in the database (as described in “Upgrade the OpenWorks® Software” on page 95), you are upgrading the OpenWorks® database instance.

2. You are installing the Oracle 11g database software with a new OpenWorks® database instance, the OpenWorks® software, and the GeoDataLoad™ software on a machine designated as the server, with one of the following operating systems:
  - Windows Server 2003, 64-bit Service Pack 2
  - Windows Server 2008, 64-bit Service Pack 2
  - Windows XP, 64-bit Service Pack 2
  - Windows Vista, 64-bit Service Pack 2
  - Windows 7, 64-bit
3. You are installing the Oracle 11g client software on a machine designated as a client.

For other types of installations, refer to the appropriate section of this manual:

- “Linux Procedures” on page 41
- “Upgrade the OpenWorks® Software” on page 95
- “OpenWorks® Schemas on an Existing Oracle Database” on page 87

## Windows Server Installation Tasks

OpenWorks® components that must be installed on the server are the Oracle software and the OpenWorks® database and schemas. To install them, use the following general workflow:

- Create a User Account on the Server
- Install the Oracle Software and OpenWorks Database Instance

### **Create a User Account on the Server**

Create a user with administrative privileges on the system on which you are installing the Oracle software and OpenWorks® database before installing the Oracle database.

1. Access the New User window.

Operating System	Command Path
Windows Server 2003 Windows Server 2008	Control Panel > Administration Tools (double click) > Computer Management (double click)  In Computer Management window: System Tools > Local Users and Groups > Users > Action (from toolbar) > New User
Windows XP	Control Panel > User Accounts > Advanced tab > Advanced button.  Right-click the Users folder under Local Users And Groups, and select New User in the shortcut menu.
Windows Vista	Control panel > Classic view > User Accounts > Manage User Accounts > Advanced tab > Advanced button, then File > New
Windows 7	Control Panel > User Accounts > Manage User Accounts > Advanced tab > Advanced button.  Right-click the Users folder under Local Users And Groups, and select New User in the shortcut menu.

2. In the New User dialog box, complete the procedure for your operating system.
  - Enter the configuration for the new user: user name, full name (or given name), password (and password confirmation), and description. A common practice is to use a name that identifies

this user with the Oracle installation, for example, *oracle*. For this user, the user name and full name can be the same.

- Uncheck the User Must Change Password At Next Logon box.
  - Click **Create**.
  - Click **Close**, and close the Local Users And Groups window.
3. Make the new user an administrator.

*Refreshing the List of Users:* After closing the Local Users and Groups window, the new user name may not appear in the Users tab of the User Accounts dialog box. If so, close the dialog and reopen it to refresh the list.

- In the User Accounts dialog box, select the new user account and click **Properties**.
  - On the Group Membership tab, click **Other** and select Administrators from the list.
4. Click **OK** in the User Accounts window.

## ***Install the Oracle Software and OpenWorks Database Instance***

Use this procedure to install the Oracle software as well as the OpenWorks database instance in the Oracle database on the system used as the database server. This procedure installing version 11.2.0.2.0 of the Oracle software on Windows.

Before you begin, you should know your Oracle system identification (SID), as you will need to supply this during the installation.

1. Log on as the user created for the Oracle installation. Even though the Oracle user must have administrator privileges, do not install as Administrator or using your personal account.
2. Create a directory for the `OW_HOME_DIR` *system* environment variable. The directory needs to be unique for the user because this folder is where the Oracle wallet credentials will be stored.

3. Set the `OW_HOME_DIR` as a system environment variable.
  - From the Control Panel, select **System And Security > System**, and then **Advanced System Settings**. (For Windows XP or Windows Server 2003 operating systems, select **System**.) The System Properties dialog displays.
  - In the Advanced tab of the System Properties dialog, click the **Environment Variables** button. Use the System Variables (lower) pane of the dialog box to set the system variable and then close the dialogs.
4. Download the software appropriate for your operating system from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).

`OWDBSetup_Win_with_Oracle.zip`

5. Extract the ZIP file.
6. Run the installation executable (`OWDB_5000_8_1.exe`). The OpenWorks Database 5000.8.1.0 dialog displays.
7. Click **Next**. The Select The Type Of Installation pane displays in the dialog.
8. Select **Install Oracle media and build new OpenWorks database instance**. If the amount of memory is incorrect, the Memory Check pane displays in the dialog.

In Windows, the amount of virtual memory should be twice the amount of physical memory (RAM) in the computer.

9. If the amount of virtual memory is incorrect:
  - Click **Cancel** to end the installation.
  - Adjust the amount of virtual memory.
  - Restart this installation procedure.
10. If the amount of virtual memory is correct, click **Next**.

11. In the Choose Install Folder pane:

- Enter the directory where you want to install the OpenWorks® database files. The default path is:

```
C:\Landmark\OpenWorksDatabase
```

- Click **Next**. The Get Oracle Information pane displays.

12. In the Get Oracle Information pane:

- In **Oracle Base**, enter a path for the Oracle base directory. For example:

```
c:\oracle\product
```

- In **Oracle Home**, enter the path for Oracle software. For example:

```
c:\oracle\product\11.2.0\dbhome_1
```

- In **Oracle SID**, accept the machine name as the Oracle system identifier, or enter another identifier. The identifier, or database instance name, should contain a maximum of eight alphanumeric characters and the alphabetical characters should be all capital letters. The first character should be alphabetical. Do not use any special characters.

- Click **Next**. The Get Database Domain pane displays.

13. In **Database Domain**, enter the domain name if the database has one, or leave it blank. The default is blank. The domain name specifies the logical location of the database within a network, and if one is entered, you must include the domain name when referring to the database instance.

**Domain name and Oracle SID**

If you enter a domain name here, you must always specify the domain name, along with the SID, when referencing the database instance.

The domain name can be uppercase letters (A-Z), numbers (0-9), and the dash character, separated by periods. For example, to put a database instance in a domain, such as `lgc.com`, enter `LGC.COM` in the field.

The combination of Oracle SID and database domain cannot be more than 40 characters.



14. Click **Next**. The First Set Of Datafiles pane displays.

15. In the First Set Of Datafiles pane

- Specify the directory where you want to install the first set of database files.

This directory must be empty. If not, the installation will fail.

- Accept the default amounts for the block size (16 KB), system tablespace (1024 MB), and SysAux tablespace (256 MB).

The data block size is the default logical block size used in the database. The size should be a multiple of the physical block size of the storage device where the database is stored.

- Click **Next**. The Second Set Of Datafiles pane displays.

16. In the Second Set Of Datafiles pane

- Specify the directory where you want to install the second set of database files.

This directory must be empty. If not, the installation will fail.

- Accept the sizes for the Undo tablespace (1024 MB) and the Redo Logs (150 MB).

#### **Redo Logs size and Oracle tuning**

The Redo Logs size is one of the parameters that can be adjusted if necessary to improve database performance. See “Appendix: Oracle Tuning Parameters” on page 173 for additional information.

- Click **Next**. The Third Set Of Datafiles pane displays.

17. In the Third Set Of Datafiles pane

- Specify the directory where you want to install the third set of database files.

This directory must be empty. If not, the installation will fail.

- Accept the default sizes for the Temp tablespace (1024 MB) and the Users tablespace size (5 MB).
- Click **Next**. The Approximate Database Size pane displays.

18. In the Approximate Database Size pane:

- Enter the possible size of the database instance. The default and the minimum is 30 GB. This value is used in calculations for backup and recovery.
- Click **Next**. The ArchiveLog Mode pane displays.

19. In the ArchiveLog Mode pane:

#### **ArchiveLog Mode or No ArchiveLog Mode**

Depending on what you select in this pane, you have three possible paths before they converge again with the configuration of the SGA (System Global Area) Allocation: ArchiveLog Mode; No ArchiveLog Mode but without automatic backups; and No ArchiveLog Mode and with automatic backups.

- Select **ArchiveLog Mode** (the default) to archive redo logs before they are overwritten. This mode allows the database to be backed up while the database is in an *inconsistent* state (or while the database is being accessed by users).
  - Click **Next**. The Schedule Backup Time pane displays.
  - In the Schedule Backup Time pane:
    - Type the number of days a backup file will be retained. The minimum is one day. The default is two days. After this time a file (such as a full or level zero incremental backup) will be considered obsolete and deleted.
    - Enter the hour and minute when a backup is performed.
    - Click **Next**. The Recovery Destination pane displays.

- In the Recovery Destination pane:
  - Specify the location for recovery files (control files, redo logs, archived redo logs, flashback logs, and RMAN backups). The location can be a system directory or network location.
  - Specify the maximum size (or disk quota) of the recovery file area in units of gigabytes.

The amount of space can vary depending on the amount of data in the database instance, the size of data blocks, the number of changes to the data, the number of days in the retention policy, and other configurations of the database.

Ideally, the area should be able to contain all data files in the database and all current backup files.

- Click **Next**. The SGA (System Global Area) Allocation pane displays.
- Select **NoArchiveLog Mode** to allow redo logs for the database instance to be overwritten without archiving the old redo logs.

**In NoArchiveLog Mode, Backups Require Database Shutdown**

With NoArchiveLog Mode selected in the ArchiveLog Mode pane, a backup can only be performed when the database is in a *consistent* state.

For an Oracle database to be in a consistent state, it must be shutdown with the normal, immediate, or transactional parameter, and the restarted database must be backed up in a mode (such as the Mount mode), where the database is closed to access, except for certain database administrator (DBA) activities.

- Click **Next**. The Configure Autobackups pane displays.
- Select **Off** (the default and is recommended) in order to perform manual backups. Clicking **Next** displays the SGA (System Global Area) Allocation pane.

- Select **On** to allow the database to perform automatic backups. Since NoArchiveLog Mode was chosen, the database must be closed, and then be restarted in a mode where only DBA activities can be performed while the backup occurs.
- Click **Next**. The Schedule Backup Time pane displays.
- In the Schedule Backup Time pane:
  - Type the number of days a backup file will be retained. The minimum is one day. The default is two days. After this time a file (such as a full or level zero incremental backup) will be considered obsolete and deleted.
  - Enter the hour and minute when a backup is performed.
  - Click **Next**. The Recovery Destination pane displays.
- In the Recovery Destination pane:
  - Specify the location for recovery files (control files, redo logs, archived redo logs, flashback logs, and RMAN backups). The location can be a system directory or network location.
  - Specify the maximum size (or disk quota) of the recovery file area in units of gigabytes.

The amount of space can vary depending on the amount of data in the database instance, the size of data blocks, the number of changes to the data, the number of days in the retention policy, and other configurations of the database.

Ideally, the area should be able to contain all data files in the database and all current backup files.
  - Click **Next**. The SGA (System Global Area) Allocation pane displays.

20. In the SGA (System Global Area) Allocation pane:

- Specify the amount of memory as a percentage that the system global area (SGA) will use.

As a guideline, use the following percentages for SGA:

— Large (typically: a dedicated database server): 85%

— Medium (typically: a workstation): 30%

— Small (typically: a laptop): 10%

- Click **Next**. The Schemas Directory pane displays.

21. In the Schemas Directory pane:

- Specify the directory where you want to create OpenWorks® schema database files.
- Click **Next**. The Projects Directories pane displays.

22. In the Projects Directories pane:

- Specify the directory where you want to create project files. You must have at least one project directory. You can create additional directories in order to distribute the files over a number of file systems.
- If desired, enter additional directories for project files.
- Click **Next**. The Pre-installation Summary pane displays.

23. In the Pre-installation Summary pane

- Verify that all settings are correct. If necessary, click **Previous** and correct settings.
- Click **Install** if all settings are correct. The Oracle wallet and a number of other settings are configured during installation.

The installation starts. Windows, such as the Oracle Universal Installer command prompt window, will display during the installation as well as various informational dialog boxes.

24. Click **Next**.

The file, sqlnet.ora, is modified to include configurations for the Oracle wallet. A backup is made of the file and saved in the same directory. The Modified SqlNet.ora dialog displays.

25. Click **OK** in the dialog. The Restart SID And Listener pane displays.

26. Accept the default **Yes** to shutdown and startup the instance and listener.

27. Click **Next**. The Listener Output pane displays

28. Verify that the commands completed successfully.

29. Click **Next**. The Install Complete pane displays.

30. Click **Done**.

If there are any errors, additional windows will appear describing the errors.

**Acceptable Oracle error messages**

Some Oracle errors are acceptable; e.g., errors that occur because of the drop user statements and IMP\_FULL\_DATABASE, EXP\_FULL\_DATABASE role conflicts.

## Windows Client Oracle Installation

Use the procedures in this section to install Oracle software on each client machine that will access the database you installed on the server. You do not need to install an Oracle client on your Windows server.

### *Install Oracle Software on the Client Machine*

1. Log on to the client machine as a user with administrator privileges. Do not install as Administrator.
2. Download the Oracle software appropriate for your operating system from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>). Refer to the table below.

Operating System	Oracle Client Software 11.2.0.2.0
Windows XP 32-bit Windows Server 2003 32-bit	Oracle_112020_Win32_Client.zip
Windows XP 64-bit Windows Server 2003 64-bit Windows Vista 64-bit Windows Server 2008 64-bit Windows 7 64-bit	Oracle_112020_Win64_Client.zip

3. Extract the ZIP file to a local directory.
4. Run the installation program by starting setup.exe from the directory to which you extracted the Oracle software. The Oracle Client Installer dialog displays with the Select Installation Type pane.
5. In the Select Installation Type pane:
  - If you plan on installing the OpenWorks® Full software on the server, select **Administrator**.
  - If you plan on installing the OpenWorks® Basic software, choose either **Administrator** or **Runtime**, depending on

whether you will use the Discovery™ software from GeoGraphix® (see below).

#### Installation type and OpenWorks® Basic

For the OpenWorks® Basic software, the Oracle client can be installed with the Runtime or Administrator installation type. If the OpenWorks® software will be used with the Discovery™ software from GeoGraphix®, the Oracle client can be installed with Administrator or Custom installation type. If the Custom installation type is chosen, you must select the following components among other components you may choose: Oracle Database Utilities, Oracle JDBC/Thin Interfaces, Oracle New, and SQL\*Plus

The file sqlnet.ora should contain the following lines:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=FILE)
    (METHOD_DATA=
      (DIRECTORY=%OW_HOME_DIR%\wallet)
    )
  )
SQLNET.WALLET_OVERRIDE= TRUE
```

If you are installing with the Custom option, consult a certified Oracle Database Administrator for more information about other Oracle components your installation may require.

6. Click **Next**. The Download Software Updates pane displays.
7. Select **Skip Software Updates**.
8. Click **Next**. The Select Product Languages pane displays.
9. The default selected language should be English.
10. Click **Next**. The Specify Installation Location pane displays.
11. In **Oracle Base**, enter a path for the Oracle base directory. For example:

```
c:\oracle\product
```

12. In **Software Location**, enter the path for Oracle 11g installation. For example:

```
c:\oracle\product\11.2.0\client_1
```



13. Click **Next**. The Prerequisite Checks pane displays and then the Summary pane if all the prerequisites are correct.

- If the check did not pass, correct the problems and restart the installation program.

14. In the Summary pane

- Verify that all settings are correct.
- Click **Install**.

15. In the Finish pane, click **OK**.

16. Update tnsnames.ora with the information for the databases you will use.

If the TNS\_ADMIN variable is not set in the environment, the default location of the file is %ORACLE\_HOME%\network\admin.

17. If needed, update sqlnet.ora as described in the note fore the step about the Select Installation Type pane.

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## Install the OpenWorks® Software

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Install the OpenWorks® software on both the server and the client. The procedure for installing the OpenWorks® software on the client is the same as for installing the software on the server.

To install the OpenWorks® software:

1. Log on as a user with administrator privileges. Do not install as Administrator.
2. Create an installation directory. For example:

```
c:\Landmark\OpenWorks
```

3. Set the `OW_HOME_DIR` user environment variable to the path of the directory of this user.

### **OW\_HOME\_DIR: User versus System Environment Variable**

Be aware of the difference between the *user* and *system* `OW_HOME_DIR` environment variables. With installation of the OpenWorks® database instance on a server, the *system* environment variable `OW_HOME_DIR` was set up. When you install the OpenWorks® software you set up the *user* environment variable `OW_HOME_DIR`.

- From the Control Panel, select **System And Security > System**, and then **Advanced System Settings**. (For Windows XP or Windows Server 2003 operating systems, select **System**.) The System Properties dialog displays.
  - In the Advanced tab of the System Properties dialog, click the **Environment Variables** button. Use the User Variables (upper) pane of the dialog box to set the user variable and then close the dialogs.
4. Set the `LM_LICENSE_FILE` user environment variable.

The LM license file contains connection information about the Landmark® Application Manager (LAM), or license server. For example, it contains a value like the following:

```
2013@hostname.company.com
```

where 2013 is the TCP port for the license server on the host machine, and where *hostname.company.com* is the full host name, or IP address, of the machine on which the license server is running.

5. Set the `Oracle_Home` system environment variable. For example, depending on what is installed on your system, the full Oracle server software or just the client, the variable must be set to a path like the following:

```
c:\oracle\product\11.2.0\dbhome_1
```

*or*

```
c:\oracle\product\11.2.0\client_1
```

6. Download the OpenWorks® software from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).
7. Extract the ZIP file to a local directory.
8. Launch the installation program.

The installation program guides you through the installation.

9. On the Introduction pane, click **Next**. The License Agreement pane displays.
10. On the License Agreement pane, accept the agreement to continue the installation and click **Next**. The Choose Install Folder pane displays.
11. On the Choose Install Folder pane
  - Specify the folder for the location of the OpenWorks® home directory.
  - Click **Next**. The Choose Install Set pane displays.
12. On the Choose Install Set pane:
  - Select either a basic or full installation.

The **Basic** install is a scaled-down version of the OpenWorks® software that focuses on the data management utilities and does not require MKS or Exceed to run successfully. A Basic installation does not include Project Administration, and does

not install the GeoDataLoad™ software (the data import and export utilities).

The **Full** install includes the Basic components plus the project administration and data management tools of the OpenWorks® software, and the GeoDataLoad™ software.

The GeoDataLoad™ software requires a license purchased separately from the license for the OpenWorks® software.

- Click **Next**. the OpenWorks® Flat File Setup pane displays.

13. In the OpenWorks® Flat File Setup pane:

- Enter the system directory and the project directory for the storage of OpenWorks® system and project files external to the database (*flat files*).

When you enter the directory names, the system creates the `OW_SYS_DATA` and `OW_PROJ_DATA` variables that point to the location of the files.

**Changing flat file storage location**

Should you need to change where flat files are stored in the future, you can edit the variables. See “Manage the Location of OpenWorks® System Files” on page 36 and “Manage the Location of OpenWorks® Project Files” on page 37 in the Windows Post-OpenWorks®-Installation Tasks section.

- Click **Next**. the Get Oracle 64-bit Information pane displays.

14. In the Get Oracle 64-bit Information pane:

- Specify the directory where Oracle was installed by either accepting the default, if it is correct, or entering the correct directory.
- Enter the appropriate Oracle alias. The Oracle alias is the Oracle system identifier (SID). If a domain was specified for database instance, add the domain to the alias. The alias name is recorded in:

`OracleHome\NETWORK\ADMIN\tnsnames.ora`

- Click **Next**. The District.dat Configuration pane displays.

15. In the District.dat Configuration pane:

- Select **Create A District.dat From TNSNAMES.ORA**. The installation program will create a district for each SID entry in tnsnames.ora. Choosing this option is strongly recommended for a new installation of the OpenWorks® software.

See “Understand and Configure Districts” on page 35 in the Windows Post-Installation Procedures section for information about configuring districts and about the district configuration options.

- Click **Next**.

**MKS Installation panes or Pre-Installation pane**

If MKS has not been installed, the Choose A Folder and Redistributable Package panes appear as described in the following steps.

If MKS has been installed, these steps will not appear.

16. In the Choose A Folder pane:

- Choose the location for the installation of MKS.
- Click **Install**.
- In the License Info pane, click **Next**.

17. In the Pre-Installation Summary pane:

- Verify that all settings are correct. If necessary, click **Previous** and correct settings.
- Click **Install**. The License pane displays, reminding you to contact Landmark Customer Support if you do not have a license for the software.

<http://css.lgc.com/CustomerSupport/CustomerSupportHome.jsp>

18. In the License pane, click **Next**. If the Microsoft Visual C++ 2005 package is not installed, the Microsoft Visual C++ 2005 SP1 Redistributable Package dialog box displays.
19. In the Redistributable Package dialog:
  - Click **Yes** to install the Microsoft Visual C++ Redistributable Package.
  - Click **Yes** again to install another version of Microsoft Visual C++ Redistributable Package. The Microsoft Visual C++ 2008 Redistributable Setup dialog displays. In the dialog, do the following:
    - Click **Next**.
    - Check the **I Have Read And Accept The License Terms** box.
    - Click **Install**.
    - Click **Finish**. Another setup dialog displays.
    - Click **Next**.
    - Check the **I Have Read And Accept The License Terms** box.
    - Click **Install**.
    - Click **Finish**.
  - Click **Next**. The Install complete pane displays in the dialog of the OpenWorks installation program.
20. In the Install Complete pane:
  - Click **Yes, restart my system**.
  - Click **Done**.

#### License configuration

To use the software after it is installed, certain licensing steps must be taken. See “Configure the OpenWorks® License” on page 33 in the Windows Post-OpenWorks®-Installation Tasks section.

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## Windows Post-OpenWorks®-Installation Tasks

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This section contains tasks to be performed after installing Oracle and the OpenWorks® software on the server and client machines. Certain of the tasks are required and others are optional

See the *OpenWorks® Project Administration* manual and the online help for more detailed information on OpenWorks® configuration topics.

The following tasks are required:

- Set up the Oracle wallet for multiple users (if users are internally identified users)
- Configure the MKS toolkit (if not already configured)
- Configure the OpenWorks® license
- Grant database access to the OpenWorks® user
- Understand and configure districts

These tasks are optional:

- Manage the location of the OpenWorks® system files
- Manage the location of the OpenWorks® project files
- Manage the location of seismic data files using the dir.dat configuration file
- Turn off Oracle's AutoExtend feature

### **Post-installation: Resolving out of memory notification, if necessary**

Once you are using the GeoDataLoad™ applications, if the data set is very large and the job runs out of memory, you will receive a message explaining how to allocate more memory. For a Windows operating system, increase the memory to 4 GB by setting an environment variable in the lgcnv.cf file in the %OWHOME%\conf directory. For 4 GB of memory, the environment variable should read:

```
OW_GDL_WIZARD_MEMORY_LIMIT 4096m
```

Use the setenv command in a Command Prompt window or as a system environment variable using the graphical user interface.

### ***Set up the Oracle Wallet for Multiple Users***

The OpenWorks® software uses the Open Oracle Secure Enterprise Password Store (Oracle wallet) to store passwords to the database and to handle the security of the passwords.

To properly configure the Oracle wallet set up, each user who will run the OpenWorks® software must have an `OW_HOME_DIR` *user* environment variable set to a unique directory for their Oracle wallet on the client on which they will access the OpenWorks® software.

Under the users directory, create a directory for each user that will be using the OpenWorks® software on this machine.

To configure an Oracle wallet for your user account

1. Log on using your typical user account.
2. Open the System Properties window.

From the Control Panel, select **System**. For non-XP and non-Windows Server 2003 systems, select **System**, then **Advanced system settings**.

3. In the Advanced tab, click **Environment Variables**.
4. In the Environment Variables window, click **New** in the *user* variables pane.
5. In the New User Variable window
  - Type `OW_HOME_DIR` in the Variable name text box.
  - In the variable value text box, type the path where the users unique home directory was created, for example, `C:\users\user1`.
  - Click **OK**.
6. In the Environment Variables window, click **OK**.
7. In the System Properties window, click **OK**.
8. Close the Control Panel.

The first time you access an OpenWorks® project, you will be prompted for your password. The wallet information will be automatically created after you input your password.



## **Configure the MKS Toolkit and Open Text Exceed**

1. On the Control Panel, select **Configure MKS Toolkit**.
2. In the Configure MKS Toolkit window, Runtime Settings tab, choose **XWindow System Settings**, then click **OK**.
3. From the X Server Settings, choose **Registered**.
4. Click Open Text Exceed. A green check mark appears to the left.
5. Ensure that the Use Network Connection box is checked
6. Click **OK**.
7. Restart the system.

## **Configure the OpenWorks® License**

For complete information about the Landmark® Application Manager (LAM), see the LAM documentation.

The server of the Landmark® Application Manager (LAM) must be running with a license for the software, and the `LM_LICENSE_FILE` *system* environment variable must be set on the computer where the OpenWorks® software is installed and running.

The `LM_LICENSE_FILE` variable should be set to

*TCP\_PortNum@MachineName*

where *TCP\_PortNum* is a TCP port number (2013 is the default), and the *MachineName* is the IP address or host name of the machine where the LAM server is running.

For example, the environment variable may be set to a value like the following:

`2013@lamhost.company.com`

## **Grant Database Access to the OpenWorks® User**

Because the OpenWorks® 5000.x.x.x software uses the Oracle wallet, a user is associated with both an operating system (OS) user and an Oracle internally identified user. The Oracle user will have the same

name as the OS user, but will now be required to provide a user name and a password to access the OpenWorks® database. Users can now change their Oracle password from the Command Menu. For detailed information and procedures to manage project databases and access, refer to the *OpenWorks® Online Help* (%OWHOME%\docs\onlinehelp.htm).

For the purposes of installation however, the steps to grant database access to the OpenWorks® user are provided here.

#### **Modify Database Users utility**

The Modify Database Users utility in this procedure replaces the orauser utility from previous releases of the OpenWorks® software.

1. Log on as an OpenWorks® user.
2. Launch the Modify Database Users utility:

From the Start menu, select **All Programs > Landmark > OpenWorks > Project Administration > Modify Database Users**.

3. If prompted, select a district to get to the correct SID.
4. In the DBA Logon window
  - In User Name, enter the name of a database administrator (DBA) who has sufficient privileges to allow users to access the OpenWorks® database. For example, the SYSTEM user (one of the internal Oracle database administrators) with SYSDBA privileges is such a user.
  - In Password, enter the DBA's password.
  - Click Login.

If the correct credentials are entered, the *Database Users* window opens. If the Database Users window does not display, the Login Failed dialog displays asking you to try to log in again. Click OK to reassert the DBA Logon dialog. The login process allows three login attempts. After three attempts, you must repeat step 2 to try to log in again.

5. In the Database Users window

- Enter the OpenWorks® user name and password in the User Details area.
- Check OW\_ADMIN if the user will be allowed to create and delete projects and create, change, or delete tables in a project or the OWSYS schema. The default state of the box is checked.
- Check only OWSYS\_ADMIN if the user will be allowed to alter the OWSYS schema in the OpenWorks® database. The default state of the box is unchecked.

**Additional information**

For more information about OW\_ADMIN and OWSYS\_ADMIN, see **Project Management > Project Administration > OpenWorks Security** in the *OpenWorks® Online Help* (*OpenWorksHome/docs/onlinehelp.htm*).

6. Click **Add**.
7. Close the Database Users dialog.

## ***Understand and Configure Districts***

Districts allow a company to break up large lists of projects, and allow the company to separate data by business unit for better data security or disk ownership.

Support for districts has become a part of the framework of the OpenWorks® software. In an installation of the OpenWorks® software, a company can decide whether it will implement districts or not.

To implement districts, the district.dat configuration file must be configured with the name of each district. The district.dat file also contains the directory name for configuration files that define storage locations for data not stored in the database. These configuration files are dir.dat and owdir.dat, for seismic data files and other OpenWorks® files, respectively. The default location for these configuration files is %OWHOME%\conf.

Utilities, such as Project Administration and Project Status Tool, support districts in their interfaces. For example, when a user of the OpenWorks® software creates a new project in Project Administration,

part of the project configuration includes selecting the district to which it will belong.

In a new OpenWorks® installation, when the district option “Create a district.dat from TNSNAMES.ora” was selected, a valid district was created for each SID. The file, district.dat, will have a default directory defined for each of the SIDs that are defined in tnsnames.ora. You will need to update these directories before running an application of the OpenWorks® software.

The OpenWorks® installation option “Create empty district.dat” requires that you configure district.dat before you can run the OpenWorks® software. The default location of the district.dat file is %OWHOME%\conf. You can change the default location by adding the environment variable OW\_CONF\_DIR. The default location of OW\_CONF\_DIR is %OWHOME%\conf.

The names of the OpenWorks® SIDs must be in all capital letters in district.dat. See **Project Management > Districts** in the *OpenWorks® Online Help* (*OpenWorksHome/docs/onlinehelp.htm*) for detailed procedures to perform district configuration tasks.

## ***Manage the Location of OpenWorks® System Files***

System files are files containing well and lithologic symbols and files describing file formats for importing or exporting data.

System files are independent of projects and of districts. The location of the following system directories do not change when changing a district: OW\_SYS\_DATA, owioformats, and owsymbols.

You can change the location of each of the directories by setting an environment variable. The OW\_SYS\_DATA directory is located by the value in the OW\_SYSDATA\_DIR environment variable. As a default, this variable is set in lgcenv.cf located in %OWHOME%\conf; however, the variable can be set in a user’s initialization script or set separately in the user’s environment. The environment variables for the location of the format files (OWIOFORMATS environment variable) and the well and lithologic symbols (OWSYMBOLDIR environment variable) can be set in a user’s environment, too.

## ***Manage the Location of OpenWorks® Project Files***

OpenWorks® project files are external files (not in the database) that are project specific. These may be files created by certain OpenWorks® applications or applications that use the OpenWorks® and seismic development kits.

Should you need to change where these files are stored in the future, you can edit the `owdir.dat` file. The location of `owdir.dat` is determined by the `district.dat` configuration file. A district must have an `owdir.dat`, and each district in an OpenWorks® instance can have a unique version of `owdir.dat`. Before editing, make sure you locate the correct `owdir.dat` that is associated with the district where your project is located.

## ***Manage the Location of Seismic Data Files (dir.dat Configuration File)***

The `dir.dat` configuration file is an ACSII text file that lists the file systems searched for seismic data stored as files. This file also describes where applications create, or from where applications retrieve, seismic data stored in files.

Applications look for `dir.dat` based on the `district.dat` configuration file. By default, `district.dat` is in `%OWHOME%\conf` but the location can be changed by setting the `OW_CONF_DIR` environment variable.

For Release 5000.x, the format of the `dir.dat` file has changed from previous versions. If `dir.dat` has not been updated for Release 5000.x, the software will recognize this and create a converted version of the file in the program's memory. However, it is recommended that you update R2003 `dir.dat` files to the new format.

The `dir.dat` file is composed of one or more lines. The lines have the format

```
RootFilePath filetype1 filetype2 . . .filetypen
```

Where

- *RootFilePath* is a file system where seismic data files are stored
- *filetype1..filetypen* are one of the following zero or more extensions of seismic data files or the attribute "OTHER\_FILES"

- Zero extensions: OpenWorks® applications will not create files in a file system with no attributes; however, an application can read or modify files in the file system, depending on the permissions of the user running the application.
- Extensions: If the attribute is a seismic data file extension (i.e., .3dv, .3dh, etc.), files with that extension can be created in the file system. If the same extension is applied to more than one file system, then new files with that extension are created in the file system with the most space.
- OTHER\_FILES: designates a file system where all types of files, except those not explicitly enumerated as attributes for another file system, can be created, read, and modified.

**OTHER\_FILES attribute required to write data**

At least one file system in dir.dat must have the OTHER\_FILES attribute for data not explicitly assigned to another file system to be written.

You can also define variables within dir.dat, where each variable represents a group of extensions.

An example dir.dat is shown below. On the left, extensions attributes are explicitly stated for each file system. On the right, variables have been defined for groups of file systems. Both dir.dat entries indicate identical storage locations for the seismic data files.

Example dir.dat with explicit extension attributes	Example dir.dat with variables defined (# denotes the variable definition)
D:\ua\ 3dv 3dh cd bri cmp OTHER_FILES	# define 3d_seismic 3dv 3dh cd bri cmp
D:\ub\ hzd hts	#define 3d_horizons hzd hts
D:\uc\ 3dv 3dh cd bri cmp	D:\ua\ 3d_seismic OTHER_FILES
D:\ud\ 3dv 3dh cd bri cmp hzd hts	D:\ub\ 3d_horizons
	D:\uc\ 3d_seismic
	D:\ud\ 3d_seismic 3d_horizons

The dir.dat files above indicate storage of 3d seismic data files in directories \ua, \uc, and \ud. File systems for horizon data files are \ub, and \ud. Storage for any other files is in file system \ua.

Refer to the dir.dat topic in the OpenWorks® online help for a complete discussion of the dir.dat configuration file.

## Turn Off AutoExtend

Oracle's AutoExtend feature is turned on by default to extend system and project tables spaces. If you would like to disable the AutoExtend feature for the OpenWorks® project tablespaces, edit the setting for the OW\_AUTOEXTEND\_FLAG variable in %OWHOME%\lgcenv.cf or %OW\_CONF\_DIR%\lgcenv.cf .

By default the setting is:

```
OW_AUTOEXTEND_FLAG    YES
```

To turn off AutoExtend, set the variable as:

```
OW_AUTOEXTEND_FLAG    NO
```





# Linux Procedures

## Scope

---

This section includes the procedures for installing Oracle 11g 64-bit, the OpenWorks® database, and the OpenWorks® and GeoDataLoad™ software on server and client systems running Linux 4.x or 5.x, 64-bit.

For the installations of the OpenWorks schemas on other supported versions of the Oracle software, see the *OpenWorks® Software Installation Procedures* manual for version 5000.8.0.0 (OW\_5000.8\_installprocedures.pdf, which is available on Landmark Software Manager). After the installation of the OpenWorks schemas, return to “Install the OpenWorks® Software” on page 72 in this chapter to install the OpenWorks software.

### **Do Not Mix Oracle Versions**

When the OpenWorks® server uses the Oracle 11g database server, only Oracle 11g clients should access the database server.

Likewise, when the OpenWorks® server uses the Oracle 10g database server, only Oracle 10g clients should access the database server.

The procedures in this section are:

- Server installation tasks
  - Completing the prerequisites for installing Oracle on the server
  - Completing pre-installation tasks, including running the Pre-Oracle utility
  - Installing the Oracle software on the server as well as the OpenWorks® database and schemas
  - Performing post-Oracle-installation tasks
  - Installing the OpenWorks® software on the server

- Client installation tasks
  - Completing the prerequisites for installing Oracle on the client
  - Installing the Oracle client software on the client
  - Installing the OpenWorks® software
  - Performing post-OpenWorks®-installation tasks

## Assumptions

---

The procedures in this chapter assume the following:

1. You are installing OpenWorks® software on systems that do not have prior installations of the OpenWorks® software.

**Warning: Do not use the installation program for the database instance (schemas) on an existing OpenWorks® database instance**

Do not attempt to upgrade an existing OpenWorks® database instance with a new release of an OpenWorks® database installation program. Such an action will destroy vital information in the OpenWorks® database.

When you upgrade the OpenWorks® software, and then upgrade the projects in the database (as described in “Upgrade the OpenWorks® Software” on page 95), you are doing all that needs to be done to upgrade the OpenWorks® database instance.

2. You are installing the Oracle 11g database software with a new OpenWorks® database instance, the OpenWorks® software, and the GeoDataLoad™ software.
3. You are installing the Oracle 11g client software on a machine designated as a client.
4. If you are installing on a remote system, you set the display variable before installing the software. For example:

```
setenv DISPLAY HostName:0.0
```

For other types of installations, refer to the appropriate section in this manual:

- “Windows Procedures” on page 11
- “Upgrade the OpenWorks® Software” on page 95
- “OpenWorks® Schemas on an Existing Oracle Database” on page 87

---

# Linux Server Installation Tasks

---

Linux server installation tasks are:

- Completing prerequisites
- Running the pre-Oracle utility
- Modifying the Linux release file (RHEL 5 only)
- Installing Oracle server, and the OpenWorks® database instance and schemas on the server
- Performing post-Oracle-installation tasks
- Installing the OpenWorks® software on the server

## ***Prerequisites***

Prerequisites for installing Oracle and the OpenWorks® database and software on servers running the RHEL operating systems are:

- Checking software packages (RPMs)
- Checking swap space
- Setting shell limits for the Oracle user
- Configuring the kernel parameters (not necessary if you plan to run the pre-Oracle utility before installing Oracle)
- Creating the Oracle user (not necessary if you plan to run the pre-Oracle utility before installing Oracle)

**Recommendation: Run pre-Oracle utility**

The pre-Oracle utility is a Landmark® utility that simplifies Oracle setup for OpenWorks® applications. Running the pre-Oracle utility is recommended.

## **Check Software Packages (RPMs)**

For RHEL 5, the required package versions are listed in

- *Oracle Database Release Notes 11g Release 2 (11.2) for Linux x86-64*

Verify the RPMs using the procedure below.

1. Verify that you are running the x86\_64 kernel on an x86\_64 platform:

```
# uname -mi
```

The result should be:

```
x86_64 x86_64
```

2. Run the command to list RPMs.

```
rpm -q --qf '%{NAME}-%{VERSION}-%{RELEASE} (%{ARCH})\n' binutils compat-db
compat-libf2c-34 elfutils-libelf elfutils-libelf-devel compat-libstdc++-33-
3.2.3 control-center gcc gcc-c++ glibc glibc-common glibc-devel glibc-
headers ksh libaio libaio-devel libgcc libstdc++ libstdc++-devel make
numactl-devel sysstat libaio unixODBC unixODBC-devel
```

It is important to have these 64-bit RPMs installed. The above command will list the architecture of each binary package. You will see that some RPMs are installed twice when you run this command (32-bit and 64-bit).

The command should result in the list of required packages shown below.

RHEL 4 x86_64	RHEL 5 x86_64 (64-bit)
binutils-2.15.92.0.2	binutils-2.17.50.0.6
compat-libstdc++-33-3.2.3	compat-libf2c-34-3.4.6-4 (RHEL version 5.6)
compat-libstdc++-33-3.2.3 (32 bit)	compat-libf2c-34-3.4.6-4.1.i386 (RHEL version 5.7)
elfutils-libelf-0.97	compat-libstdc++-33-3.2.3
elfutils-libelf-devel-0.97	compat-libstdc++-33-3.2.3 (32-bit)
expat-1.95.7	elfutils-libelf-0.125
gcc-3.4.6	elfutils-libelf-devel-0.125
gcc-c++-3.4.6	elfutils-libelf-devel-0.137 (RHEL version 5.6 or 5.7)
glibc-2.3.4-2.41	gcc-4.1.2
glibc-2.3.4-2.41 (32 bit)	gcc-c++-4.1.2
glibc-common-2.3.4	glibc-2.5-24
glibc-devel-2.3.4	glibc-2.5-24 (32-bit)
glibc-headers-2.3.4	glibc-common-2.5
libaio-0.3.105	glibc-devel-2.5
libaio-0.3.105 (32 bit)	glibc-devel-2.5 (32-bit)

RHEL 4 x86_64	RHEL 5 x86_64 (64-bit)
libaio-devel-0.3.105	glibc-headers-2.5
libaio-devel-0.3.105 (32 bit)	ksh-20060214
libgcc-3.4.6	libaio-0.3.106
libgcc-3.4.6 (32-bit)	libaio-0.3.106 (32-bit)
libstdc++-3.4.6	libaio-devel-0.3.106
libstdc++-3.4.6 (32 bit)	libaio-devel-0.3.106 (32-bit)
libstdc++-devel 3.4.6	libgcc-4.1.2
make-3.80	libgcc-4.1.2 (32-bit)
numactl-0.6.4.x86_64	libstdc++-4.1.2
pdksh-5.2.14	libstdc++-4.1.2 (32-bit)
sysstat-5.0.5	libstdc++-devel 4.1.2
unixODBC-2.2.11	make-3.81
unixODBC-2.2.11 (32 bit)	numactl-devel-0.9.8.x86_64
unixODBC-devel-2.2.11	sysstat-7.0.2
unixODBC-devel-2.2.11 (32 bit)	unixODBC-2.2.11
	unixODBC-2.2.11 (32-bit)
	unixODBC-devel-2.2.11
	unixODBC-devel-2.2.11 (32-bit)

## Check Swap Space on the Server

Check the swap space using the following command:

```
# grep SwapTotal /proc/meminfo
```

Ensure that you have enough swap for your host configuration based on the following table.

RAM	Swap Space
Between 1 GB and 2 GB	1.5 times the size of RAM
Between 2 GB and 16 GB	Equal to the size of RAM
More than 16 GB	16 GB

During installation, the Oracle software uses the guidelines in the table to determine if you have adequate swap space. For a host with 2 GB of RAM, for example, Oracle suggests 3 GB of swap. If your system has more memory, the Oracle installation program may recommend more swap.

If you need to add swap space, use the procedure in the following example of adding 1 GB of swap space on the system. Based on your configuration, calculate how much swap space you need to add.

To add a 1 GB swap file:

1. Determine the size of the new swap file and multiple by 1024 to determine the block size. For example, the block size of a 1024 MB swap file is 1048576.
2. At a shell prompt as root, type the following command with `count` being equal to the desired block size:

```
dd if=/dev/zero of=/swapfile bs=1024 count=1048576
```

3. Set up the swap file with the command:

```
/sbin/mkswap /swapfile
```

- To enable the swap file immediately but not automatically at boot time:

```
/sbin/swapon /swapfile
```

- To enable the swap file at boot time, edit `/etc/fstab` to include:

```
/swapfile swap swap defaults 0 0
```

The next time the system boots, it will enable the new swap file.

4. After adding the new swap file, make sure it is enabled by viewing the output of the commands

```
cat /proc/swaps
```

*or*

```
free
```

## Set Shell Limits for the Oracle User

To improve the performance of the software on Linux systems, you must increase the shell limits for the Oracle user for the number of open file descriptors and for the number of processes available to a single

user. Shell limits are set in `/etc/security/limits.conf` .  
Shell limits should be set as shown below.

Shell Limit	Item in limits.conf	Hard Limit
Maximum number of open file descriptors	<code>nofile</code>	65536
Maximum number of processes available to a single user	<code>nproc</code>	16384
Maximum size of the stack segment of the process	<code>stack</code>	10240

To increase the shell limits:

1. Add the following lines to `/etc/security/limits.conf`:

```
OracleUserName soft nproc 2047
OracleUserName hard nproc 16384
OracleUserName soft nofile 1024
OracleUserName hard nofile 65536
OracleUserName hard stack 10240
```

Soft limits are the number of file handles or processes the user will have on login. If these are not sufficient, the limits can be extended up to the hard limit with the `ulimit` command.

2. Add or edit the following line in `/etc/pam.d/login`, if it does not already exist:

```
session required /lib64/security/pam_limits.so
```

3. Depending on the Oracle user's default shell, make the following changes to the default shell start-up file:

For C shell (`csh` or `tcsh`), add the following lines to `/etc/csh.login`:

```
if ( $USER == "OracleUserName" ) then
    limit maxproc 16384
    limit descriptors 65536
endif
```



## Configure Kernel Parameters

This section describes how to configure kernel parameters manually.

**Recommendation: Use the pre-Oracle utility to configure kernel parameters**

You have the option to run the pre-Oracle utility before installing the database on the server (see below). Running the pre-Oracle utility is recommended. Running the pre-Oracle utility creates the Oracle user and sets the kernel parameters so you do not need to do them manually.

Verify that the kernel parameters shown in the following table are set to values greater than or equal to the recommended value shown. The procedure following the table describes how to verify and set the values. If the current value for any parameter is higher than the value listed in the table, *do not* change the value of that parameter.

Parameter	Value	File
semmsl semmns semopm semmni	250 32000 100 128	/proc/sys/kernel/sem
shmall	2097152	/proc/sys/kernel/shmall
shmmax	Half the size of physical memory (in bytes)	/proc/sys/kernel/shmmax
shmmni	4096	/proc/sys/kernel/shmmni
file-max	6815744	/proc/sys/fs/file-max
ip_local_port_range	1024 65000	/proc/sys/net/ipv4/ip_local_port_range

To view the current value specified for these kernel parameters, and to change them if necessary, follow these steps:

1. Enter the commands shown below to view the current values of the kernel parameters.

**Record the values returned from the commands**

Make a note of the current values and identify any values that you must change.

Parameter	Command
semmsl, semmns, semopm, and semmni	# /sbin/sysctl -a   grep sem  This command displays the value of the semaphore parameters in the order listed.
shmall, shmmax, and shmmni	# /sbin/sysctl -a   grep shm
file-max	# /sbin/sysctl -a   grep file-max
ip_local_port_range	# /sbin/sysctl -a   grep ip_local_port_range  This command displays a range of port numbers.

2. If the value of any kernel parameter is different and lower than the recommended value, complete the following steps (*do not change a value if it is higher than the recommended value*):

- Using a text editor, create or edit `/etc/sysctl.conf`, and add or edit lines similar to the following:

**Include only parameter values that will be changed**

Include lines only for the kernel parameter values that you want to change. For the semaphore parameters (`kernel.sem`), you must specify all four values. However, if any of the current values are larger than the recommended value, specify the larger value.

```
kernel.shmmax = 2147483648
kernel.shmall = 2097152
kernel.sem = 250 32000 100 128
kernel.shmmni = 4096
fs.file-max = 6815744
fs.aio-max-nr = 1048576
net.ipv4.ip_local_port_range = 1024 65000
net.core.rmem_default = 4194304
net.core.rmem_max = 4194304
net.core.wmem_default = 1048567
net.core.wmem_max = 1048567
```

By specifying the values in `/etc/sysctl.conf`, they will persist when you reboot the system.

- Enter the following command to load the values of the kernel parameters from `/etc/sysctl.conf`:

```
# /sbin/sysctl -p
```

- Review the output from this command to verify that the values are correct. If the values are incorrect, edit `/etc/sysctl.conf`, and then enter the `sysctl` command again.

## Create the Oracle User

This procedure shows how to manually create an Oracle user.

### **Recommendation: Use pre-Oracle utility to create Oracle user**

You have the option to run the pre-Oracle utility before installing Oracle on the server (see below). Running the pre-Oracle utility is recommended. The utility creates the Oracle user and sets the kernel parameters so you do not need to do this manually.

To create an Oracle user:

1. Create the dba group if it does not exist:

- Log on as root.
- Execute the command:

```
/usr/sbin/groupadd -g 501 dba
```

The group ID (501) and the group name (dba) must be unique.

*or*

- Add the following line to the file, `/etc/group`:

```
dba:x:501:
```

The group ID (501) and the group name (dba) must be unique.

2. Create the new Oracle user

- Log on as root.

- Execute the following command (where `ora11g` is the example user name of the Oracle user):

```
/usr/sbin/useradd -d /d01/ora11g -g dba -s /bin/csh -u 7777 -m ora11g
```

where `/d01/ora11g` is the home directory (and `dba` is the group name of the user; `7777` is the UID (user ID) for the user and is unique; the home directory is created (`-m`) if it does not exist and the default (or system) initialization files will be copied from the skeleton directory (usually `/etc/skel`) to the home directory; and `ora11g` is the user name.

3. Change permissions on the Oracle user's directory by executing the command

```
chmod -R 775 /d01/ora11g
```

4. Edit the new Oracle user's login script:

- Log on as the Oracle user.
- Add the following lines to the Oracle user's `.login` file, if they do not exist. Use values appropriate to your setup.

## Linux 64-bit

```
setenv ORACLE_SID OpenWorksInstanceIdentifier
setenv LM_LICENSE_FILE TCP_Port@HostName
setenv OWDBSETUP_DIR LocationOfOpenWorksDatabaseFiles
setenv OWHOME PathnameOfOpenWorksInstallDir
setenv ORACLE_OWNER OracleUserName
setenv OW_HOME_DIR $HOME
setenv ORACLE_BASE ${HOME}/product
setenv ORACLE_HOME ${ORACLE_BASE}/11.2.0/dbhome_1
setenv FLEXLM_NO_CKOUT_INSTALL_LIC 1
umask 022
setenv PATH /usr/bin:${PATH}:${ORACLE_HOME}/bin:${OWHOME}/bin
if ($?LD_LIBRARY_PATH == 0) then
    setenv LD_LIBRARY_PATH ${ORACLE_HOME}/lib32:${ORACLE_HOME}/lib
else
    setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:${ORACLE_HOME}/lib32:${ORACLE_HOME}/lib
endif
setenv CLASSPATH ${ORACLE_HOME}/JRE/lib:${ORACLE_HOME}/JRE/lib/rt.jar:${ORACLE_HOME}/jlib
```

5. If you have not correctly set the shell limits for the Oracle user, see “Set Shell Limits for the Oracle User” on page 47.

## ***Run the Pre-Oracle Utility (Recommended)***

Use the Pre-Oracle utility to set up your environment for Oracle and to create the Oracle user (the user who will install Oracle and the OpenWorks® database).

The Pre-Oracle utility also prompts you to modify the kernel parameters. The changes are important for a machine running the Oracle server.

1. Log on as root.
2. Download the Pre-Oracle utility from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).
3. Extract the ZIP file to a directory.
4. In the directory where the Pre-Oracle program was extracted, run the `bin` file in a terminal window. For example:

```
./OWPO_VersionNumLx.bin
```

The Introduction pane in the OpenWorks Pre-Oracle dialog box displays.

5. In the Introduction pane, click **Next**. The Choose Install Folder pane displays.
6. In the Choose Install Folder pane:
  - Enter the directory where you want to install its files. For the installation and configuration, the program will install a Java runtime environment (JRE) and other files (including uninstall files). When the program ends, an installation log is also placed in this folder.
  - Click **Next**. The Pre-Installation Summary pane displays.
7. In the Pre-Installation Summary pane:
  - Verify the install folder location is correct.
  - If necessary, click **Previous** and correct settings, and then return to this pane.

- Click **Install**. The Installing Pre-oracle pane displays with a progress bar, and then displays the Oracle Setup Installation banner in a terminal window.
8. In the Oracle Setup Installation terminal window:
- Press **Enter** to continue the installation.
  - When prompted to create the Oracle user/owner account, enter *y*.
  - Enter the Oracle user name that you want to create.
  - Enter the path for the home directory of OpenWorks. For example, the default is:

```
/Landmark/OpenWorks
```

The path will be saved to the `OWHOME` environment variable for the Oracle user. If the path is not known at this time, it can be set later in the initialization files of the Oracle user.

**Required for the Database Administration Tool**

The Oracle user must have the `OWHOME` environment variable set in order to use the Database Administration tool.

- Enter the connection information (the TCP port and host name) of the Landmark® Application Manager (LAM) for the `LM_LICENSE_FILE` environment variable. If the connection information is not known at this time, it can be set later in the initialization files of the Oracle user.

**Required for the Database Administration Tool**

The Oracle user must have a valid license to the OpenWorks® software in order to use the Database Administration tool.

LAM is the license server for all software from Landmark, and the server should have a license file that contains a current license for the software you will use, in this case, the OpenWorks® software.

The `LM_LICENSE_FILE` variable should be set to a value with the following form:

*TCP\_PortNum@MachineName*

where *TCP\_PortNum* is a TCP port number (2013 is the default), and the *MachineName* is the IP address or full host name of the machine where the LAM server is running.

For example, the environment variable may be set to a value like the following:

```
2013@lamhost.company.com
```

*or*

```
2013@123.123.123.123
```

- Enter the home directory for the Oracle user. If the directory does not exist, the program will create it.
- Enter the user ID.

The number in brackets is the next available user ID. You can accept this number by just pressing the Enter key, or enter your own number. The number must be unique on the system.

- Enter the name of the group for the database administrator.

The characters in brackets (`dba`) is the default group name. You can accept this name by just pressing the Enter key, or enter your own.

- Enter the group ID number by accepting the default (555).
- When prompted about whether system files can be modified, answer `Y`.

The original `passwd` and `group` files are copied to another file with the file name of the original file and a numerical suffix (for example, `passwd.12345`).

- Enter the system identifier (SID) for the database instance. The identifier should contain a maximum of eight alphanumeric characters and the alphabetical characters should be all capital

letters. The first character should be alphabetical. Do not use any special characters.

A summary appears giving the SID, owner, and home directory.

- Press **Enter**.

The Linux Configuration Utility banner displays in the terminal window.

9. In the Linux Configuration Utility terminal window:

- Press **Enter**.
- Enter `1` to update the kernel configuration.

The script updates the kernel.

- Press **Enter**.
- Enter `3` to quit the configuration utility.

The Install Complete pane displays in the OpenWorks Pre-Oracle dialog box.

10. In the dialog box, click **Done**.

11. In a terminal window, change the permissions on the home directory of the Oracle user to have `775` permissions. For example, if the home directory of the Oracle user is `ora11g`;

- Change directories to the parent directory of the home directory of the Oracle user.
- Execute the `chmod` command to change the permissions of the home directory.

```
chmod 775 ora11g
```



## ***Install Oracle Database Software and OpenWorks Database Instance***

1. Log on as the Oracle user.

### **Root User Needed for Post-installation Tasks**

After the database instance is installed, two scripts must be run by the root user.

2. Download the software appropriate for the operating system from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>) to a directory on the system.

`OWDBSetup_linux_with_Oracle.zip`

The ZIP file is around 2.5 GB, and when it is expanded it takes about another 2.5 GB.

3. Extract the ZIP file into a directory.
4. In the directory where the file was extracted, run the installer command:

```
./OWDB_5000_8_1.bin
```

The Introduction pane of the OpenWorks Database dialog box displays.

5. Click **Next**. The Select Type Of Install pane displays in the dialog.
6. In the Select Type Of Install pane:
  - Select **Install Oracle media and build new OpenWorks database instance**.
  - Click **Next**. The Choose Install Folder pane displays.

7. In the Choose Install Folder pane:
  - Enter the directory where you want to install the files of the OpenWorks® database instance.
  - Click **Next**. The Get Oracle Information pane displays.

***Additional Checks:*** The limits.conf file and the files of the system (versions of RPMs) are checked. If the check fail, additional panes will display.

8. In the Get Oracle Information pane:
  - In **Oracle Base**, enter a path for the Oracle base directory. This path is set in relation to the Oracle home path set in the Pre-Oracle installation. For example:

```
/oracle/product
```

If you change the default path in the text box, you may need to change the setting of the `ORACLE_BASE` environment variable in the `.login` initialization file of the Oracle user. For example:

```
setenv ORACLE_BASE ${HOME}/product
```

- In **Oracle Home**, enter the path for Oracle software. For example:

```
/oracle/product/11.2.0/dbhome_1
```

If you change the default path in the text box, you may need to change the setting of the `ORACLE_HOME` environment variable in the `.login` initialization file of the Oracle user. For example:

```
setenv ORACLE_HOME ${ORACLE_BASE}/11.2.0/dbhome_1
```

- In **Oracle SID**, accept the machine name as the Oracle system identifier, or enter another identifier. The identifier, or database instance name, should contain a maximum of eight alphanumeric characters and the alphabetical characters should be all capital letters. The first character must be alphabetical. Do not use any special characters.

If you change the default value in the text box, you may need to change the setting of the `ORACLE_SID` environment

variable in the `.login` initialization file of the Oracle user. For example:

```
setenv ORACLE_SID OpenWorksInstanceIdentifier
```

- Click **Next**. The Get Database Domain pane displays.
9. *Optional*. In **Database Domain**, enter the domain name if the database has one, or leave it blank. The default is blank. The domain name specifies the logical location of the database within a network, and if one is entered, you must include the domain name when referring to the database instance.

#### Domain name and Oracle SID

If you enter a domain name here, you must always specify the domain name, along with the SID, when referencing the database instance.

The domain name can be uppercase letters (A-Z), numbers (0-9), and the dash character, separated by periods. For example, to put a database instance in a domain, such as `lgc.com`, enter `LGC.COM` in the field.

The combination of Oracle SID and database domain cannot be more than 40 characters.

10. Click **Next**. The First Set Of Datafiles pane displays.
11. In the First Set Of Datafiles pane:
- Specify the directory where you want to install the first set of database files.
- This directory must be empty. If not, the installation will fail.
- Accept the default amounts for the block size (16 KB), system tablespace (1024 MB), and SysAux tablespace (256 MB).
- The data block size is the default logical block size used in the database. The size should be a multiple of the physical block size of the storage device where the database is stored.
- Click **Next**. The Second Set Of Datafiles pane displays.
12. In the Second Set Of Datafiles pane:
- Specify the directory where you want to install the second set of database files.

This directory must be empty. If not, the installation will fail.

- Accept the sizes for the Undo tablespace (1024 MB) and the Redo Logs (150 MB).

#### **Redo Logs size and Oracle tuning**

The Redo Logs size is one of the parameters that can be adjusted if necessary to improve database performance. See “Appendix: Oracle Tuning Parameters” on page 173 for additional information.

- Click **Next**. The Third Set Of Datafiles pane displays.

13. In the Third Set Of Datafiles pane:

- Specify the directory where you want to install the third set of database files.

This directory must be empty. If not, the installation will fail.

- Accept the default sizes for the Temp tablespace (1024 MB) and the Users tablespace size (5 MB).
- Click **Next**. The Approximate Database Size pane displays.

14. In the Approximate Database Size pane:

- Enter the possible size of the database instance. The default and the minimum is 30 GB. This value is used in calculations for backup and recovery.
- Click **Next**. The ArchiveLog Mode pane displays.

15. In the ArchiveLog Mode pane:

#### **ArchiveLog Mode or No ArchiveLog Mode**

Depending on what you select in this pane, you have three possible paths before they converge again with the configuration of the SGA (System Global Area) Allocation: ArchiveLog Mode; No ArchiveLog Mode but without automatic backups; and No ArchiveLog Mode and with automatic backups.

- Select **ArchiveLog Mode** (the default) to archive redo logs before they are overwritten. This mode allows the database to

be backed up while the database is in an *inconsistent* state (or while the database is being accessed by users).

- Click **Next**. The Schedule Backup Time pane displays.
- In the Schedule Backup Time pane:
  - Type the number of days a backup file will be retained. The minimum is one day. The default is two days. After this time a file (such as a full or level zero incremental backup) will be considered obsolete and deleted.
  - Enter the hour and minute when a backup is performed.
  - Click **Next**. The Recovery Destination pane displays.

— In the Recovery Destination pane:

- Specify the location for recovery files (control files, redo logs, archived redo logs, flashback logs, and RMAN backups). The location can be a system directory or network location.
- Specify the maximum size (or disk quota) of the recovery file area in units of gigabytes.

The amount of space can vary depending on the amount of data in the database instance, the size of data blocks, the number of changes to the data, the number of days in the retention policy, and other configurations of the database.

Ideally, the area should be able to contain all data files in the database and all current backup files.

- Click **Next**. The SGA (System Global Area) Allocation pane displays.

- Select **NoArchiveLog Mode** to allow redo logs for the database instance to be overwritten without archiving the old redo logs.

**In NoArchiveLog Mode, Backups Require Database Shutdown**

With NoArchiveLog Mode selected in the ArchiveLog Mode pane, a backup can only be performed when the database is in a *consistent* state.

For an Oracle database to be in a consistent state, it must be shutdown with the normal, immediate, or transactional parameter, and the restarted database must be backed up in a mode (such as the Mount mode), where the database is closed to access, except for certain database administrator (DBA) activities.

- Click **Next**. The Configure Autobackups pane displays.
- Select **Off** (the default and is recommended) in order to perform manual backups. Clicking **Next** displays the SGA (System Global Area) Allocation pane.
- Select **On** to allow the database to perform automatic backups. Since NoArchiveLog Mode was chosen, the database must be closed, and then be restarted in a mode where only DBA activities can be performed while the backup occurs.
- Click **Next**. The Schedule Backup Time pane displays.
- In the Schedule Backup Time pane:
  - Type the number of days a backup file will be retained. The minimum is one day. The default is two days. After this time a file (such as a full or level zero incremental backup) will be considered obsolete and deleted.
  - Enter the hour and minute when a backup is performed.
  - Click **Next**. The Recovery Destination pane displays.

— In the Recovery Destination pane:

- Specify the location for recovery files (control files, redo logs, archived redo logs, flashback logs, and RMAN backups). The location can be a system directory or network location.
- Specify the maximum size (or disk quota) of the recovery file area in units of gigabytes.

The amount of space can vary depending on the amount of data in the database instance, the size of data blocks, the number of changes to the data, the number of days in the retention policy, and other configurations of the database.

Ideally, the area should be able to contain all data files in the database and all current backup files.

- Click **Next**. The SGA (System Global Area) Allocation pane displays.

16. In the SGA (System Global Area) Allocation pane:

- Specify the amount of memory as a percentage that the system global area (SGA) will use.

As a guideline, use the following percentages for SGA:

— Large (typically: a dedicated database server): 85%

— Medium (typically: a workstation): 30%

— Small (typically: a laptop): 10%

- Click **Next**. The Schemas Directory pane displays.

17. In the Schemas Directory pane:

- Specify the directory where you want to create OpenWorks® schema database files.
- Click **Next**. The Projects Directories pane displays.

## 18. In the Projects Directories pane:

- Specify the directory where you want to create project files. You must have at least one project directory. You can create additional directories in order to distribute the files over a number of file systems.
- If desired, enter additional directories for project files.
- Click **Next**. The DB Admin Info pane displays.

## 19. In the DB Admin Info pane:

Pre-Oracle might have configured these values for the Oracle user in the account's initialization file (.login). This configuration allows the Oracle user to run the Database Administration tool in the OpenWorks® software.

- Enter path for the home of the OpenWorks® software. For example, a typical path might be:

```
/d01/Landmark/OpenWorks
```

- Enter the connection information (the TCP port and host name) of the Landmark® Application Manager (LAM) for the `LM_LICENSE_FILE` environment variable. If the connection information is not known at this time, it can be set later in the initialization files of the Oracle user.

LAM is the license server for all software from Landmark, and the server should have a license file that contains a current license for the software you will use, in this case, the OpenWorks® software.

This configuration sets the `LM_LICENSE_FILE` environment variable with a value with the following form:

```
TCP_PortNum@MachineName
```

where *TCP\_PortNum* is a TCP port number (2013 is the default), and the *MachineName* is the IP address or full host name of the machine where the LAM server is running.



For example, the value may be set like the following:

```
2013@lamhost.company.com
```

*or*

```
2013@123.123.123.123
```

### Settings for Other Environment Variables

The settings of the following environment variables are also necessary in the user's environment. They are set by the Pre-Oracle installation program.

**OWDBSETUP\_DIR:** The variable must be set with the directory location of the OpenWorks database setup files (specifically, `owdbsetup.sh`). Typically, the default location is:

```
OracleUserHome/Landmark/OpenWorksDatabase
```

**OW\_HOME\_DIR:** The variable must be set to the home directory of the user. For example:

```
setenv OW_HOME_DIR $HOME
```

**PATH:** The `PATH` environment variable should contain the path to the `bin` directory of the OpenWorks installation (`OpenWorksHome/bin`) and the Oracle installation (`OracleHome/bin`).

- Click **Next**. The Pre-installation Summary pane displays.

#### 20. In the Pre-installation Summary pane

- Verify that all settings are correct. If necessary, click **Previous** and correct settings.
- Click **Install** if all settings are correct. The Oracle wallet and a number of other settings are configured during installation.

After the database instance is installed, the Post Install Actions pane displays.

#### 21. Follow the instructions in the Post Install Actions pane to execute the two scripts, `root.sh` and `orainstRoot.sh`.

- Open a terminal window on the same machine.
- Log on as root.

- Execute the `root.sh` and `orainstRoot.sh` scripts. Their locations are indicated in the Post Install Actions pane. The default path names are:

*OracleHome*/`root.sh`

*OracleUsersHome*/`oraInventory/orainstRoot.sh`

The log for `root.sh` is stored in the *OracleHome*/`install` directory.

- Click **Next** in the Post Install Actions pane only after successfully executing the `root.sh` and `orainstRoot.sh` scripts.

After clicking Next, the Schemas pane displays. This pane displays the messages created as the OpenWorks schemas were created.

22. Click **Next** in the Schemas pane.

The file, `sqlnet.ora`, is modified to include configurations for the Oracle wallet. A backup is made of the file and saved in the same directory. The Modified SqlNet.ora dialog displays.

23. Click **OK** in the dialog. The Restart SID And Listener pane displays.

24. In the Restart SID And Listener pane:

- Accept the default **Yes** to shutdown and startup the instance and listener.
- Click **Next**. The Listener Output pane displays

25. In the Listener Output pane:

- Verify that the commands completed successfully.
- Click **Next**. The Modify `.login` pane displays. A new initialization file is created with a name like `.login_mod` or `.bash_profile_mod`. This file contains the settings for various environment variables. These variables must be set in the Oracle user's initialization file in order for the user to be able to run the Database Administration tool of the OpenWorks® software.

26. In the Modify .login pane, click **Next**. The Install Complete pane displays.

A log (Landmark\_OpenWorks\_Database\_InstallLog.log) for the installation is stored in the same directory as the location selected for the database in the Choose Install Folder pane.

27. Click **Done**.

If there are any errors, additional windows will appear describing the errors.

#### **Acceptable Oracle error messages**

Some Oracle errors are acceptable; e.g., errors that occur because of the drop user statements and IMP\_FULL\_DATABASE, EXP\_FULL\_DATABASE role conflicts.

## **Server Post-Oracle-Installation Tasks**

After you install the Oracle software on the server, perform the following post-installation tasks:

Execute the following command as the Oracle user:

```
chmod -R 775 $ORACLE_HOME
```

Error messages display that it is not possible to alter the permissions on certain files in the Oracle home directory. These errors can be ignored. The ownership of these files was changed to root when root ran the root.sh configuration script earlier in the installation procedure.

# Linux Client Procedures

---

## Prerequisites

Prerequisites for installing Oracle on the client running the RHEL operating systems are:

- Checking software packages (RPMs)

### Check Software Packages (RPMs)

For RHEL 5, the required package versions are listed in

- *Oracle Database Installation Guide 11g Release 2 (11.2) for Linux x86-64*

Verify the RPMs using the procedure below.

1. Verify that you are running the x86\_64 kernel on an x86\_64 platform:

```
# uname -mi
```

The result should be: “x86\_64 x86\_64”

2. Run the command to list RPMs.

```
rpm -q --qf '%{NAME}-%{VERSION}-%{RELEASE} (%{ARCH})\n' binutils compat-db
compat-libf2c-34 elfutils-libelf elfutils-libelf-devel compat-libstdc++-33-
3.2.3 control-center gcc gcc-c++ glibc glibc-common glibc-devel glibc-
headers ksh libaio libaio-devel libgcc libstdc++ libstdc++-devel make
numactl-devel sysstat libaio unixODBC unixODBC-devel
```

It is important to have these 64-bit RPMs installed. The above command will list the architecture of each binary package. You will see that some RPMs are installed twice when you run this command (32-bit and 64-bit).

The command should result in the following list of required packages.

RHEL 4 x86_64	RHEL 5 x86_64 (64-bit)
binutils-2.15.92.0.2	binutils-2.17.50.0.6
compat-libstdc++-33-3.2.3	compat-libf2c-34-3.4.6-4 (RHEL version 5.6)

RHEL 4 x86_64	RHEL 5 x86_64 (64-bit)
compat-libstdc++-33-3.2.3 (32 bit)	compat-libf2c-34-3.4.6-4.1.i386 (RHEL version 5.7)
elfutils-libelf-0.97	compat-libstdc++-33-3.2.3
elfutils-libelf-devel-0.97	compat-libstdc++-33-3.2.3 (32-bit)
expat-1.95.7	elfutils-libelf-0.125
gcc-3.4.6	elfutils-libelf-devel-0.125
gcc-c++-3.4.6	elfutils-libelf-devel-0.137 (RHEL version 5.6 or 5.7)
glibc-2.3.4-2.41	gcc-4.1.2
glibc-2.3.4-2.41 (32 bit)	gcc-c++-4.1.2
glibc-common-2.3.4	glibc-2.5-24
glibc-devel-2.3.4	glibc-2.5-24 (32-bit)
glibc-headers-2.3.4	glibc-common-2.5
libaio-0.3.105	glibc-devel-2.5
libaio-0.3.105 (32 bit)	glibc-devel-2.5 (32-bit)
libaio-devel-0.3.105	glibc-headers-2.5
libaio-devel-0.3.105 (32 bit)	ksh-20060214
libgcc-3.4.6	libaio-0.3.106
libgcc-3.4.6 (32-bit)	libaio-0.3.106 (32-bit)
libstdc++-3.4.6	libaio-devel-0.3.106
libstdc++-3.4.6 (32 bit)	libaio-devel-0.3.106 (32-bit)
libstdc++-devel 3.4.6	libgcc-4.1.2
make-3.80	libgcc-4.1.2 (32-bit)
numactl-0.6.4.x86_64	libstdc++-4.1.2
pdksh-5.2.14	libstdc++-4.1.2 (32-bit)
sysstat-5.0.5	libstdc++-devel 4.1.2
unixODBC-2.2.11	make-3.81
unixODBC-2.2.11 (32 bit)	numactl-devel-0.9.8.x86_64
unixODBC-devel-2.2.11	sysstat-7.0.2
unixODBC-devel-2.2.11 (32 bit)	unixODBC-2.2.11
	unixODBC-2.2.11 (32-bit)
	unixODBC-devel-2.2.11
	unixODBC-devel-2.2.11 (32-bit)

## ***Install Oracle on the Client***

Use this procedure to install the Oracle software on the client.

1. If not logged in as root, log in as root.

2. Download the appropriate Oracle software from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>) to a temporary directory.

Operating System	Oracle software
64-bit	Oracle_112020_Linux64_Client.zip

3. In the directory where the file resides, extract files from the ZIP file. For example:

```
unzip ./Oracle_112020_Linux64_Client.zip
```

4. Log on as a local or network user.
5. In the directory to where the files were extracted, run the installer command:

```
./database/runInstaller
```

6. In the Select Installation Type screen
  - Select **Administrator**.
  - Click **Next**.
7. Enter the path for Oracle home (the path in the `ORACLE_HOME` environment variable).
8. In the Specify Inventory directory and credentials screen:
  - Enter the inventory directory and group name or accept the defaults.
  - Click **Next**.
9. Enter the path for the `ORACLE_BASE` environment variable.
10. In the Product-Specific Prerequisite Checks screen:
  - Verify that the overall result of the check is `Passed`.
  - If any of the tests fail, exit the installation, set the recommended value of the parameter mentioned for the system, and run the installation program again.
  - Click **Next**.

11. In the Summary screen:
  - Verify that all settings are correct.
  - Click **Install**.
12. Follow the instructions in the Execute Configuration scripts window to execute the two scripts, `orainstRoot.sh` and `root.sh`.
  - Open a terminal window on the same system.
  - Log on as root.
  - Execute the `orainstRoot.sh` and `root.sh` scripts.
13. Click **OK** in the Execute Configuration scripts window only after successfully executing `orainstRoot.sh` and `root.sh` scripts.
14. In the End of Installation screen, click **Exit**.
15. In the Exit window, click **Yes**. The installation program closes.

## ***Client Post-Oracle-Installation Tasks***

### **Fix Directory Permission Problem**

Execute the following command as the Oracle user:

```
chmod -R 775 $ORACLE_HOME
```

Error messages display that it is not possible to alter the permissions on certain files in the Oracle home directory. These errors can be ignored. The ownership of these files was changed to root when root ran the `root.sh` configuration script earlier in the installation procedure.

---

## Install the OpenWorks® Software

---

Install the OpenWorks® software on both the server and the client. The procedure for installing the OpenWorks® software on the client is the same as for installing the software on the server.

To install the OpenWorks® software:

1. Log on as a user with administrator privileges.
2. Create an installation directory for the OpenWorks home directory.

*/LocalStorage/Landmark/OpenWorks*

3. Download the OpenWorks® software from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).
4. Extract the ZIP file to a directory.
5. From the directory to which the file was extracted, launch the installation program.

*./OW\_5000\_8\_1\_0Lx.bin*

The Introduction pane displays in the Landmark OpenWorks dialog box.

The installation program steps you through the installation and tracks the progress of the installation in a checklist on the left side of the window.

6. Click **Next** in the Introduction pane. The License Agreement pane displays.
7. In the License Agreement pane:
  - Accept the agreement to continue the installation.
  - Click **Next**. The Choose Install Folder pane displays.



8. In the Choose Install Folder pane:
  - Specify the folder for the location of the OpenWorks® home directory.
  - Click **Next**. The OpenWorks Flat File Setup pane displays.

9. In the OpenWorks® Flat File Setup Pane:
  - Enter the system directory and the project directory for the storage of OpenWorks® system and project files. The files are data files external to a project in the OpenWorks database instance.

When you enter the directory names, the system creates the `OW_SYS_DATA` and `OW_PROJ_DATA` variables that point to the location of the directories.

#### Changing flat file storage location

Should you need to change where the system or project files are stored in the future, you can edit environment variables. See “Manage the Location of OpenWorks® System Files” on page 81 and “Manage the Location of OpenWorks® Project Files” on page 81 in the Linux Post-OpenWorks®-Installation Tasks section.

- Click **Next**. The Get Oracle 64-bit Information pane displays.
10. In the Get Oracle 64-bit Information pane:
    - Specify the Oracle home directory, where Oracle was installed.
    - Enter the appropriate Oracle alias. The Oracle alias is the Oracle system identifier (SID). If a domain was specified for database instance, add the domain to the alias. The alias name is recorded in:

*OracleHome/network/admin/tnsnames.ora*

- Enter the user name of the owner of the Oracle installation.
- Click **Next**. The District.dat Configuration pane displays.

11. In the District.dat Configuration pane:

- Choose a method for configuring district.dat. For a new installation, it is recommended to select **Create a district.dat from TNSNAMES.ORA**. This will create a district for each SID entry in the tnsnames.ora file.

See “Understand and Configure Districts” on page 80 in the Linux Post-Installation Procedures section for information about configuring districts and about the district configuration options.

- Click **Next**. The Pre-Installation Summary pane displays.

12. In the Pre-Installation Summary pane:

- Verify that all settings are correct. If necessary, click **Previous** and correct settings.
- Click **Install**. The Installing Landmark OpenWorks pane and then the License pane display.

The License pane reminds you that to run any of the applications in the OpenWorks software, you must have a valid license from Landmark Graphics Corporation.

[http://css.lgc.com/psp/crmp/CUSTOMER/CRM/c/X\\_LGC\\_CSS.X\\_LICENSE\\_SS\\_RPT.GBL](http://css.lgc.com/psp/crmp/CUSTOMER/CRM/c/X_LGC_CSS.X_LICENSE_SS_RPT.GBL)

13. In the License screen, click **Next**.

14. In the Linux Specific pane:

- Make note of any scripts that need to be executed.

For example, if SELINUX is enabled, a shell script, root.sh, located in \$OWHOME/bin must be run before the software in the OpenWorks software can be used. To check whether SELINUX is enabled, as root execute the sestatus command in a terminal window.

- Click **Next**. The Install Complete pane displays.

15. In the Install Complete pane, click **Done**.

A log of the installation is stored in the OpenWorks home directory.

---

## Linux Post-OpenWorks®-Installation Tasks

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This section contains tasks to be performed after installing Oracle and the OpenWorks® software on the server and client machines. Certain of the post-installation tasks are required and others are optional.

See the *OpenWorks® Project Administration* manual and the online help for more detailed information on OpenWorks® configuration topics.

The following tasks are required:

- Change the security context for SELinux (if SELinux is used)
- Update Linux LAM server information in `.lgclogin`
- Create local users (if user does not exist)
- Update users
- Grant database access to the OpenWorks® user
- Understand and configure districts

These tasks are optional:

- Manage the location of OpenWorks® system files
- Manage the location of the OpenWorks® project files
- Manage the location of seismic data files using the `dir.dat` configuration file
- Run the `owsetup` script on the Linux server
- Set Oracle to run database at boot time
- Set AutoExtend

### **Post-installation: Resolving out of memory notification, if necessary**

Once you are using the GeoDataLoad™ applications, if the data set is very large and the job runs out of memory, you will receive a message explaining how to allocate more memory. For a Linux operating system, increase the memory to 4 GB by setting an environment variable in `lgcenv.cf` in the `$OWHOME/conf` directory. Set the variable with the following command:

```
export OW_GDL_WIZARD_MEMORY_LIMIT 4096m
```

### **Change the Security Context for SELinux (64-bit RHEL 5 Servers)**

Perform this procedure if instructed to do so via a *Red Hat 5 specific* screen at the end of the OpenWorks® installation. It is specific to RHEL 5 servers that have security-enhanced Linux (SELinux) enabled for controlling access to system resources. (To check whether

SELINUX is enabled, as root execute the sestatus command in a terminal window.)

1. As root, set the `$OWHOME` environment variable to the location of the home directory of the OpenWorks® installation.
2. Run the `root.sh` script:

```
sh $OWHOME/bin/root.sh
```

## **Update Linux LAM Server Information in .lgclogin**

To ensure the license server information is updated for all users in succeeding steps, edit the `.lgclogin` file located in `$OWHOME/templates`.

Open `.lgclogin` in a text editor and change the line:

```
# setenv LM_LICENSE_FILE __LM_LICENSE_FILE_Is_Not_Set__
```

to, for example:

```
setenv LM_LICENSE_FILE 2014@lamhost.company.com
```

substituting appropriate values for the TCP port number (2014 in the example above) and the machine name (`lamhost.company.com` in the example above) for the port number used by the LAM server on the host where the server is running.

## **Create Local Users**

Skip this section if you do not need to create a local user.

1. As root, launch `$OWHOME/bin/lgcuser`.
2. Press Return.
3. Select Create User (#2) and follow the instructions on the screen.

Repeat the steps for each local user.

## Update Users

Perform the following procedure if the local user exists or you need to update a network user.

1. As root, launch `$OWHOME/bin/lgcuser`.
2. Select Update User (#4) and follow the instructions on the screen.

## Grant Database Access to the OpenWorks® User

The OpenWorks® software now uses the Oracle Secure Enterprise Password Store (Oracle wallet) to store passwords to the database and to handle the security of the passwords.

A user of Release 5000.x.x.x of the OpenWorks® software is now associated with both an operating system (OS) user and an Oracle internally identified user. The Oracle user will have the same name as the OS user, but will now be required to provide a user name and a password to access the OpenWorks® database. Users can now change their Oracle password from the Command Menu. For detailed information and procedures to manage project databases and access, refer to the *OpenWorks® Online Help* (`$OWHOME/docs/onlinehelp.htm`).

For the purposes of installation however, the steps to grant database access to the OpenWorks® user are provided here.

### Modify Database Users utility

The Modify Database Users utility in this procedure replaces the orauser utility from previous releases of the OpenWorks® software.

1. Log in as an OpenWorks® user.
2. Launch the Modify Database Users utility:
  - Launch the OpenWorks® Command Menu:  

```
$OWHOME/bin/startow -i $$
```
  - Select **Project > Modify Database Users**.
3. If prompted, select a district to get to the correct SID.

4. In the DBA Logon window
  - In User Name, enter the name of a database administrator (DBA) who has sufficient privileges to allow users to access the OpenWorks® database. For example, the SYSTEM user (one of the internal Oracle database administrators) with SYSDBA privileges is such a user.
  - In Password, enter the DBA's password.
  - Click Login.

If the correct credentials are entered, the Database Users window opens. If the Database Users window does not display, the Login Failed dialog displays asking you to try to log in again. Click OK to reassert the DBA Logon dialog. The login process allows three login attempts. After three attempts, you must repeat step 2 to try to log in again.

5. In the Database Users window
  - Enter the OpenWorks® user name and password in the User Details area.
  - Check OW\_ADMIN if the user will be allowed to create and delete projects and create, change, or delete tables in a project or the OWSYS schema. The default state of the box is checked.
  - Check only OWSYS\_ADMIN if the user will be allowed to alter only the OWSYS schema in the OpenWorks® database. The default state of the box is unchecked.

**Additional information**

For more information about OW\_ADMIN and OWSYS\_ADMIN, see **Project Management > Project Administration > OpenWorks Security** in the *OpenWorks® Online Help* (*OpenWorksHome/docs/onlinehelp.htm*).

- Click **Add**.
6. Close the Database Users dialog.

## ***Understand and Configure Districts***

Districts allow a company to break up large lists of projects, and allow the company to separate data by business unit for better data security or disk ownership.

Support for districts has become a part of the framework of the OpenWorks® software. In an installation of the OpenWorks® software, a company can decide whether it will implement districts or not.

To implement districts, the `district.dat` configuration file must be configured with the name of each district. The `district.dat` file also contains the directory name for configuration files that define storage locations for data not stored in the database. These configuration files are `dir.dat` and `owdir.dat`, for seismic data files and other OpenWorks® files, respectively. The default location for these configuration files is `$OWHOME/conf`.

Utilities, such as Project Administration and Project Status Tool, support districts in their interfaces. For example, when a user of the OpenWorks® software creates a new project in Project Administration, part of the project configuration includes selecting the district to which it will belong.

In a new OpenWorks® installation, when the district option “Create a `district.dat` from `TNSNAMES.ora`” was selected, a valid district was created for each SID. The file, `district.dat`, will have a default directory defined for each of the SIDs that are defined in `tnsnames.ora`. You will need to update these directories before running an application of the OpenWorks® software.

The OpenWorks® installation option “Create empty `district.dat`” requires that you configure `district.dat` before you can run the OpenWorks® software. The default location of the `district.dat` file is `$OWHOME/conf`. You can change the default location by adding the environment variable `OW_CONF_DIR` to the `.lgclogin` file. The default location of `OW_CONF_DIR` is `$OWHOME/conf`.

The names of the OpenWorks® SIDs must be in all capital letters in `district.dat`. See **Project Management > Districts** in the *OpenWorks® Online Help* ([OpenWorksHome/docs/onlinehelp.htm](http://OpenWorksHome/docs/onlinehelp.htm)) for detailed procedures to perform district configuration tasks.



## ***Manage the Location of OpenWorks® System Files***

System files are files containing well and lithologic symbols and files describing file formats for importing or exporting data.

System files are independent of projects and of districts. The location of the following system directories do not change when changing a district: OW\_SYS\_DATA, owioformats, and owsymbols.

You can change the location of each of the directories by setting an environment variable. The OW\_SYS\_DATA directory is now located by the value in the OW\_SYSDATA\_DIR environment variable. As a default, this variable is set in lgcenv.cf located in OpenWorksHome/conf; however, the variable can be set in a user's initialization script or set separately in the user's environment. The environment variables for the location of the format files (OWIOFORMATS environment variable) and the well and lithologic symbols (OWSYMBOLDIR environment variable) can be set in a user's environment too.

## ***Manage the Location of OpenWorks® Project Files***

OpenWorks® project files are external files (not in the database) that are project specific. These may be files created by certain OpenWorks® applications or applications that use the OpenWorks® and seismic development kits.

Should you need to change where these files are stored in the future, you can edit the owdir.dat file. The location of owdir.dat is determined by the district.dat configuration file. A district must have an owdir.dat, and each district in an OpenWorks® instance can have a unique version of owdir.dat. Before editing, make sure you locate the correct owdir.dat that is associated with the district where your project is located.

## ***Manage the Location of Seismic Data Files (dir.dat Configuration File)***

The dir.dat configuration file is an ASCII text file that lists the file systems searched for seismic data stored as files. This file also describes where applications create or from where applications retrieve seismic data stored in files.

Applications look for dir.dat based on the district.dat configuration file. By default, district.dat is in OpenWorksHome/conf, but the location can be changed by setting the OW\_CONF\_DIR environment variable.

For Release 5000.x, the format of the dir.dat file has changed from previous versions. If dir.dat has not been updated for Release 5000.x, the software will recognize this and create a converted version of the file in the program's memory. However, it is recommended that you update R2003 dir.dat files to the new format.

The dir.dat file is composed of one or more lines. The lines have the format

```
RootFileSystemPath filetype1 filetype2 . . .filetypen
```

Where

- *RootFileSystemPath* is a file system where seismic data files are stored
- *filetype1..filetypen* are one of the following zero or more extensions of seismic data files or the attribute "OTHER\_FILES"
  - Zero extensions: OpenWorks® applications will not create files in a file system with no attributes; however, an application can read or modify files in the file system, depending on the permissions of the user running the application.
  - Extensions: If the attribute is a seismic data file extension (i.e., .3dv, 3dh, etc.), files with that extension can be created in the file system. If the same extension is applied to more than one file system, then new files with that extension are created in the file system with the most space.
  - OTHER\_FILES: designates a file system where all types of files, except those not explicitly enumerated as attributes for another file system, can be created, read, and modified.

**OTHER\_FILES attribute required to write data**

At least one file system in dir.dat must have the OTHER\_FILES attribute for data not explicitly assigned to another file system to be written.

You can also define variables within dir.dat, where each variable represents a group of extensions.

An example dir.dat is shown below. On the left, extensions attributes are explicitly stated for each file system. On the right, variables have been defined for groups of file systems. Both dir.dat indicate identical storage locations for the seismic data files.

Example dir.dat with explicit extension attributes	Example dir.dat with variables defined (# denotes the variable definition)
/ua 3dv 3dh cd bri cmp OTHER_FILES	# define 3d_seismic 3dv 3dh cd bri cmp
/ub hzd hts	#define 3d_horizons hzd hts
/uc 3dv 3dh cd bri cmp	/ua 3d_seismic OTHER_FILES
/ud 3dv 3dh cd bri cmp hzd hts	/ub 3d_horizons
	/uc 3d_seismic
	/ud 3d_seismic 3d_horizons

The dir.dat files above indicate storage of 3d seismic data files in file systems /ua, /uc, and /ud. File systems for horizon data files are /ub, and /ud. Storage for any other files is in file system /ua.

Refer to the dir.dat topic in the OpenWorks® online help for a complete discussion of the dir.dat configuration file.

### ***Run the owsetup Script on Linux Server***

The owsetup script performs a number of configuration steps such as setting permissions and adding startup commands so that OpenWorks® will run properly.

1. As root, launch:

```
$OWHOME/install/owsetup -o $OWHOME
```

2. When the OpenWorks® Set Up utility opens, select option 3.

### ***Set Oracle to Start Database at Boot Time***

To have the Oracle database start at boot time, set the entry in the /etc/oratab parameter file that is used by the dbstart utility to start the Oracle database. The entry looks like:

```
SID:ORACLE_HOME_AUTO
```

Where AUTO is the setting for starting the Oracle database at boot time. In the example below:

```
SID: owR5000/oracle/OraHome1:N
```

changing the AUTO setting from N to Y and saving the file will result in the database starting at boot time.

## ***Turn Off AutoExtend***

Oracle's AutoExtend feature is turned on by default to extend system and project tables spaces. If you would like to disable the AutoExtend feature for the OpenWorks® project tablespaces, edit the setting for the `OW_AUTOEXTEND_FLAG` variable in `$OWHOME/lgcenv.cf` or `$OW_CONF_DIR/lgcenv.cf` .

By default the setting is:

```
OW_AUTOEXTEND_FLAG    YES
```

To turn off AutoExtend, set the variable as:

```
OW_AUTOEXTEND_FLAG    NO
```

---

## Starting OpenWorks®

---

The `startow` command allows you to start the OpenWorks® Command Menu. To use the OpenWorks® applications, you must have a current license and access to the OpenWorks® database instance.

To start the OpenWorks® Command Menu, open a terminal window and enter:

```
$OWHOME/bin/startow
```

Creates an OpenWorks session with an instance ID with the default ID.

or

```
$OWHOME/bin/startow -i $$
```

Creates an OpenWorks session with an instance ID equal to the shell process ID.

or

```
$OWHOME/bin/startow -i NumValue
```

Where *NumValue* is a positive number with no more than nine digits, and creates a with an instance ID of *NumValue*.



# **OpenWorks® Schemas on an Existing Oracle Database**

## **Scope**

---

The procedures in this section cover installing the OpenWorks® schemas on a server with an existing Oracle database. The procedure applies to all operating systems.

This procedure assumes no prior installation of the OpenWorks® schemas on this server.

## **Prerequisite: For OpenWorks Schemas on an Oracle 11g Database**

---

In order for the OpenWorks database instance to function correctly on an Oracle 11g database, the `COMPATIBLE` initialization parameter of the database must have been set to `11.1.0.0.0` before installing the OpenWorks schemas.

**WARNING:** If your 11g database has a value other than `11.1.0.0.0` for the `COMPATIBLE` initialization parameter, some projects may not restore properly.

## Install OpenWorks® Schemas on an Existing Oracle Database

---

1. Log on as the Oracle user.
2. Create a directory for the `OW_HOME_DIR` environment variable. The directory needs to be unique for the local user because the Oracle database software will store the Oracle wallet credentials in this location.
3. Set the `OW_HOME_DIR` environment variable to the path of the directory of this user.

For Windows, this environment variable is a *system* environment variable. In Windows, do the following:

- From the Control Panel, select **System And Security > System**, and then **Advanced System Settings**. (For Windows XP or Windows Server 2003 operating systems, select **System**.) The System Properties dialog displays.
  - In the Advanced tab of the System Properties dialog, click the **Environment Variables** button. Use the System Variables (lower) pane of the dialog box to set the system variable and then close the dialogs.
4. Download the OpenWorks® Database installation file from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).
  5. Extract the ZIP file to a local directory.

These files have names of a form similar to the following:  
`OWDBVersionInfo.exe` or `OWDBVersionInfo.bin`. For example:

```
OWDB_5000_8_1.bin
```

6. On Linux 64-bit, verify that Oracle lib32 is in the `LD_LIBRARY_PATH`:

```
echo LD_LIBRARY_PATH ${ORACLE_HOME} /  
lib32:${LD_LIBRARY_PATH}
```



7. Make sure the Oracle Listener is running. For example:

```
$ORACLE_HOME/bin/lsnrctl status
```

8. Run the installation program.
9. In the Introduction pane, click **Next**. The Select Type Of Install pane displays.
10. In the Select Type Of Install pane, select **Create Additional OpenWorks Instance on Existing Oracle Install**.
11. Click **Next**. The Choose Install Folder pane displays.
12. In the Choose Install Folder pane, enter the directory where you want to install the OpenWorks® database files.

#### **Single Versus Multiple Locations for the Files of OpenWorks® Database Instances**

If you have multiple OpenWorks database instances on an Oracle database, all OpenWorks database instances can use the same location for the database files.

If the OpenWorks database instances have different locations:

- Differences can arise between the versions of the scripts in the various directories for the OpenWorks database instances.
- If the same Oracle user administers each database instance, the `OWDBSETUP_DIR` environment variable must be changed to the location for that database instance, when the Oracle user administers the database instance. The Database Administration tool of the OpenWorks software uses the path in the environment variable to find its SQL scripts.

13. Click **Next**. The Installation Options pane displays.
14. In the Installation Options pane, select **OpenWorks® Schemas**.
15. Click **Next**. The Get Oracle Information pane displays.
16. In the Get Oracle Information pane:
  - Verify that the default Oracle Home directory is where you installed Oracle.

- In **Oracle SID**, accept the machine name as the Oracle system identifier, or enter another identifier. The identifier must be unique on the Oracle database. The identifier, or database instance name, should contain a maximum of eight alphanumeric characters and the alphabetical characters should be all capital letters. The first character must be alphabetical. Do not use any special characters.
- In **Oracle SID Alias**, accept the default, which is usually the same as the Oracle SID name. This value is the net service name, and it can be different from the SID name.
- Click **Next**. The Schemas Directory pane displays.

17. In the Schemas Directory pane:

- Select the directory where you want to create OpenWorks® schemas. The directory should be different from the location for the schemas of any other database instance.
- Click **Next**. The Projects Directories pane displays

18. In the Projects Directories pane:

- Specify the directory where you want to create project files. You must have at least one project directory. You can create additional directories in order to distribute the files over a number of file systems.
- If desired, enter additional directories for project database files.
- Click **Next**. The DB Admin Info pane displays.

19. In the DB Admin Info pane:

Pre-Oracle might have configured these values for the Oracle user in the account's initialization file (.login). This configuration allows the Oracle user to run the Database Administration tool in the OpenWorks® software.

- In **OpenWorks Home**, enter path for the home of the OpenWorks® software. For example, a typical path might be:

`/d01/Landmark/OpenWorks`

- In **License Server**, enter the connection information (the TCP port and host name) of the Landmark® Application Manager (LAM) for the `LM_LICENSE_FILE` environment variable. If the connection information is not known at this time, it can be set later in the initialization files of the Oracle user.

LAM is the license server for all software from Landmark, and the server should have a license file that contains a current license for the software you will use, in this case, the OpenWorks® software.

This configuration sets the `LM_LICENSE_FILE` environment variable with a value with the following form:

*TCP\_PortNum@MachineName*

where *TCP\_PortNum* is a TCP port number (2013 is the default), and the *MachineName* is the IP address or full host name of the machine where the LAM server is running.

For example, the value may be set like the following:

`2013@lamhost.company.com`

*or*

`2013@123.123.123.123`

- Click **Next**. The Pre-installation Summary pane displays.

20. In the Pre-Installation Summary pane:

- Verify that all settings are correct.
- If necessary, click **Previous** and correct settings.
- If all settings are correct, click **Install**.

21. In the OpenWorks® Schemas Creation Output pane:

- Check for Oracle error messages in the log file.

Some Oracle errors are acceptable, for example, errors that occur because of drop user statements and `IMP_FULL_DATABASE`, `EXP_FULL_DATABASE` role conflicts.

- Click **Next**.
  - Click **Next**. The Database Initialization Parameters Check dialog displays.
22. In the Database Initialization Parameters Check dialog:
- Follow the instructions to check the initialization parameters `recyclebin` (should be `off`) and `sec_case_sensitive_logon` (should be `FALSE`), and if need be, to set them for `init.ora`.
  - Click **OK**. The Modify `.login` pane displays.
23. In the Modify `.login` pane, click **Next**. The Install Complete pane displays.

A new initialization file is created with a name like `.login_mod` or `.bash_profile_mod`. This file contains the settings for various environment variables. These variables must be set into the Oracle user's initialization file in order for the user to be able to run the Database Administration tool of the OpenWorks® software.

A log (`Landmark_OpenWorks_Database_InstallLog.log`) for the installation is stored in the same directory as the location selected for the database in the Choose Install Folder pane.

24. In the Install Complete screen, click **Done**.
25. Check the initialization parameter with a script in the Database Administration tool in the OpenWorks® software.
- For example, the following commands to check the parameter:

```
show parameters recyclebin
show parameters sec_case_sensitive_logon
```

- For example, if necessary, the following commands set the following initialization parameter to `off`:

```
alter system set recyclebin=off scope=spfile;

alter system set sec_case_sensitive_logon=false
scope=spfile;
```

After installing the OpenWorks® database and schemas, you can install the OpenWorks® software on the server and the clients. See:

- Windows Procedures: “Install the OpenWorks® Software” on page 26.
- Linux Procedures: “Install the OpenWorks® Software” on page 72.



# ***Upgrade the OpenWorks® Software***

This chapter contains information about upgrading an installation of the OpenWorks® software Release 5000.x.x.x to the current version of the OpenWorks® software.

You can use the procedures in this section to upgrade the following versions:

- 5000.0.2.5
- 5000.0.3.0
- 5000.0.3.5
- 5000.8.0.0
- 5000.8.0.1

For releases before 5000.0.2.5, you will need to upgrade to a 5000.0.2.x version before upgrading to this version, or perform a new installation for this version and then transfer your data to the new installation.

The installation process has the following parts:

- “Install the New Version of the OpenWorks® Software” on page 96
- “Upgrade the Oracle Software” on page 98
- “Remove the Oracle Wallet Directory and its Files” on page 100
- “Upgrade the Projects in the OpenWorks® Database” on page 101
- Perform Post-installation Steps
  - “Linux Post-installation Steps” on page 103
  - “Windows: Post-installation Steps” on page 104

---

## Install the New Version of the OpenWorks® Software

---

If you are installing an update over an existing 5000.x.x.x installation, the installation program will not prompt you for `district.dat`, the OpenWorks® project directories for files external to the OpenWorks® instance, and the `ORACLE_HOME` configurations. These configurations will be saved during the update process.

**WARNING: Do Not Use the Database Installation Program on an Existing OpenWorks® Database Instance**

Do **not** attempt to upgrade an existing OpenWorks® database instance with a new release of an OpenWorks® database installation program. Such an action will destroy vital information in the OpenWorks® database.

In the Landmark® Software Manager, a release database installation program has a title of the form:

*OpenWorks Database VersionNum OS\_Name*  
*OpenWorks Database VersionNum Update OS\_Name*

And its file name has a form similar to the following:

*OWDBVersionNum.Ext*  
*OWDBVersionNumUpdate.Ext*

When you upgrade the OpenWorks® software, and then upgrade the projects in the database (as described in this section), the database instance will be upgraded.

To patch an existing installation of the OpenWorks® and GeoDataLoad™ software, do the following:

1. Backup all of your OpenWorks® projects.

This is recommended since the project upgrade script will be run.

2. Make sure all OpenWorks® sessions and launchers are closed.

If you do not close out all of the running OpenWorks® processes, you may receive “file busy” messages in the installation log file. This will indicate that the file was not overwritten, and you will need to stop the process that is running and install again.

3. Log in as user with system administrator privileges.



4. For Linux, stop NetD as follows. In a terminal window, type:

```
ps -ef | grep NetD
```

This determines the owner. Run the command below as the owner.

```
$OWHOME/bin/stop_netd
```

5. Download the OpenWorks® software from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).
6. Extract the ZIP file to a local directory.
7. Set the environment variable (Linux, \$OWHOME; Windows, system-level variable, %OWHOME%).
8. Install the update for OpenWorks® and GeoDataLoad™ software by running the executable (.bin file) in Linux or the installation program (.exe file) in Windows.
9. Upgrade existing projects. See the “Upgrade the Projects in the OpenWorks® Database” on page 101.

## Upgrade the Oracle Software

---

This version of the OpenWorks® software supports version 10.2.0.5 of the Oracle server and client, and supports version 11.2.0.2 of the Oracle server and client.

- **Staying with Oracle 10g:** If the version of the Oracle software is less than version 10.2.0.5, upgrade it to version 10.2.0.5. For upgrade instructions, see README.htm or README.html located among the patch installation files from Oracle.

Specifically:

- **Linux:** See the section, “10.6.2 Manually Upgrading a Release 10.2 Database.”
- **Windows:** See the section, “10.5.2 Manually Upgrading a Release 10.2 Database.”

This process allows you to upgrade a 10.2.0.x database to version 10.2.0.5.

### Manual versus Database Upgrade Assistant

The section, “10.5.1 Upgrading a Release 10.2 Database using Oracle Database Upgrade Assistant,” or “10.6.1 Upgrading a Release 10.2 Database using Oracle Database Upgrade Assistant”, of README.htm or README.html discusses upgrading the database using Oracle Database Upgrade Assistant (DBUA).

DBUA may produce mixed results in this upgrade.

The manual process is recommended.

For more information, see the Oracle documentation, specifically the *Oracle Database Upgrade Guide 10g Release 2 (10.2)* (document B14238-02).

- **Upgrading to Oracle 11g (11.2.0.2):** If your site currently uses 10g, and the site will use version 11.2.0.2, see “Upgrade the Oracle Software: 10g to 11g” on page 105 for upgrading the Oracle software to 11g.

**Do Not Mix Oracle Versions**

When the OpenWorks® server uses the Oracle 11g database server, only Oracle 11g clients should access the database server.

Likewise, when the OpenWorks® server uses the Oracle 10g database server, only Oracle 10g clients should access the database server.

---

## Remove the Oracle Wallet Directory and its Files

---

In version 5000.0.3.0 of the OpenWorks software, changes were made to the storage of credentials in the Oracle wallet for a user. Some applications created with libraries from the previous versions of the OpenWorks software, such as version 5000.0.2.x, may have trouble accessing the information in the Oracle wallet.

If you are upgrading from version 5000.0.2.x of the software, the Oracle wallet for a user must be deleted. After the first access of the database, when the user provides login credentials, the Oracle wallet for the user will be recreated, and old and new applications will be able to access the OpenWorks database instance as before.

### ***Deleting a User's Wallet***

If you are upgrading from 5000.0.2.x, remove the Oracle wallet of a user of the OpenWorks database instance. The removal of the wallet is accomplished by deleting the user's `wallet` directory and its contents.

Do the following to delete the wallet:

1. Navigate to the location of the `wallet` directory for the user.

**Linux:** the directory is normally contained in the user's home directory (pointed to by the `$HOME` environment variable).

**Windows:** the directory is in the user directory pointed to by the `%OW_Home_Dir%` user environment variable. For example:

```
c:\users\UserName
```

2. Delete the `wallet` directory.

---

## Upgrade the Projects in the OpenWorks® Database

---

After installing the new version of the OpenWorks® software, you must upgrade any 5000.x.x.x projects in the database to the current version.

### ***Upgrading a Project Database Using the Command Line***

To upgrade one project database and its interpretation projects, execute the following script in a terminal window:

```
$OWHOME/bin/OWRuntimeLauncher.sh
RunPatchSqlScripts OW_SID ProjectDBName
-logdir LogDir
```

where *OW\_SID* is the system identifier of the OpenWorks® database where the project database is located.

*ProjectDBName* is the name of the project database that needs to be upgraded.

*LogDir* is the location where the script should store its logs. The parameters `-logdir LogDir` are optional.

After the projects have been upgraded, follow the post-installation steps in the following sections.

### ***Upgrading All Project Databases Using the Command Line***

To upgrade all projects in an OpenWorks® database, run the script with the *ProjectDBName* argument set to the `ALL` keyword. For example (substitute *OW5000* with the name of the OpenWorks instance, or SID):

- **Windows:** `%owhome%\bin\OWRuntimeLauncher.bat  
RunPatchSqlScripts OW5000 ALL  
-logdir C:\userhome\LOGS`
- **Linux:** `$OWHOME/bin/OWRuntimeLauncher.sh  
RunPatchSqlScripts OW5000 ALL  
-logdir /d01/userhome/logs`

After the projects have been upgraded, follow the post-installation steps in the following sections.

## ***Upgrading Projects With Project Administration***

Project Administration allows you to upgrade project databases of version 5000.0.3.5 or older. After the OpenWorks® software has been updated, you need to update all the projects already in the database.

To upgrade multiple project databases:

1. Right-click the name of a project database that should be upgraded to the current version of the OpenWorks® software. The pop-up menu displays
2. Select the **Upgrade** option in the menu. The Project Upgrade dialog displays.
3. In the list of project databases, use Ctrl+Click to select a discontinuous set of project databases, or Shift+Click to select a contiguous set of project databases, or check the Select All box to select all project databases in the list.
4. Click **Start**.
5. After the projects have been upgraded, follow the post-installation steps in the following sections.

---

## Linux Post-installation Steps

---

### *Updating Users*

After upgrading the OpenWorks® software, you should update the user profile of the users of the database instance. This can be done by using the `lgcuser` utility.

Perform the following procedure if a local user of the database instance should be updated (whether a local or network user).

1. As root, launch `$OWHOME/bin/lgcuser`.
2. Press **Return**.
3. Select `Update User (#4)` and follow the instructions on the screen.

The user can now run the OpenWorks® software with the new profile.


---

## Windows: Post-installation Steps

---

On Windows, if services from GeoGraphix® software are running on the machine, you may need to restart them. The services you may need to restart are:

- GGX Database Service
- GGX List Service
- GGX Network Access Service

For example, open the Services control panel (**Start >Control Panel >Administrative Tools > Services**), select the name of a service in the right pane, and click the Restart Service (  ) toolbar button.



# ***Upgrade the Oracle Software: 10g to 11g***

This chapter contains information about upgrading an installation of the Oracle software from version 10g (10.2.0.5) to 11g (11.2.0.2). This procedure uses the Database Administration tool in the OpenWorks software.

- “Assumptions for the Database Upgrade Procedure” on page 106
- “Linux: Oracle Database Upgrade” on page 107
- “Linux: Upgrade Oracle Client” on page 119
- “Windows: Oracle Database Upgrade” on page 125
- “Windows: Upgrade Oracle Client” on page 133

Some older Landmark applications may have problems using the Oracle 11g software. For more information about configurations that enable those applications to use the upgraded OpenWorks software and database instance, see:

“Oracle 11g Compatibility with Some Applications” on page 136

### **Do Not Mix Oracle Versions**

If you upgrade the server software, upgrade the client software.

When the OpenWorks® server uses the Oracle 11g database server, only Oracle 11g clients should access the database server.

Likewise, when the OpenWorks® server uses the Oracle 10g database server, only Oracle 10g clients should access the database server.

---

## Assumptions for the Database Upgrade Procedure

---

These upgrade procedures are based upon the following assumptions:

- Version 5000.8.1.0 of the OpenWorks® software is installed.
- The user performing the upgrade must be the Oracle user.
- The same Oracle user must manage both the old Oracle installation and the new installation.
- Since the Database Administration tool is a part of the OpenWorks software, the environment of the Oracle user must have the following environment variables set:
  - **PATH:** the PATH environment variable should have `$OWHOME/bin` added to it in Linux, or `%owhome%\bin` in Windows.
  - **OpenWorks Home:** the `OWHOME` environment variable must be set in the environment of the user (Oracle user) performing the upgrade.
  - **License For the OpenWorks Software:** the `LM_LICENSE_FILE` environment variable must be set in the environment of the user (Oracle user) performing the upgrade.
  - **Directory of the OpenWorks Database Setup Files:** the `OWDBSETUP_DIR` environment variable must be set with the directory location where the `owdbsetup.sh` file resides. Typically, the default location:

*OracleUserHome/Landmark/OpenWorksDatabase*

---

## Linux: Oracle Database Upgrade

---

This procedure upgrades an existing Oracle 10g (10.2.0.5) database to Oracle 11g (11.2.0.2).

To upgrade an existing Oracle 10g database to Oracle 11g, do the following:

- “Check Prerequisites” on page 107
- “Install Oracle 11g in Linux” on page 111
- “Run the Database Administration Tool in Linux” on page 115
- “Update Oracle User Environment” on page 118

### Check Prerequisites

Do the following before upgrading the Oracle software.

1. Create a cold backup of the Oracle 10g database.
1. Check the following lines in `/etc/security/limits.conf`:

```
OracleUserName soft nproc 2047
OracleUserName hard nproc 16384
OracleUserName soft nofile 1024
OracleUserName hard nofile 65536
OracleUserName hard stack 10240
```

2. Check the kernel parameters.

```
more /etc/sysctl.conf
```

They should be the following:

```
kernel.shmmax = 2147483648
```

*The shmmax parameter should be a value in bytes equal to 4 GB - 1 byte or equal to half the size of physical memory, whichever is lower*

```
kernel.shmall = 2097152
kernel.sem = 250 32000 100 128
kernel.shmmni = 4096
fs.file-max = 6815744
fs.aio-max-nr = 1048576
```

*The aio-max-nr parameter limits concurrent outstanding requests and should be set to avoid I/O subsystem failures.*

```
net.ipv4.ip_local_port_range = 1024 65500
net.core.rmem_default = 4194304
net.core.rmem_max = 4194304
net.core.wmem_default = 1048567
net.core.wmem_max = 1048576
```

3. To correct a kernel parameter, do the following:

- Logon as root.
- Edit `sysctl.conf` located in the `/etc` directory. For example:

```
vi /etc/sysctl.conf
```

- Modify the values for the parameter. For most parameters the values given above are minimal values.
- Save the file.
- To load the new parameters, run following command:

```
sysctl -p /etc/sysctl.conf
```

- To check that the correct, new parameters are loaded, run the following command:

```
/sbin/sysctl -a
```

- Log out as root.

4. In `limits.conf` located in the `/etc/security` directory, increase the limits of the maximum open file descriptors for the Oracle owner. Add the following line to the file as root:

```
@dba - nofile 65536
```

5. Run the command to list RPMs.

```
rpm -q --qf '%{NAME}-%{VERSION}-%{RELEASE} (%{ARCH})\n' binutils compat-db
compat-libf2c-34 elfutils-libelf elfutils-libelf-devel compat-libstdc++-33-
3.2.3 control-center gcc gcc-c++ glibc glibc-common glibc-devel glibc-
```

```
headers ksh libaio libaio-devel libgcc libstdc++ libstdc++-devel make
numactl-devel sysstat libaio unixODBC unixODBC-devel
```

It is important to have these 64-bit RPMs installed. The above command will list the architecture of each binary package. You will see that some RPMs are installed twice when you run this command (32-bit and 64-bit).

The command should result in the list of required packages shown below. For Oracle 11g (11.2.0.2), make sure the following packages are installed. The version of the package should be the version given below or later.

RHEL 4 x86_64	RHEL 5 x86_64 (64-bit)
binutils-2.15.92.0.2	binutils-2.17.50.0.6
compat-libstdc++-33-3.2.3	compat-libf2c-34-3.4.6-4 (RHEL version 5.6)
compat-libstdc++-33-3.2.3 (32 bit)	compat-libf2c-34-3.4.6-4.1.i386 (RHEL version 5.7)
elfutils-libelf-0.97	compat-libstdc++-33-3.2.3
elfutils-libelf-devel-0.97	compat-libstdc++-33-3.2.3 (32-bit)
expat-1.95.7	elfutils-libelf-0.125
gcc-3.4.6	elfutils-libelf-devel-0.125
gcc-c++-3.4.6	elfutils-libelf-devel-0.137 (RHEL version 5.6 or 5.7)
glibc-2.3.4-2.41	gcc-4.1.2
glibc-2.3.4-2.41 (32 bit)	gcc-c++-4.1.2
glibc-common-2.3.4	glibc-2.5-24
glibc-devel-2.3.4	glibc-2.5-24 (32-bit)
glibc-headers-2.3.4	glibc-common-2.5
libaio-0.3.105	glibc-devel-2.5
libaio-0.3.105 (32 bit)	glibc-devel-2.5 (32-bit)
libaio-devel-0.3.105	glibc-headers-2.5
libaio-devel-0.3.105 (32 bit)	ksh-20060214
libgcc-3.4.6	libaio-0.3.106
libgcc-3.4.6 (32-bit)	libaio-0.3.106 (32-bit)
libstdc++-3.4.6	libaio-devel-0.3.106
libstdc++-3.4.6 (32 bit)	libaio-devel-0.3.106 (32-bit)
libstdc++-devel 3.4.6	libgcc-4.1.2
make-3.80	libgcc-4.1.2 (32-bit)
numactl-0.6.4.x86_64	libstdc++-4.1.2
pdksh-5.2.14	libstdc++-4.1.2 (32-bit)
sysstat-5.0.5	libstdc++-devel 4.1.2

RHEL 4 x86_64	RHEL 5 x86_64 (64-bit)
unixODBC-2.2.11	make-3.81
unixODBC-2.2.11 (32 bit)	numactl-devel-0.9.8.x86_64
unixODBC-devel-2.2.11	sysstat-7.0.2
unixODBC-devel-2.2.11 (32 bit)	unixODBC-2.2.11
	unixODBC-2.2.11 (32-bit)
	unixODBC-devel-2.2.11
	unixODBC-devel-2.2.11 (32-bit)

6. If not set in the environment, set the `OWHOME` (OpenWorks home) and the `LM_LICENSE_FILE` environment variables in the initialization file (for example, `.login`) for the Oracle user.

For the `OWHOME` variable, for example, if the OpenWorks software were installed in the `/Landmark/OpenWorks` directory, the file would have a setting like the following:

```
setenv OWHOME /Landmark/OpenWorks
```

For the `LM_LICENSE_FILE` environment variable, the form is the following:

```
setenv LM_LICENSE_FILE TCP_PortNum@MachineName
```

where `TCP_PortNum` is a TCP port number (2013 is the default), and the `MachineName` is the IP address or full host name of the machine where the LAM server is running.

For example, the environment variable may be set to a value like the following:

```
2013@lamhost.company.com
```

*or*

```
2013@123.123.123.123
```

7. Start Oracle 10.2.0.5 database instance.
8. Start the Oracle 10.2.0.5 listener.

## Install Oracle 11g in Linux

To install the Oracle 11g software, do the following:

1. Logon as Oracle owner.

### Oracle 10g and 11g Must Have the Same Oracle Owner

The Oracle owner must be the same in both installation, 10g and 11g. If the installations have different owners, you will not be able to upgrade your OpenWorks database instance from 10g to 11g.

2. If you are logged in as a temporary or substitute user (for example, used the `su` command), set the `DISPLAY` variable. For example:

```
setenv DISPLAY HostName:0.0
```

3. Download OpenWorks database instance installation program (for example, `OWDBSetup_linux_with_Oracle.zip`) for the operating system from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>) to a directory on the system.

*Note:* The ZIP file is around 2.5 GB, and when it is expanded it takes about another 2.5 GB.

4. Extract the ZIP file into a directory.
5. In the directory where the file was extracted, run the installer command:

```
./OWDB_5000_8_1.bin
```

The Introduction pane of the OpenWorks Database dialog box displays.

6. Click **Next**. The Select Type Of Install pane displays in the dialog.
7. In the Select Type Of Install pane:
  - Select **Install Oracle media only to support recovery or upgrade**.
  - Click **Next**. The Choose Install Folder pane displays.

8. In the Choose Install Folder pane:
  - Enter the directory where you want to install the files of the OpenWorks® database instance.
  - Click **Next**. The Get Oracle Information pane displays.
9. In the Get Oracle Information pane:
  - In **Oracle Base**, enter a path for the Oracle base directory. For example:

```
/oracle/product
```

If you change the default path in the text box, you may need to change the setting of the `ORACLE_BASE` environment variable in the `.login` initialization file of the Oracle user. For example:

```
setenv ORACLE_BASE ${HOME}/product
```

- In **Oracle Home**, enter the path for Oracle software. For example:

```
/oracle/product/11.2.0/dbhome_1
```

If you change the default path in the text box, you may need to change the setting of the `ORACLE_HOME` environment variable in the `.login` initialization file of the Oracle user. For example:

```
setenv ORACLE_HOME ${ORACLE_BASE}/11.2.0/dbhome_1
```

- Click **Next**. The DB Admin Info pane displays.

10. In the DB Admin Info pane:

Pre-Oracle might have configured these values for the Oracle user in the account's initialization file (`.login`). This configuration allows the Oracle user to run the Database Administration tool in the OpenWorks® software.

- Enter path for the home of the OpenWorks® software. For example, a typical path might be:

```
/d01/Landmark/OpenWorks
```



- Enter the connection information (the TCP port and host name) of the Landmark® Application Manager (LAM) for the `LM_LICENSE_FILE` environment variable. If the connection information is not known at this time, it can be set later in the initialization files of the Oracle user.

LAM is the license server for all software from Landmark, and the server should have a license file that contains a current license for the software you will use, in this case, the OpenWorks® software.

This configuration sets the `LM_LICENSE_FILE` environment variable with a value with the following form:

*TCP\_PortNum@MachineName*

where *TCP\_PortNum* is a TCP port number (2013 is the default), and the *MachineName* is the IP address or full host name of the machine where the LAM server is running.

For example, the value may be set like the following:

`2013@lamhost.company.com`

*or*

`2013@123.123.123.123`

- Click **Next**. The Pre-installation Summary pane displays.

11. In the Pre-installation Summary pane:

- Verify that all settings are correct. If necessary, click **Previous** and correct settings.
- Click **Install** if all settings are correct. The Installing landmark OpenWorks Database pane displays.

After the database is installed, the Post Install Actions pane displays.

12. Follow the instructions in the Post Install Actions pane to execute the any scripts mentioned, such as `root.sh` or `orainstRoot.sh`.

- Open a terminal window on the same machine.

- Log on as root.
- Execute the root.sh and orainstRoot.sh scripts. Their locations are indicated in the Post Install Actions pane. The default path names are:

*OracleHome*/root.sh

The log for root.sh is stored in the *OracleHome*/install directory.

- Click **Next** in the Post Install Actions pane only after successfully executing the root.sh and orainstRoot.sh scripts.

After clicking Next, The SQLNET.ORA dialog box displays. The file, sqlnet.ora, is modified to include configurations for the Oracle wallet. A backup is made of the file and saved in the same directory. The file is located in:

*OracleHome*/network/admin/sqlnet.ora

- Click **OK** in the SQLNET.ORA dialog. The Modify .login pane displays.

A new initialization file is created with a name like .login\_mod or .bash\_profile\_mod. This file contains the settings for various environment variables, such as the OWDBSETUP\_DIR environment variable. These variables must be set in the Oracle user's initialization file in order for the user to be able to run the Database Administration tool of the OpenWorks® software.

13. In the Modify .login pane, click **Next**. The Install Complete pane displays.

A log (Landmark\_OpenWorks\_Database\_InstallLog.log) for the installation is stored in the same directory as the location selected for the database in the Choose Install Folder pane.

14. Click **Done**.

If there are any errors, additional windows will appear describing the errors.

**Acceptable Oracle error messages**

Some Oracle errors are acceptable; e.g., errors that occur because of the drop user statements and IMP\_FULL\_DATABASE, EXP\_FULL\_DATABASE role conflicts.

## ***Run the Database Administration Tool in Linux***

This procedure uses the Database Administration tool of the OpenWorks software to upgrade the database instance from Oracle 10g to 11g.

Do the following to upgrade the database instance:

1. Open a terminal window.
2. Start Database Administration by executing the `OWRuntimeLauncher.sh` script with the `DbAdmin` parameter. For example:

```
$OWHOME/bin/OWRuntimeLauncher.sh DbAdmin
```

The Database Administration window displays.

3. Select **Database > Upgrade**. The Upgrade Wizard dialog opens.

The default log directory is the user's home directory.

4. Click **Next**. The Options pane displays.
5. In the Options pane, do the following:
  - In **Oracle Instance**, specify the name of the system identifier (SID) of the OpenWorks database instance. This value is filled in with the setting of the `ORACLE_HOME` environment variable in environment of the Oracle user.

- In **Oracle 10 Home**, specify the path for Oracle home. For example:

```
/d01/ora10g/OraHome1
```

- In **Oracle 11 Home**, specify the path for Oracle home. for example:

```
/d01/ora11g/product/11.2.0/dbhome_1
```

- In **Log Directory**, if you want the log files in a location other than the default (the home directory of the Oracle user), specify a path.
- Click **Next**. The Move Files pane displays.

The Move Files pane contains a table with a column for paths to data files in the Oracle 10g database, and with a column listing a set of file names of the data files in a directory. A directory can have one or more data files.

6. In the Move Files pane, do the following:

- Select one or more locations of data files. During the selection, hold down the Shift key to select contiguous locations, or hold down the Ctrl key to select discontinuous locations.
- Click **Change New Directory Locations**. An Open dialog displays, allowing you to select a destination location for the files in the Oracle 11g environment.
- Select the directory for the data files.
- Click **Open**.
- Repeat the steps on this pane until you have selected a new destination for all the data files in the Oracle 10g environment.
- After all the Oracle 10g data files have a destination in the Oracle 11g environment, click **Next**. The Parameters pane displays.

7. In the Parameters pane, use the following guidelines:

- **Database Mode**: ArchiveLog mode archives redo logs before they are overwritten. This mode allows the database to be

backed up while the database is in an *inconsistent* state (or while the database is being accessed by users). NoArchiveLog mode allows redo logs for the database instance to be overwritten without archiving the old redo logs.



**NoArchiveLog Mode: Backups Require Database Shutdown**

With NoArchiveLog mode, a backup can only be performed when the database is in a *consistent* state.

For an Oracle database to be in a consistent state, it must be shutdown with the normal, immediate, or transactional parameter, and the restarted database must be backed up in a mode (such as the Mount mode), where the database is closed to access, except for certain database administrator (DBA) activities.

- **Schedule Database Backup:** If ArchiveLog is selected, the database will perform an automatic backup. If NoArchiveLog is selected, select Yes to allow the database to make automatic backups, or select No otherwise.

**WARNING:** As described for NoArchiveLog in Database Mode, the database must shutdown before the backup begins. Any connections to the database at the time of the shutdown will be disconnected.

- **Backup Time (  ):** Click the Backup Time button to display the Select Backup Time dialog and to set the time for automatic backups.
- **Number Of Days To Keep Backups:** Specify the number of days to keep database backups. The default is two.
- **Recovery Area Directory (  ):** Specify the location for recovery files (control files, redo logs, archived redo logs, flashback logs, and RMAN backups). The location can be a system directory or network location.
- **Recovery Area Maximum Size:** Specify the maximum size (or disk quota) of the recovery file area in units of gigabytes.

The amount of space can vary depending on the amount of data in the database instance, the size of data blocks, the number of changes to the data, the number of days in the retention policy

for backups and archive logs, and other configurations of the database.

Ideally, the area should be able to contain all data files in the database and all current backup files.

- **Memory Target:** Specify a minimum amount of memory in units of megabytes for the database instance to use. This value helps determine how much memory the instance will use and enables automatic memory management by the database. The database can increase it up to the maximum memory target. The amount should be more than 1024 MB (or 1 GB), but equal to or less than the maximum memory target.
  - **Maximum Memory Target:** Specify the maximum amount in units of megabytes that the database instance can use on the system. The amount should be more than 1024 MB (or 1 GB).
8. Click **Finish**. The Upgrade Wizard window closes, and the upgrade messages are displayed in the Upgrade *DatabaseInstance* tab in the Database Administration window.

The upgrade may take a long time, depending on the amount of data in the database instance. When finished, the wizard displays:

```
The upgrade is successfully completed.
```

## Update Oracle User Environment

After the installation of Oracle 11g and upgrading the existing database, the environment variables of the Oracle owner account must be updated to refer to the new Oracle installation. To update these parameters, do the following:

1. Modify the `ORACLE_BASE` and `ORACLE_HOME` variables in `.login` of Oracle owner to reflect the location of the Oracle 11g database.
2. Log out, and then login again as the Oracle owner.
3. In the 11g installation, add (or modify) the `ADR_BASE_LISTENER` parameter in `listener.ora`. It should refer to the new home of the 11g installation. For example:

```
ADR_BASE_LISTENER = /d01/ora10g/product/11.2.0/dbhome_1
```

## Linux: Upgrade Oracle Client

---

For client installations of the OpenWorks® software, you must also install version 11g of the Oracle client in a new directory from the installation directory for the 10g client, and then set the `ORACLE_HOME` environment variable to the directory of the 11g client.

### Prerequisites

The prerequisite for installing Oracle on the client running the RHEL operating systems is checking software packages (RPMs).

For RHEL 5, the required package versions are listed in

- *Oracle Database Installation Guide 11g Release 2 (11.2) for Linux x86* (for 32-bit versions)
- *Oracle Database Installation Guide 11g Release 2 (11.2) for Linux x86-64* (for 64-bit versions)

Verify the RPMs using the procedure below.

1. For the 64-bit operating system only, verify that you are running the `x86_64` kernel on an `x86_64` platform:

```
# uname -mi
```

The result should be: “`x86_64 x86_64`”

2. Run the command to list RPMs.
  - For the 32-bit operating system:

```
rpm -q binutils compat-db elfutils-libelf compat-libstdc++-33-3.2.3 control-center gcc gcc-c++ glibc glibc-common glibc-devel glibc-headers ksh libaio libaio-devel libgcc libstdc++ libstdc++-devel make numactl-devel sysstat libaio unixODBC unixODBC-devel
```

- For the 64-bit operating system:

```
rpm -q --qf '%{NAME}-%{VERSION}-%{RELEASE} (%{ARCH})\n' binutils compat-db compat-libf2c-34 elfutils-libelf elfutils-libelf-devel compat-libstdc++-33-3.2.3 control-center gcc gcc-c++ glibc glibc-common glibc-devel glibc-headers ksh libaio libaio-devel libgcc libstdc++ libstdc++-devel make numactl-devel sysstat libaio unixODBC unixODBC-devel
```

It is important to have these 64-bit RPMs installed. The above command will list the architecture of each binary package. You will see that some RPMs are installed twice when you run this command (32-bit and 64-bit).

The command should result in the following list of required packages.

### Red Hat Enterprise Linux 4

RHEL 4 x86 (32-bit)	RHEL 4 x86_64 (64-bit)
binutils-2.15.92.0.2	binutils-2.15.92.0.2
compat-libstdc++-33-3.2.3	compat-libstdc++-33-3.2.3
elfutils-libelf-0.97	compat-libstdc++-33-3.2.3 (32 bit)
elfutils-libelf-devel-0.97	elfutils-libelf-0.97
gcc-3.4.6	elfutils-libelf-devel-0.97
gcc-c++-3.4.6	expat-1.95.7
glibc-2.3.4-2.41	gcc-3.4.6
glibc-common-2.3.4	gcc-c++-3.4.6
glibc-devel-2.3.4	glibc-2.3.4-2.41
glibc-headers-2.3.4	glibc-2.3.4-2.41 (32 bit)
libaio-devel-0.3.105	glibc-common-2.3.4
libaio-0.3.105	glibc-devel-2.3.4
libgcc-3.4.6	glibc-headers-2.3.4
libstdc++-3.4.6	libaio-0.3.105
libstdc++-devel-3.4.6	libaio-0.3.105 (32 bit)
make-3.80	libaio-devel-0.3.105
numactl-0.6.4.i386	libaio-devel-0.3.105 (32 bit)
pdksh-5.2.14	libgcc-3.4.6
sysstat-5.0.5	libgcc-3.4.6 (32-bit)
unixODBC-2.2.11	libstdc++-3.4.6
unixODBC-devel-2.2.11	libstdc++-3.4.6 (32 bit)
	libstdc++-devel 3.4.6
	make-3.80
	numactl-0.6.4.x86_64
	pdksh-5.2.14
	sysstat-5.0.5
	unixODBC-2.2.11
	unixODBC-2.2.11 (32 bit)



RHEL 4 x86 (32-bit)	RHEL 4 x86_64 (64-bit)
	unixODBC-devel-2.2.11 unixODBC-devel-2.2.11 (32 bit)

### Red Hat Enterprise Linux 5.

RHEL 5 x86 (32-bit)	RHEL 5 x86_64 (64-bit)
binutils-2.17.50.0.6	binutils-2.17.50.0.6
compat-libstdc++-33-3.2.3	compat-libf2c-34-3.4.6-4 (RHEL version 5.6)
elfutils-libelf-0.125	compat-libf2c-34-3.4.6-4.1.i386 (RHEL version 5.7)
elfutils-libelf-devel-0.125	compat-libstdc++-33-3.2.3
elfutils-libelf-devel-static-0.125	compat-libstdc++-33-3.2.3 (32-bit)
gcc-4.1.2	elfutils-libelf-0.125
gcc-c++-4.1.2	elfutils-libelf-devel-0.125
glibc-2.5-24	elfutils-libelf-devel-0.137 (RHEL version 5.6 or 5.7)
glibc-common-2.5	gcc-4.1.2
glibc-devel-2.5	gcc-c++-4.1.2
glibc-headers-2.5	glibc-2.5-24
kernel-headers-2.6.18	glibc-2.5-24 (32-bit)
ksh-20060214	glibc-common-2.5
libaio-0.3.106	glibc-devel-2.5
libaio-devel-0.3.106	glibc-devel-2.5 (32-bit)
libgcc-4.1.2	glibc-headers-2.5
libgomp-4.1.2	ksh-20060214
libstdc++-4.1.2	libaio-0.3.106
libstdc++-devel-4.1.2	libaio-0.3.106 (32-bit)
make-3.81	libaio-devel-0.3.106
numactl-devel-0.9.8.i386	libaio-devel-0.3.106 (32-bit)
sysstat-7.0.2	libgcc-4.1.2
unixODBC-2.2.11	libgcc-4.1.2 (32-bit)
unixODBC-devel-2.2.11	libstdc++-4.1.2
	libstdc++-4.1.2 (32-bit)
	libstdc++-devel 4.1.2
	make-3.81
	numactl-devel-0.9.8.x86_64

RHEL 5 x86 (32-bit)	RHEL 5 x86_64 (64-bit)
	sysstat-7.0.2 unixODBC-2.2.11 unixODBC-2.2.11 (32-bit) unixODBC-devel-2.2.11 unixODBC-devel-2.2.11 (32-bit)

## Install Oracle on the Client

Use this procedure to install the Oracle software on the client.

1. Log on as a local or network user.

### Root User

Later in this procedure, the root user is required to run one or more scripts.

2. Download the Oracle software from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>) to a directory on the system where there is sufficient space for the Zip file. The file will be one of the following:

Operating System	Oracle software
32-bit	Oracle_112020_Linux32_Client.zip
64-bit	Oracle_112020_Linux64_Client.zip

3. In the location where the file was downloaded, extract the contents of the file to a directory.

### Sufficient Space for the Files and Installer

Be sure to extract the file on a drive with plenty of space. Without sufficient space the installation will fail. The Zip file itself is large (over 580 MB), and the unzipped files are larger still.

- For the Linux 32-bit file:

```
unzip ./Oracle_112020_Linux32_Client.zip
```

- For the Linux x86\_64-bit file:  

```
unzip ./Oracle_112020_Linux64_Client.zip
```
- 4. Run the installer command:  

```
./database/runInstaller
```
- 5. In the Select Installation Type screen
  - Select **Administrator**.
  - Click **Next**.
- 6. Enter the path for the `ORACLE_HOME` environment variable.
- 7. In the Specify Inventory directory and credentials screen
  - Enter the inventory directory and group name or accept the defaults.
  - Click **Next**.
- 8. Enter the path for the `ORACLE_BASE` environment variable.
- 9. In the Product-Specific Prerequisite Checks screen
  - Verify that the overall result of the check is Passed.
  - If any of the tests fail, exit the installation, set the recommended value of the parameter mentioned on the host, and run the installation program again.
  - Click **Next**.
- 10. In the Summary screen
  - Verify that all settings are correct.
  - Click **Install**.
- 11. Follow the instructions in the Execute Configuration scripts window to execute the two scripts, `oraInstRoot.sh` and `root.sh`.
  - Open a terminal window on the same host machine.

- Log on as root.
  - Execute the orainstRoot.sh and root.sh scripts.
12. Click **OK** in the Execute Configuration scripts window only after successfully executing orainstRoot.sh and root.sh scripts.
  13. In the End of Installation screen click **Exit**.
  14. In the Exit window, click **Yes**. The installation program closes.

### Fix Directory Permission Problem

Execute the following command as the Oracle user:

```
chmod -R 775 $ORACLE_HOME
```

You will get error messages that it is not possible to alter the permissions on certain files in \$ORACLE\_HOME. These errors can be ignored. The ownership of these files was changed to root when you ran the root.sh configuration script earlier in the installation procedure.

---

## Windows: Oracle Database Upgrade

---

This procedure upgrades an existing Oracle 10g (10.2.0.5) database to Oracle 11g (11.2.0.2).

To upgrade an existing Oracle 10g database to Oracle 11g, do the following:

- “Perform Prerequisites” on page 125
- “Install Oracle 11g in Windows” on page 125
- “Run the Database Administration Tool in Windows” on page 127
- “Update Oracle Environment” on page 131

### ***Perform Prerequisites***

Do the following before upgrading the Oracle software.

1. Create a cold backup of the database.
2. Start Oracle 10.2.0.5 database instance.
3. Start the Oracle 10.2.0.5 listener.

### ***Install Oracle 11g in Windows***

1. Log on as the user created for the Oracle installation. Even though the Oracle user must have administrator privileges, do not install as Administrator or using your personal account.
2. Download the software appropriate for your operating system from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>).

OWDBSetup\_Win\_with\_Oracle.zip

3. Extract the ZIP file.
4. Run the installation executable (OWDB\_5000\_8\_1.exe). The OpenWorks Database 5000.8.1.0 dialog displays.

5. Click **Next**. The Select The Type Of Install pane displays in the dialog.

6. In the Select Type Of Install pane:

- Select **Install Oracle media only to support recovery or upgrade**.
- Click **Next**. The Memory Check For Oracle pane displays.

In Windows, the amount of virtual memory should be twice the amount of physical memory (RAM) in the computer.

7. In the Memory Check For Oracle pane:

- If the amount of virtual memory is incorrect.
  - Click **Cancel** to end the installation.
  - Adjust the amount of virtual memory.
  - Restart this installation procedure.
- If the amount of virtual memory is correct, click **Next**. The Choose Install Folder pane displays.

8. In the Choose Install Folder pane:

- Enter the directory where you want to install the files of the OpenWorks® database instance.
- Click **Next**. The Get Oracle Information pane displays.

9. In the Get Oracle Information pane:

- In **Oracle Base**, enter a path for the Oracle base directory. For example:

```
c:\oracle\product
```

- In **Oracle Home**, enter the path for Oracle software. For example:

```
c:\oracle\product\11.2.0\dbhome_1
```

- Click **Next**. The Pre-Installation Summary pane displays.

10. In the Pre-installation Summary pane:

- Verify that all settings are correct. If necessary, click **Previous** and correct settings.
- Click **Install** if all settings are correct. The Installing landmark OpenWorks Database pane displays.

After the database is installed, the SQLNET.ORA dialog box displays. The file, sqlnet.ora, is modified to include configurations for the Oracle wallet. A backup is made of the file and saved in the same directory. The file is located in:

*OracleHome\network\admin\sqlnet.ora*

- Click **OK** in the SQLNET.ORA dialog. The Install Complete pane displays.

A log (Landmark\_OpenWorks\_Database\_InstallLog.log) for the installation is stored in the same directory as the location selected for the database in the Choose Install Folder pane.

11. Click **Done**.

If there are any errors, additional windows will appear describing the errors.

**Acceptable Oracle error messages**

Some Oracle errors are acceptable; e.g., errors that occur because of the drop user statements and IMP\_FULL\_DATABASE, EXP\_FULL\_DATABASE role conflicts.

## ***Run the Database Administration Tool in Windows***

This procedure uses the Database Administration tool of the OpenWorks software to upgrade the database instance from Oracle 10g to 11g.

Do the following to upgrade the database instance:

1. Open a Command Prompt window as Administrator.
  - In the Start Menu, right-click the **Command Prompt** icon (cmd.exe) to display a shortcut menu.

- Select **Run As Administrator**. An Administrator: Command Prompt window displays.
2. Start Database Administration by executing the `OWRuntimeLauncher.sh` script with the `DbAdmin` parameter. For example:

```
%OWHOME%\bin\OWRuntimeLauncher.bat DbAdmin
```

The Database Administration window displays.

3. Select **Database > Upgrade**. The Upgrade Wizard dialog opens.

The default log directory is the user's home directory.

4. Click **Next**. The Options pane displays.

5. In the Options pane, do the following:

- In **Oracle Instance**, specify the name of the system identifier (SID) of the OpenWorks database instance. This value is filled in with the setting of the `ORACLE_HOME` environment variable in environment of the Oracle user.

- In **Oracle 10 Home**, specify the path for Oracle home. for example:

```
c:\oracle\OraHome1
```

- In **Oracle 11 Home**, specify the path for Oracle home. for example:

```
c:\oracle\product\11.2.0\dbhome_1
```

- In **Log Directory**, if you want the log files in a location other than the default (the home directory of the Oracle user), specify a path.

- Click **Next**. The Move Files pane displays.

The Move Files pane contains a table with a column for paths to data files in the Oracle 10g database, and with a column listing a set of file names of the data files in a directory. A directory can have one or more data files.



6. In the Move Files pane, do the following:
  - Select one or more locations of data files. During the selection, hold down the Shift key to select contiguous locations, or hold down the Ctrl key to select discontinuous locations.
  - Click **Change New Directory Locations**. An Open dialog displays, allowing you to select a destination location for the files in the Oracle 11g environment.
  - Select the directory for the data files.
  - Click **Open**.
  - Repeat the steps on this pane until you have selected a new destination for all the data files in the Oracle 10g environment.
  - After all the Oracle 10g data files have a destination in the Oracle 11g environment, click **Next**. The Parameters pane displays.
7. In the Parameters pane, use the following guidelines:
  - **Database Mode:** ArchiveLog mode archives redo logs before they are overwritten. This mode allows the database to be backed up while the database is in an *inconsistent* state (or while the database is being accessed by users). NoArchiveLog mode allows redo logs for the database instance to be overwritten without archiving the old redo logs.

**NoArchiveLog Mode: Backups Require Database Shutdown**

With NoArchiveLog mode, a backup can only be performed when the database is in a *consistent* state.

For an Oracle database to be in a consistent state, it must be shutdown with the normal, immediate, or transactional parameter, and the restarted database must be backed up in a mode (such as the Mount mode), where the database is closed to access, except for certain database administrator (DBA) activities.

- **Schedule Database Backup:** If ArchiveLog is selected, the database will perform an automatic backup. If NoArchiveLog is selected, select Yes to allow the database to make automatic backups, or select No otherwise.

**WARNING:** As described for NoArchiveLog in Database Mode, the database must shutdown before the backup begins. Any connections to the database at the time of the shutdown will be disconnected.

- **Backup Time (🕒):** Click the Backup Time button to display the Select Backup Time dialog and to set the time for automatic backups.
- **Number Of Days To Keep Backups:** Specify the number of days to keep database backups. The default is two.
- **Recovery Area Directory(📁):** Specify the location for recovery files (control files, redo logs, archived redo logs, flashback logs, and RMAN backups). The location can be a system directory or network location.
- **Recovery Area Maximum Size:** Specify the maximum size (or disk quota) of the recovery file area in units of gigabytes.

The amount of space can vary depending on the amount of data in the database instance, the size of data blocks, the number of changes to the data, the number of days in the retention policy for backups and archive logs, and other configurations of the database.

Ideally, the area should be able to contain all data files in the database and all current backup files.

- **Memory Target:** Specify a minimum amount of memory in units of megabytes for the database instance to use. This value helps determine how much memory the instance will use and enables automatic memory management by the database. The database can increase it up to the maximum memory target. The amount should be more than 1024 MB (or 1 GB), but equal to or less than the maximum memory target.
- **Maximum Memory Target:** Specify the maximum amount in units of megabytes that the database instance can use on the system. The amount should be more than 1024 MB (or 1 GB).

8. Click **Finish**. The Upgrade Wizard window closes, and the upgrade messages are displayed in the Upgrade *DatabaseInstance* tab in the Database Administration window.

The upgrade may take a long time, depending on the amount of data in the database instance. When finished, the wizard displays:

```
The upgrade is successfully completed.
```

## **Update Oracle Environment**

After the installation of Oracle 11g and upgrading the existing database, you must update `OW_LMSYS_DB_DIR`. To update it, do the following:

1. Reboot the machine.
2. Make sure the database and listener comes up correctly and are accessible.

To check, open the Computer Management control panel, and in the Services pane, the following should be true:

- **Oracle 10 Listener Startup Type:** Manual
- **Oracle 11 Listener Status:** Automatic
- **PATH Environment Variable:** Verify that the `bin` directory for Oracle 11g is before Oracle 10g.
- **OracleServiceSIDName Status:** Automatic

If the Oracle service does not automatically start when Windows is restarted, do the following:

- Open a Command Prompt window with Administrator privileges. For example:
  - In Windows 7, enter `cmd` in the Search box in the Start Menu, and then instead of pressing Enter, press Ctrl + Shift + Enter.
  - In Windows XP, right-click the Command Prompt item in the Start Menu to display a shortcut menu, and then select the Run As item in the shortcut menu.

- Use the Oradim tool from Oracle to delete the service. For example:

```
oradim -delete -sid SIDName
```

- Make sure the service does not exist. For example:
  - Right-click Computer to display a shortcut menu, and select Manage to display the Computer Management window.
  - In Services And Applications > Services, the name, `OracleServiceSIDName`, should not be in the list on the right.
- Create a new service configured with the automatic start mode. For example

```
oradim -new -sid SIDName -startmode auto
```

- In the Computer Management window, the service, `OracleServiceSIDName`, should be listed, and its startup type should be `Automatic`, not `Manual` or `Disabled`. The service should restart automatically when the system restarts.
- Reboot the machine to make sure the service (the database) restarts.

## Windows: Upgrade Oracle Client

---

For client installations of the OpenWorks® software, you must also install version 11g of the Oracle Client in a new directory from the installation directory for the 10g client.

### *Install Oracle Software on the Client Machine*

1. Log on to the client machine as a user with administrator privileges. Do not install as Administrator.
2. Download the Oracle software appropriate for your operating system from the Landmark® Software Manager (<https://esd.halliburton.com/download/download.jsp>). Refer to the table below.

Operating System	Oracle Client Software 11.2.0.2.0
Windows XP 32-bit Windows Server 2003 32-bit	Oracle_112020_Win32_Client.zip
Windows XP 64-bit Windows Server 2003 64-bit Windows Vista 64-bit Windows Server 2008 64-bit Windows 7 64-bit	Oracle_112020_Win64_Client.zip

3. Extract the ZIP file to a local directory.
4. Run the installation program by starting setup.exe from the directory to which you extracted the Oracle software. The Oracle Client Installer dialog displays with the Select Installation Type pane.
5. In the Select Installation Type pane
  - If you plan on installing the OpenWorks® Full software on the server, select **Administrator**.
  - If you plan on installing the OpenWorks® Basic software, choose either **Administrator** or **Runtime**, depending on

whether you will use the Discovery™ software from GeoGraphix® (see below).

#### Installation type and OpenWorks® Basic

For the OpenWorks® Basic software, the Oracle client can be installed with the Runtime or Administrator installation type. If the OpenWorks® software will be used with the Discovery™ software from GeoGraphix®, the Oracle client can be installed with Administrator or Custom installation type. If the Custom installation type is chosen, you must select the following components among other components you may choose: Oracle Database Utilities, Oracle JDBC/Thin Interfaces, Oracle New, and SQL\*Plus

The file sqlnet.ora should contain the following lines:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=FILE)
    (METHOD_DATA=
      (DIRECTORY=%OW_HOME_DIR%\wallet)
    )
  )
SQLNET.WALLET_OVERRIDE= TRUE
```

If you are installing with the Custom option, consult a certified Oracle Database Administrator for more information about other Oracle components your installation may require.

6. Click **Next**. The Download Software Updates pane displays.
7. Select **Skip Software Updates**.
8. Click **Next**. The Select Product Languages pane displays.
9. The default selected language should be English.
10. Click **Next**. The Specify Installation Location pane displays.

11. In **Oracle Base**, enter a path for the Oracle base directory. For example:

```
c:\oracle\product
```

12. In **Software Location**, enter the path for Oracle 11g installation. For example:

```
c:\oracle\product\11.2.0\client_1
```

13. Click **Next**. The Prerequisite Checks pane displays and then the Summary pane if all the prerequisites are correct.

- If the check did not pass, correct the problems and restart the installation program.

14. In the Summary pane

- Verify that all settings are correct.
- Click **Install**.

15. In the Finish pane, click **OK**.

16. Update tnsnames.ora with the information for the databases you will use.

If the TNS\_ADMIN variable is not set in the environment, the default location of the file is %ORACLE\_HOME%\network\admin.

17. If needed, update sqlnet.ora as described in the note for the step about the Select Installation Type pane.

---

## Oracle 11g Compatibility with Some Applications

---

Some older Landmark applications are built specifically for Oracle 10g (for example, the GeoProbe® software), and when the OpenWorks software and database are upgraded to version 11g of the Oracle software, these applications may not run. To enable those applications to run with the newer version of the database software, a couple of configuration changes of their environment must be made.

- Set the `OW_ORACLE_VERSION` Variable
- Link to Oracle 11g Libraries

### **Set the `OW_ORACLE_VERSION` Variable**

The `OW_ORACLE_VERSION` variable must be set in `lgcenv.cf` to the value of `11g`. The file is located in the `OpenWorksHome/conf` directory. This variable must be set in Linux and Windows, wherever the OpenWorks software is installed.

When the OpenWorks software is installed, and if during the installation, the current version of the database software is 11g, the installation program will configure `lgcenv.cf` correctly. However, if for example, the OpenWorks software was upgraded to version 5000.8.1.0, but the database software was upgraded to version 11g after the upgrade of the OpenWorks software, this variable would not have been changed, and it must be manually changed.

The variable has the following context in `lgcenv.cf`.

```
#
# Use the following parameter to use the correct jdbc
# jar file for OpenWorks
# three Valid Values:
#   11g                -- Use jdbc from Oracle 11g
#   10g                -- Use jdbc from Oracle 10g
#   __OW_ORACLE_VERSION_Is_Not_Set_Yet__ -- defaults
#                       to jdbc from Oracle 10g
#
OW_ORACLE_VERSION __OW_ORACLE_VERSION_Is_Not_Set_Yet__
#
```



To set the variable manually, so that the OpenWorks software and other Landmark software uses Oracle 11g, the file should be edited so that the variable is set to the value of 11g. For example:

```
OW_ORACLE_VERSION 11g
```

If the variable is set to any other value, version 10g of the Oracle software is assumed to be the installed version.

## ***Link to Oracle 11g Libraries***

In Linux, symbolic links need to be made in the library directories of the Oracle client. The links should have the name of `libnnz10.so`, and they should link to the similar 11g library, `libnnz11.so`.

When the OpenWorks software is installed, and if during the installation, the current version of the database software is 11g, the installation program will try to configure the links. However, sometimes because of permissions issues, the installation program may not be able to make the links. If such issues occur, the installation program will warn you of the problem and ask you to run a script, `CreateOracleLinks.sh`. This script must be run as the root user or as a user with access to the Oracle 11g database.

Also, if for example, the OpenWorks software was upgraded to version 5000.8.1.0, but the database software was upgraded to version 11g after the upgrade of the OpenWorks software, the links must be created manually.

As the root user, execute the following command to create the links:

```
sh $OWHOME/bin/CreateOracleLinks.sh
```



# ***Upgrade OpenWorks® R2003.12 Database***

This section describes how to upgrade an OpenWorks® database (R2003.12) residing in an Oracle version 8.1.7.4 or Oracle 9.2.0.4 instance to an OpenWorks® database (Release 5000.x.x.x) in an Oracle 10g 10.2.0.5 instance.

After you upgrade the database, you need to install the new version of OpenWorks® in a different location from the existing version. There is no OpenWorks® software upgrade from R2003 to version 5000.x.x.x.

This section also outlines changes to the OpenWorks® environment (password changes, district configurations, and the location of system, project, and data files external to the database) with version 5000.x.x.x

## **Database Differences and Assumptions**

---

This section provides some basic information you should know before you begin upgrading and migrating your data to a new OpenWorks® database instance of Release 5000.x.x.x.

### ***Differences in the Oracle Databases***

The major differences in the Oracle databases between the OpenWorks® software R2003 and Release 5000.x.x.x are:

- The OpenWorks® software R2003.12 uses Oracle 8.1.7.4 or Oracle 9.2.0.4. The OpenWorks® software version 5000.x.x.x uses Oracle 10g Release 2 (10.2.0.5) or Oracle 11g Release 2 (11.2.0.2).
- The projects in the OpenWorks® software R2003.12 use dictionary-managed tablespaces. Starting with the OpenWorks® software version 5000.0, projects use locally managed tablespaces.

- The OpenWorks® software R2003.12 uses externally identified Oracle users. The OpenWorks® software version 5000.x.x.x uses internally identified Oracle users.

## ***Assumptions for Upgrading***

Verify that the following conditions are met:

1. The installed software and database instance of the OpenWorks® software R2003.12 exist.
2. The installed software of the OpenWorks® software version 5000.0.0.2, or above, exists.
3. The OWSYSSID (for example, ow2003) of the R2003.12 instance has been added to tnsnames.ora (located in \$ORACLE\_HOME/network/admin) on the machine where the installed software of the OpenWorks® software version 5000.0.0.2, or above, is installed.
4. A database connection to the OWSYSSID of the R2003.12 instance can be made from the installed software of the OpenWorks® software version 5000.0.0.2, or above, using SQL\*Plus.
5. The Oracle server, where version 5000.x.x.x of the OpenWorks® database is located, is on the same machine as the installation of version 5000.x.x.x of the OpenWorks® software.

## Pre-Migration Steps

---

Before performing an upgrade:

- Perform a full backup of the data in the R2003.12 OpenWorks® database. This step is a safety measure.
- Install a database server for the OpenWorks® software version 5000.x.x.x. For more information, see either the procedure for Windows (in the ““Windows Server Installation Tasks” on page 13” section) or the procedure for Linux (in the ““Linux Server Installation Tasks” on page 44” section).
- In tnsnames.ora of the Oracle installation for the OpenWorks® software version 5000.x.x.x, include the connection information for the OpenWorks® database (OWSYSSID) of R2003.12.
- Using SQL\*Plus on the system where version 5000.x.x.x, test the connect to the R2003.12 database.

---

## Upgrading to Version 5000.x.x.x

---

Because the OpenWorks® database in R2003.12.x.x used Oracle 8i or 9i as its data management system an existing R2003.12.x.x cannot be *upgraded in place*. In its most basic terms, the data in a database for R2003.12.x.x must be exported from that database and imported into an OpenWorks® database of version 5000.0.0.2, or above. The procedures below delineate that procedure.

### ***Preparing the R2003.12 Database for Export***

To prepare the data for exporting from an R2003 database, you must remove any remote projects and generate a database schema configuration files for the R2003.12 database. The steps below will help you in those tasks.

These steps should be performed in the environment of version 5000.0.0.2, or above, of the OpenWorks® software.

1. Check for remote projects.
  - Run the `check_remote_projects.sql` script (located in `$OWHOME/dat/project5000.0`) as the database user (for example, `system`) of the R2003.12 database to determine if there are any remote projects on the database.

```
cd $OWHOME/dat/project5000.0
sqlplus system/Password@OW_DB_SID
SQL>@check_remote_projects.sql "OW_DB_SID"
```

- If there are no remote projects on the `ow2003` instance, go to step 2. Otherwise, perform the following step to handle the remote projects before proceeding to step 2.
  - If there are remote projects, the result will look similar to the following. Perform the steps shown in the results.

```
Project FLOUNDER is a remote project on sid LATEST
```

```
Project GOM is a remote project on sid
OWSID.COMPANY.COM
```

```
In R5000, the remote project functionality is no
longer supported.
```

Please go back to the R2003.12 instance and use Project Admin to backup the remote projects, delete them from ow2003 instance and restore them in the R5000 instance.

If you have further questions, please contact Landmark Customer Support.

2. Generate a schema definition file for the existing OpenWorks® R2003.12 database.

Run the `$OWHOME/dat/project5000.0/process_ow2003_tablespaces.sql` script as the database user (e.g., system) against the R2003.12 OWSYSSID ow2003 to generate an OpenWorks® R2003.12 schema definition (tablespaces and users) SQL file called `ow2003_tablespace.sql`.

```
cd $OWHOME/dat/ project5000.0
sqlplus system/Password@ow2003
SQL>@ process_ow2003_tablespaces.sql /DirPath/ow2003_tablespaces.sql
```

The result will look similar to the following:

```
create tablespace FLOUNDER datafile '/d01/ora9i/OraHome1/owprojects/
  FLOUNDER02090191891A.dbs' size 200M autoextend on extent management local;
create user FLOUNDER identified by values 'DDC631FBD8763204' default tablespace
  FLOUNDER temporary tablespace TEMP;
grant create session, connect to FLOUNDER;
```

3. Run the `$OWHOME/dat/project5000.0/process_ow2003_users.sql` script as the database user (e.g., system) against the R2003.12 OWSYSSID ow2003 to grant roles to the OpenWorks® project users. The script generates an SQL file called `ow2003_users.sql`.

For example, continuing the SQL session in Step 2:

```
SQL>@process_ow2003_users.sql /DirPath/ow2003_users.sql
```

-or-

Starting a new SQL session:

```
cd $OWHOME/dat/project5000.0
sqlplus system/Password@ow2003
SQL>@process_ow2003_users.sql /DirPath/ow2003_users.sql
```

The result will look similar to the following:

```
alter user owjune identified by owjune;
alter user owtest identified by owtest;
grant MANAGE_EMPTY to OWJUNE;
grant L_INTERP_FLOUNDER to OWJUNE;
grant OW_ADMINISTRATOR to OWJUNE;
insert into owsys.ow_sys_user (user_id) values ('OWJUNE');
insert into owsys.ow_sys_user (user_id) values ('OWTEST');

commit;
```

4. Copy \$OWHOME/dat/project5000.0/fullexport.cntl from the OpenWorks® 5000.0.0 installation to the R2003.12 image.

## Exporting the Database from OpenWorks® R2003.12

Perform the following steps as an Oracle database user (such as the SYSTEM user) in the environment of Release 2003.12 of the OpenWorks® 2003.12 software.

1. Run a full Oracle database export as the database user (e.g., system) against the R2003.12 OWSYSSID ow2003. Modify the settings of the following variables in the fullexport.cntl configuration file that was copied in the preceding procedure.

```
BUFFER=2000000
USERID="system/Password@OW_DB_SID"
FILE=/FullPath/FileNameOfExportFile.dmp
FULL=Y
LOG=/FullPath/FileNameOfLogFile.log
```

Where:

*Password* is the password of the system user.

*OW\_DB\_SID* is the OWSYSSID of the database.

*FullPath* is the full path to the location of the dmp and log files.

*FileNameOfExportFile* is the name of the export file. This file must have a dmp extension (or file suffix).

*FileNameOfLogFile* is the name of the log file. This file name must have a log extension (or file suffix).



2. Execute the export command.

**Match Oracle export utility to Oracle server version**

It is very important to use the matching Oracle export utility to the correct version of Oracle server. You must use an Oracle 8 export utility for an Oracle 8 server and use an Oracle 9 export utility for an Oracle 9 server.

- For an Oracle 8 server:

```
su - oracle8
$ORACLE_HOME/bin/exp parfile = fullexport.cntl
```

Ensure this is the Oracle 8 ORACLE\_HOME.

- For an Oracle 9 server:

```
su - oracle9
$ORACLE_HOME/bin/exp parfile = fullexport.cntl
```

Ensure this is the Oracle 9 ORACLE\_HOME.

3. Copy the export file from the R2003.12 installation to the installation of the OpenWorks® version 5000.x.x.x software.

### ***Procedures in the OpenWorks® 5000.x.x.x Installation***

Run the following steps in the OpenWorks® 5000.x.x.x installation.

1. Create the directory structure for the new data files.

The tablespace data file structure will be kept the same as your OpenWorks® R2003.12 instance, make sure you pre-create these data file directories in your ow5000 installation with oracle as the directories' owner. If you want to change the data file structure, edit the ow2003\_tablespace.sql file and create the directories as the Oracle user (e.g. ora10g), the directories' owner.

2. Rename sqlnet.ora if wallet is configured in the file.

If you have sqlnet.ora file similar to the following example in \$ORACLE\_HOME/network/admin, rename it to sqlnet.ora\_orig, otherwise, skip this step.

```
NAMES.DIRECTORY_PATH= (TNSNAMES, EZCONNECT)
WALLET_LOCATION=
(SOURCE=
(METHOD=FILE)
(METHOD_DATA=
(DIRECTORY=${OW_HOME_DIR}/wallet)
)
)
SQLNET.WALLET_OVERRIDE= TRUE
```

3. Run the ow2003\_tablespace.sql script to create the tablespaces and OpenWorks® project users in the OpenWorks® 5000.x.x.x instance (ow5000).

```
sqlplus system/Password@ow5000
SQL>@/DirPath/ow2003_tablespace.sql
```

For a list of possible errors, see “Possible Errors During the Import” on page 152.

4. Run a full Oracle database import as the database user (e.g., system) using the ow2003.dmp file (created in Step 5.b.) in the ow5000 instance. Modify the parameter values in the file based on your configuration.

**Note:** The Oracle import process will change the system password to match the password in the OW2003 database.

**Assumption:** You already copied ow2003.dmp from the OpenWorks® R2003.12 installation to an OpenWorks® 5000.x.x.x installation.

- su - ora10g

- Modify `$OWHOME/dat/project5000.0/fullimport.cntl` as follows:

```

BUFFER=2000000
USERID="system/Password@ow5000"
FILE=/DirPath/ow2003.dmp
FULL=Y
IGNORE=Y
LOG=/DirPath/ow5000.log

```

- Execute the following command:

```
imp parfile = fullimport.cntl
```

See “Possible Errors During the Import” on page 152.

5. Rename `sqlnet.ora_orig` back to `sqlnet.ora`.

If you do not have `sqlnet.ora_orig` in `$ORACLE_HOME/network/admin`, create a `sqlnet.ora` file like this as Oracle user in the `$ORACLE_HOME/network/admin` directory:

```

NAMES.DIRECTORY_PATH= (TNSNAMES, EZCONNECT)
WALLET_LOCATION=
(SOURCE=
(METHOD=FILE)
(METHOD_DATA=
(DIRECTORY=${OW_HOME_DIR}/wallet)
)
)
SQLNET.WALLET_OVERRIDE= TRUE

```

6. Upgrade the OpenWorks® schemas `owsys` and `ow_admin_utils`.

This step assumes that both the OpenWorks® database and the OpenWorks® software are installed on the same machine.

- As the database user (e.g., `system`), create an internal account for the Oracle user (e.g., `ora10g`) in the `ow5000` database.

```

sqlplus system/OW2003Password@ow5000
SQL> create user ora10g identified by ora10g;
SQL> grant connect, create session to ora10g;

```

- As the Oracle user (e.g., `ora10g`), set the `ORACLE_SID` environment variable. For example:

```

su - ora10g
setenv ORACLE_SID ow5000

```

- Set the OWSYSSID variable (OpenWorks® database SID name); in this example, ow5000:

```
setenv OWSYSSID ow5000.company.com
```

Here ow5000.company.com is the alias name in \$ORACLE\_HOME/network/admin/tnsnames.ora.

```
setenv OW_USER ora10g
setenv OW_PASSWORD ora10g
setenv OWHOME /d01/ow_nc
setenv ORACLE_HOME /d01/ora10g/OraHome1
setenv PATH ${OWHOME}/bin:${ORACLE_HOME}/
bin:${PATH}
setenv LM_LICENSE_FILE 2014@owlic5
```

- Set the LD\_LIBRARY\_PATH environment variable based on the Oracle server:

#### For 32-bit Oracle:

```
setenv LD_LIBRARY_PATH ${ORACLE_HOME}/
lib:${OWHOME}/lib:${LD_LIBRARY_PATH}
```

#### For 64-bit Oracle:

```
setenv LD_LIBRARY_PATH ${ORACLE_HOME}/
lib32:${OWHOME}/lib:${LD_LIBRARY_PATH}
```

- Make sure an entry is made in \$OWHOME/conf/district.dat for the SID (ow5000 in this example); otherwise, you will receive a message: ERROR: No entry found for *SID\_Name*.

```
OW5000 /d01/owhome/conf "OW5000" OW5000
```

- Set the encrypted passwords for the OpenWorks® schemas lmsys and ow\_admin\_utils.

#### Linux

In a terminal window, execute:

```
$OWHOME/bin/chglms DbUserName DBAPassword TNS_ServiceNameForSID
```

#### Example

```
$OWHOME/bin/chglms system SystemPassword owlsid.company.com
```

## Windows

In a Command Prompt window, execute:

```
%OWHOME%\bin\chglms DbUserName DbPassword TNS_ServiceNameForSID
```

### Example

```
%OWHOME%\bin\chglms system Password owwsid.company.com
```

- Run the following upgrade command as the Oracle owner (ora10g):

```
$OWHOME/bin/owsysUpgrader5000 OW_SID_Name DirForLogFile
```

For example:

```
$OWHOME/bin/owsysUpgrader5000 ow5000 /d01/owjune/
```

7. If the tablespace data file structure in the ow2003\_tablespace.sql file is NOT modified, skip this step and go to Step 8. Otherwise, remove the invalid entries from the LMSYS.OW\_LMSYS\_DB\_DIR table as follows.

```
sqlplus system/OW2003Password@ow5000
SQL> select dir_path from lmsys.OW_LMSYS_DB_DIR;
DIR_PATH
/d01/ora9i/OraHome1/owprojects/
Asssume the database data file is modified from
/d01/ora9i/OraHome1/owprojects to
/d01/ora10g/OraHome1/owprojects in ow2003_tablespace.sql.
SQL> delete from lmsys.OW_LMSYS_DB_DIR where dir_path='/d01/ora9i/OraHome1/
owprojects';
```

If the entry “/d01/ora10g/OraHome1/owprojects/” already exists in the LMSYS.OW\_LMSYS\_DB\_DIR table go to Step 8.

```
SQL>insert into lmsys.OW_LMSYS_DB_DIR values ('DATA', '/d01/ora10g/OraHome1/
owprojects');
SQL>commit;
```

Use the \$OWHOME/bin/dboradir script to maintain the Oracle database locations.

8. Run the `ow2003_users.sql` script to create the OpenWorks® project users and populate the project privileges for each OpenWorks® project user.

```
SQL>@Dir/ow2003_users.sql
```

The result of `ow2003_users.sql` will look similar to the following:

```
create user owjune identified by owjune;
create user owtest identified by owtest;
grant MANAGE_EMPTY to OWJUNE;
grant L_INTERP_FLOUNDER to OWJUNE;
grant OW_ADMINISTRATOR to OWJUNE;
insert into owsys.ow_sys_user (user_id) values ('OWJUNE');
insert into owsys.ow_sys_user (user_id) values ('OWTEST');
commit;
```

Optionally, to change the password for OpenWorks® project user “owjune,” do the following:

```
sqlplus system/OW2003Password@ow5000
SQL>alter user owjune identified by xxxxxx;
```

where “xxxxxx” is the new password for OpenWorks® user “owjune.”

Exit SQL\*Plus.

9. As the Oracle owner (`ora10g`), run the `owchglms.sql` script to set the default passwords for the `lmsys` and `ow_admin_utils` users in version `5000.x.x.x` of the OpenWorks® database instance. For example:

```
su - ora10g
sqlplus system/SystemPassword@ow5000
SQL>@${ORACLE_BASE}/Landmark/OpenWorksDatabase/owdbsetup/owchglms.sql
```

10. Upgrade each OpenWorks® project using the OpenWorks® ProjectAdmin or the command line.

You must have an `lgcuser` and an Oracle internal user first and the usernames of `lgcuser` and the Oracle internal user must match.

- Create/update a user of the OpenWorks® database in the Release 5000 environment that matches the owner of your

projects in the 2003 environment that was created during the ow2003\_users.sql process, in this case OWJUNE.

- If you already have an OpenWorks® R2003 lgcuser, do the following:

```
su - root
OWHOME=OpenWorksHomeDirectory
export OWHOME
cd ${OWHOME}/bin
./lgcuser
Select option 4 to update an existing user's profile
Select option 7 to quit
```

- To create a new lgcuser, do the following:

```
su - root
OWHOME=OpenWorksHomeDirectory
export OWHOME
cd ${OWHOME}/bin
./lgcuser
Select option 2 to create a new user account
Select option 7 to quit
```

- Assign the OW\_ADMINISTRATOR role to the Oracle internal user:
  - Login as lgcuser.
  - Launch the OpenWorks® Command Menu:  
\${OWHOME}/bin/startow.
  - From the OpenWorks® Command Menu, select Project > Modify Database Users.
  - When prompted, enter the dba user and password; for example, system and *SystemPassword*.
  - Select the OW\_ADMINISTRATOR option.
- If the Oracle internal user does not have MANAGE role of the project which will be upgraded, assign `MANAGE_Project Name` access to the Oracle internal user.
  - From the OpenWorks® Command Menu, select Project > Project Admin.
  - From the Project Administration dialog menu, select ProjectAdmin > User > Project Access.

- Select all the projects you wish to upgrade and click Manage.
- Upgrade the project from the GUI:
  - From the OpenWorks® Command Menu, select Project > Project Admin.
  - In the Project Administration dialog, select the project you want to upgrade to version 5000.x.x.x of the OpenWorks® software.
  - From the Project Administration dialog menu, select Project > Project Database.
  - Click Upgrade.

*Or,*

Upgrade the project in batch mode. Before upgrading an OpenWorks® project in batch mode, set the OW\_USER and OW\_PASSWORD environment variables.

- If there is no seismic project to upgrade, do the following:

```
$OWHOME/bin/projectUpgrader5000 ProjectName OW_SysSID UserSpecifiedLogDir CreateDirFlag
```

- If there is a seismic project to upgrade, do the following:

```
$OWHOME/bin/OWRuntimeLauncher.sh OwBatchUpgrade ALL
```

## **Possible Errors During the Import**

1. In the Oracle 10g database, the UNDO tablespace will replace the old Oracle 8.1.7 RBS tablespace, and a locally managed TEMP tablespace will replace the old dictionary-managed tablespace TEMP. If you encounter an error in this step like the examples below, it can be safely ignored.

```
IMP-00017: following statement failed with ORACLE error 12913:  
"CREATE TABLESPACE "RBS" DATAFILE '/pa/oracle/dbs_2/database/datafiles/fla"  
"nders/rbsflanders.dbf' SIZE 209715200 DEFAULT STORAGE(INITIAL 2097152"  
" NEXT 2097152 MINEXTENTS 10 MAXEXTENTS 505 PCTINCREASE 50) ONLINE PERMANENT"  
"ORARY "  
IMP-00003: ORACLE error 12913 encountered  
ORA-12913: Cannot create dictionary managed tablespace
```



```
IMP-00017: following statement failed with ORACLE error 12913:
"CREATE TABLESPACE "TEMP" DATAFILE '/pa/oracle/dbs_3/database/datafiles/fla"
"nders/tempflanders.dbf' SIZE 104857600   DEFAULT STORAGE(INITIAL 26214"
"4 NEXT 262144 MINEXTENTS 1 MAXEXTENTS 2147483645 PCTINCREASE 0) ONLINE TEMP"
"ORARY "
IMP-00003: ORACLE error 12913 encountered
ORA-12913: Cannot create dictionary managed tablespace
```

2. The GLOBAL\_NAME in R2003 does not match the GLOBAL\_NAME in version 5000.x.x.x of the OpenWorks® software. The following error can be safely ignored. For more information on this Oracle error, contact Landmark® Support and reference Solution Document 140760.

```
IMP-00017: following statement failed with ORACLE error 23327:
"BEGIN SYS.DBMS_DEFER_IMPORT_INTERNAL.QUEUE_IMPORT_CHECK('OW1214P', 'SVR4-b"
"e-8.1.0'); END;"
IMP-00003: ORACLE error 23327 encountered
ORA-23327: imported deferred rpc data does not match GLOBAL NAME and platform
of importing db
ORA-06512: at "SYS.DBMS_SYS_ERROR", line 86
ORA-06512: at "SYS.DBMS_DEFER_IMPORT_INTERNAL", line 30
ORA-06512: at line 1
```

3. The following error can be safely ignored. For more information on this Oracle error, contact Landmark® Support and reference Solution Document 140676.

```
IMP-00019: row rejected due to ORACLE error 1
IMP-00003: ORACLE error 1 encountered
ORA-00001: unique constraint (SYSTEM.HELP_TOPIC_SEQ) violated
Column 1 @
Column 2 1
Column 3
```

4. The following errors can be safely ignored. For more information on this Oracle error, please contact Landmark® Support and reference Solution Document 140677.

```
IMP-00017: following statement failed with ORACLE error 2264:
"ALTER TABLE "REPCAT$_PRIORITY_GROUP" ADD CONSTRAINT
"REPCAT$_PRIORITY_GROUP"
"_C1" CHECK (data_type_id in (1, 2, 3, 4, 5, 6, 7)) ENABLE NOVALIDATE"
IMP-00003: ORACLE error 2264 encountered
ORA-02264: name already used by an existing constraint
IMP-00019: row rejected due to ORACLE error 1
IMP-00003: ORACLE error 1 encountered
ORA-00001: unique constraint (SYSTEM.REPCAT$_RESOL_METHOD_PK) violated
Column 1 1
Column 2 MINIMUM
```

5. The following errors can be safely ignored. For more information on this Oracle error, contact Landmark® Support and reference Solution Document 140758.

```
IMP-00017: following statement failed with ORACLE error 2270:
"ALTER TABLE "DEF$_CALLDEST" ADD CONSTRAINT "DEF$_CALL_DESTINATION" FOREIGN
"
"KEY ("DBLINK") REFERENCES "DEF$_DESTINATION" ("DBLINK") ENABLE NOVALIDATE"
IMP-00003: ORACLE error 2270 encountered
ORA-02270: no matching unique or primary key for this column-list
```

---

## Password Changes and the Oracle Wallet

---

Prior to Release 5000, the OpenWorks® software stored passwords in an encrypted file in the user's home directory. The OpenWorks® software now uses an Oracle utility called Oracle Secure Password Store (Oracle wallet) for this purpose. The primary advantage of this scheme is that the Oracle wallet is tightly integrated with Oracle itself. Once a wallet is configured you can connect to any Oracle utility or from any client program with a blank user name. The first time you run an OpenWorks® program against an Oracle instance you will be prompted for a password. The password will be stored in the wallet and you will not be prompted again. There is also a Change Password option on the Project Menu where users can change their own password. This will store the new password in the wallet. This change improves the security of the overall system.

On servers, the OpenWorks® Database Installation process configures everything necessary for Oracle wallet. On clients, the OpenWorks® Installation process configures everything necessary for Oracle wallet.

However, in non-standard installs or development environments, you must be aware of the requirements of the Oracle wallet system.

### **Environment Changes**

The OpenWorks® user must set the OW\_HOME\_DIR environment variable; for example:

OW\_HOME\_DIR=C:\Landmark\OpenWorks\users\User\_Name. This is typically set to your home directory and it controls the location of the wallet file. In a standard install it will be set in .lgclogin or by the installation program on Windows. Make sure that the OW\_HOME\_DIR exists and does not contain any spaces in it.

Make sure the \$ORACLE\_HOME/network/admin/sqlnet.ora file contains the text shown below. This new environment variable is necessary because Oracle wallet will not work if there are spaces in the directory path. If there are spaces in your home directory path choose another location.

### **On Windows**

```
WALLET_LOCATION=
(SOURCE=
(METHOD=FILE)
```

```

(METHOD_DATA=
  (DIRECTORY=%OW_HOME_DIR%\wallet)
)
)
SQLNET.WALLET_OVERRIDE= TRUE

```

### On Linux

```

WALLET_LOCATION=
(SOURCE=
  (METHOD=FILE)
  (METHOD_DATA=
    (DIRECTORY=${OW_HOME_DIR}/wallet)
  )
)
SQLNET.WALLET_OVERRIDE= TRUE

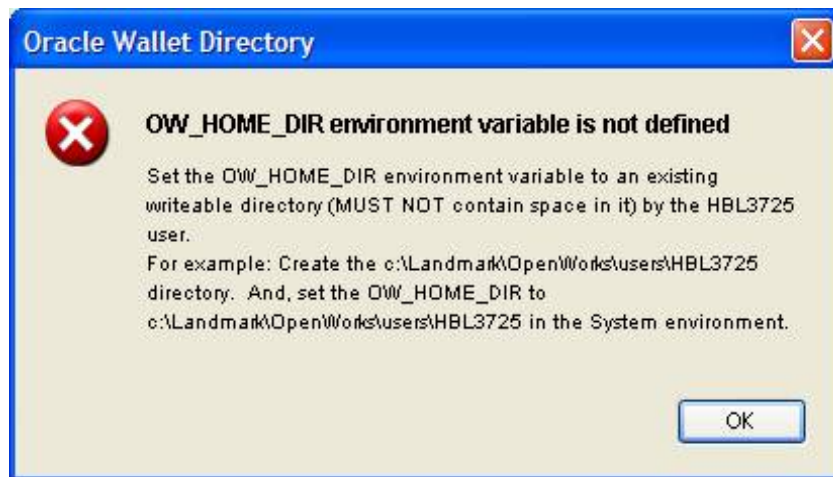
```

### Notes

- The OW\_USER and OW\_PASSWORD environment settings are obsolete.
- Once cached in the wallet password will not expire. Password prompts will not occur in batch applications. Once the password is set it will not expire unless the underlying Oracle password changes. However, to ensure that no GUI is set, then set the environment variable OW\_NO\_PASSWORD\_DIALOG=TRUE.
- The cached password in encrypted format in a file created by the OpenWorks® software on a client machine is obsolete.
- Users are able to connect as “sqlplus /@sidname” *Note:* The forward slash ( / ) means check that correct credential exists in wallet) as well as “sqlplus username/password@sidname”.

## OpenWorks® Database Installation Program Configures Oracle Wallet

OW\_HOME\_DIR must be set before running the OpenWorks® database installation program. If OW\_HOME\_DIR is not set, the following error dialog will open:



The OpenWorks® database installation program uses OW\_HOME\_DIR when creating an Oracle wallet for the Oracle owner account. The installation program will also automatically configure sqlnet.ora as described above. To enable Oracle wallet support, the Oracle owner must have a wallet.

### ***OpenWorks® Installation and sqlnet.ora on Client Machines***

The OpenWorks® installation configures the wallet entry in the sqlnet.ora file on client machines. If you change the location pointed to by the TNSADMIN variable after the install you must ensure that a valid sqlnet.ora is in the new location.

If you create a default district.dat during the install, the directory will be `__Directory_Is_Not_Set_Yet__` instead of `$OWHOME/conf` (Windows: `%OWHOME%\conf`). This simplifies diagnosing a problem with the district.dat.

If you leave the directory as `$OWHOME/conf` (Windows: `%OWHOME%\conf`), while it is a valid directory, it typically is not the correct location for the dir.dat for seismic data. The default owdir.dat is still created in `$OWHOME/conf` (Windows: `%OWHOME%\conf`). This means that the flat file access of the OpenWorks® software will not function correctly. Even if you are not using the Landmark® seismic interpretation software, you must edit district.dat and set the directories to the location of owdir.dat.

---

## District Configuration

---

Districts allow a company to break up large lists of projects, and allow the company to separate data by business unit for better data security or disk ownership.

Support for districts has become a part of the framework of the OpenWorks® software. In an installation of the OpenWorks® software, a company can decide whether it will implement districts or not.

To implement districts, the `district.dat` configuration file must be configured with the name of each district. The `district.dat` file also contains the directory name for configuration files that define storage locations for data not stored in the database. These configuration files are `dir.dat` and `owdir.dat`, for seismic data files and other OpenWorks® files, respectively. The default location for these configuration files is `$OWHOME/conf` (Windows: `%OWHOME%\conf`).

Utilities, such as Project Administration and Project Status Tool, support districts in their interfaces. For example, when a user of the OpenWorks® software creates a new project in Project Administration, part of the project configuration includes selecting the district to which it will belong.

In a new OpenWorks® installation, when the district option “Create a `district.dat` from `TNSNAMES.ora`” was selected, a valid district was created for each SID. The file, `district.dat`, will have a default directory defined for each of the SIDs that are defined in `tnsnames.ora`. You will need to update these directories before running an application of the OpenWorks® software.

If the OpenWorks® installation option “Create empty `district.dat`” was selected, you must configure `district.dat` before you can run the OpenWorks® software. The default location of `district.dat` is `$OWHOME/conf` (Windows: `%OWHOME%\conf`). You can change the default location by adding the environment variable `OW_CONF_DIR` to the `.lgclogin` file. The default location of `OW_CONF_DIR` is `$OWHOME/conf` (Windows: `%OWHOME%\conf`).

*SID Names in `district.dat`:* Names of the OpenWorks® SIDs must be in all capital letters in `district.dat`. See **Project Management > Districts** in the *OpenWorks® Online Help* (`OpenWorksHome/docs/onlinehelp.htm`) for detailed procedures to perform district configuration tasks. If you are restoring an OpenWorks® project and its SeisWorks® data from a version before Release 5000, it is especially

important to refer to the topics in **Project Management > Districts** in the *OpenWorks® Online Help* (*OpenWorksHome/docs/onlinehelp.htm*) before proceeding.

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## System, Project, and File Locations

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### ***OpenWorks® System File Locations***

System files are files containing well and lithologic symbols and files describing file formats for importing or exporting data.

System files are independent of projects and of districts. The location of the following system directories do not change when changing a district: OW\_SYS\_DATA, owioformats, and owsymbols.

You can change the location of each of the directories by setting an environment variable. The OW\_SYS\_DATA directory is located by the value in the OW\_SYSDATA\_DIR environment variable. As a default, this variable is set in lgcenv.cf located in %OWHOME%\conf; however, the variable can be set in a user's initialization script or set separately in the user's environment. The environment variables for the location of the format files (OWIOFORMATS environment variable) and the well and lithologic symbols (OWSYMBOLDIR environment variable) can be set in a user's environment, too.

### ***OpenWorks® Project File Locations***

OpenWorks® project files are external files (not in the database) that are project specific. These may be files created by certain OpenWorks® applications or applications that use the OpenWorks® and seismic development kits.

Should you need to change where these files are stored in the future, you can edit the owdir.dat file. The location of owdir.dat is determined by the district.dat configuration file. A district must have an owdir.dat, and each district in an OpenWorks® instance can have a unique version of owdir.dat. Before editing, make sure you locate the correct owdir.dat that is associated with the district where your project is located.

### ***Seismic Data File Locations (dir.dat Configuration File)***

The dir.dat configuration file is an ACSII text file that lists the file systems searched for seismic data stored as files. This file also describes where applications create, or from where applications retrieve, seismic data stored in files.



Applications look for `dir.dat` based on the `district.dat` configuration file. By default, `district.dat` is in `%OWHOME%\conf` but the location can be changed by setting the `OW_CONF_DIR` environment variable.

For Release 5000.x, the format of the `dir.dat` file has changed from previous versions. If `dir.dat` has not been updated for Release 5000.x, the software will recognize this and create a converted version of the file in the program's memory. However, it is recommended that you update R2003 `dir.dat` files to the new format.

The `dir.dat` file is composed of one or more lines. The lines have the format

```
RootFilePath filetype1 filetype2...filetypen
```

Where

- `RootFilePath` is a file system where seismic data files are stored
- `filetype1...filetypen` are one of the following zero or more extensions of seismic data files or the attribute "OTHER\_FILES"
  - Zero extensions: OpenWorks® applications will not create files in a file system with no attributes; however, an application can read or modify files in the file system, depending on the permissions of the user running the application.
  - Extensions: If the attribute is a seismic data file extension (i.e., `.3dv`, `.3dh`, etc.), files with that extension can be created in the file system. If the same extension is applied to more than one file system, then new files with that extension are created in the file system with the most space.
  - OTHER\_FILES: designates a file system where all types of files, except those not explicitly enumerated as

attributes for another file system, can be created, read, and modified.

#### **OTHER\_FILES attribute required to write data**

At least one file system in dir.dat must have the OTHER\_FILES attribute for data not explicitly assigned to another filesystem to be written.

You can also define variables within dir.dat, where each variable represents a group of extensions.

Refer to the dir.dat topic in the OpenWorks® online help for a complete discussion of the dir.dat configuration file.

### **Example dir.dat for Windows**

An example dir.dat for Windows is shown below. On the left, extensions attributes are explicitly stated for each file system. On the right, variables have been defined for groups of file systems. Both dir.dat entries indicate identical storage locations for the seismic data files.

<b>Example dir.dat with explicit extension attributes</b>	<b>Example dir.dat with variables defined (# denotes the variable definition)</b>
D:\ua\ 3dv 3dh cd bri cmp OTHER_FILES	# define 3d_seismic 3dv 3dh cd bri cmp
D:\ub\ hzd hts	#define 3d_horizons hzd hts
D:\uc\ 3dv 3dh cd bri cmp	D:\ua\ 3d_seismic OTHER_FILES
D:\ud\ 3dv 3dh cd bri cmp hzd hts	D:\ub\ 3d_horizons
	D:\uc\ 3d_seismic
	D:\ud\ 3d_seismic 3d_horizons

The dir.dat files above indicate storage of 3d seismic data files in directories \ua, \uc, and \ud. File systems for horizon data files are \ub, and \ud. Storage for any other files is in file system \ua.

### **Example dir.dat for Linux**

An example dir.dat for Linux is shown below. On the left, extensions attributes are explicitly stated for each file system. On the right,

variables have been defined for groups of file systems. Both dir.dat indicate identical storage locations for the seismic data files.

Example dir.dat with explicit extension attributes	Example dir.dat with variables defined (# denotes the variable definition)
<pre data-bbox="212 382 808 762">/ua 3dv 3dh cd bri cmp OTHER_FILES /ub hzd hts /uc 3dv 3dh cd bri cmp /ud 3dv 3dh cd bri cmp hzd hts</pre>	<pre data-bbox="815 382 1422 762"># define 3d_seismic 3dv 3dh cd bri cmp #define 3d_horizons hzd hts /ua 3d_seismic OTHER_FILES /ub 3d_horizons /uc 3d_seismic /ud 3d_seismic 3d_horizons</pre>

The dir.dat files above indicate storage of 3d seismic data files in file systems /ua, /uc, and /ud. File systems for horizon data files are /ub, and /ud. Storage for any other files is in file system /ua.



# ***Appendix: Troubleshooting***

This appendix has the following information:

- “Adobe Reader and Linux” on page 166
- “After Upgrading, My Application Stops Working” on page 171

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## Adobe Reader and Linux

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This section discusses alternate viewers for PDF files that are available in Linux.

### ***Linux: Other Readers***

Red Hat Linux has a number of viewers for PDF files. In the Gnome desktop, Linux has `gv`, `ggv`, and `xpdf`. In the K Desktop Environment (KDE), Linux has `kghostview`. Each viewer is available from the command line, and `xpdf` and `kghostview` are available from the Gnome panel. For example, to start `xpdf`:

Main Menu > Programs > Graphics > `xpdf`

To start `kghostview`:

Main Menu > Programs > KDE menus > Graphics > PS/PDF Viewer

These viewers usually display PDF files adequately, but they do not have all of the features of Adobe Reader and are not recommended with applications from Landmark® software applications. Among many differences, these viewers do not have a bookmark pane, or if a viewer does have a bookmark pane, the viewer does not recognize the named bookmarks, which allow the bookmark pane to act as a table of contents to the document.

### ***Linux: Opening PDF Files in the Nautilus File Manager***

The Adobe installation program installs the Adobe Reader files so that you can run Adobe Reader from the command line (for example, `/usr/local/AdobeReader/bin/acroread`). The Gnome desktop provides more than a terminal window and a command line to start a program and open a file. A Nautilus window allows you to double-click on a file and open it.

To be able to double-click a PDF file and open it with Adobe Reader, do the following:

1. Select **Main Menu > Programs > Settings > File Types and Programs** in the Gnome Panel. The File Types And Programs dialog opens.

2. In the list box, select the line with `PDF document` in the Description column.
3. Click **Edit List**. The Edit Application List dialog opens.
4. Click **Add Application** in the Add Application List dialog. The Edit Application dialog opens.
5. In the Add Application dialog, do the following:
  - In Application Name, enter a name for the application. For example:  

```
Adobe Reader 7
```
  - In Application Command, enter the path name for `acroread`. Assuming a location of Adobe Reader, `/usr/local/AdobeReader`, you would enter:  

```
/usr/local/AdobeReader/bin/acroread
```
  - Check both check boxes: Can Open Multiple Files, and Can Open From URI.
6. Click **OK** in the Add Application and the Edit Application List dialogs.
7. In the Default Action group box of the Files Types And Programs dialog, select the Open With Application radio button.
8. Also in the Default Action box, click the Arrows button to display a list of names of applications, and select the name you entered in the Application Name text box in Step 5.
9. Click **OK** in the File Types And Programs dialog.
10. In Red Hat Enterprise Linux 5.0, set the `LANG` environment variable to `C` in your shell initialization file. For example, in the Bash shell, you would include the following line in the file:

```
LANG=C
```

## ***Linux: Running Adobe Reader from the Gnome Panel***

If you want to run Adobe Reader before attempting to open a PDF file, you can run `acroread` from the command line, or you can insert it in the menu in the Gnome panel.

To insert an Adobe Reader item in the menu of the Gnome panel, do the following:

1. In a terminal window, log in as Super User

```
su -      (su followed by a dash)
Password:
```

2. Enter `gmenu` to open the GNOME Menu Editor window.
3. In the tree in the left list box, choose the name of a menu (branch) from which you want to be able to start Adobe Reader. For instance, you might choose the menus: Programs (System Menus), and then the Applications submenu.
4. Select **File >New Item**. A untitled item (leaf) appears at the bottom of the list of items for the menu, and default tabs appear on the right.
5. In the Basic tab, do the following:

- In Name, enter a name for Adobe Reader. For example:

```
Adobe Reader 7
```

- In Comment, you may enter information about the item, but a comment is not required. The comment appears in a pop-up when the menu is displayed, and your mouse cursor hovers over the item.
- In Command, enter the full path name for `acroread`. For example:

```
/usr/local/AdobeReader/bin/acroread &
```

- In Type, select Application.



- If you want to associate an icon with Adobe Reader, do the following:

—Click the **Icon** button to open the Choose An Icon dialog.

—Browse for an icon file. For example, an icon file for Adobe Reader ( `acroread.png` ) is located in the following directory:

```
/usr/share/icons/hicolor/32x32/apps
```

—Click **OK** in the Choose An Icon dialog.

- Uncheck **Run In Terminal**.

6. Click the **Save** button under the Basic tab.
7. If you want the new item somewhere else in the menu, you can drag and drop the item to a new location, or you can use the Move Up and Move Down tool bar buttons to move the selected item to a new location in the menu.
8. In Red Hat Enterprise Linux 5.0, set the `LANG` environment variable to `C` in your shell initialization file. For example, in the Bash shell, you would include the following line in the file:

```
LANG=C
```

## Possible Syntax Error in Linux

After installing Adobe Reader in Linux, you may see the following error:

```
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
expr: syntax error
```

```
[2]+ Killed                  ./acroread
[root@owhp64 bin]#
```

It doesn't appear to stop until you use the kill command in another terminal window.

To fix it, you must edit ReaderHome/bin/acroread. Basically, a line just needs an asterisk.

Fix Adobe Reader's "expr: syntax error" message

Find acroread (it is a shell script, probably in /usr/local/bin or under whichever-directory-you-specified-during-installation/bin) and apply this patch:

```
--- acroread.old      2007-06-01 18:18:49.000000000 -0500
+++ acroread         2007-06-01 18:20:57.000000000 -0500
@@ -415,7 +415,7 @@
     return 1
     fi

-         echo $mfile| sed 's/libgtk-x11-\([0-9]*\)
+         echo $mfile| sed 's/libgtk-x11-\([0-9]*\)
     return 0
     fi
```

Alternatively, edit acroread using a text editor such as vi(1) and add an asterisk after the second [0-9] block in line 418.

---

## After Upgrading, My Application Stops Working

---

Some older Landmark applications are built specifically for Oracle 10g, and depending on your upgrade path and other issues, the OpenWorks installation program may not have been able to configure your environment so that the other applications can properly run with the upgraded OpenWorks and database software.

For more information, see the following section in the “Upgrade the Oracle Software: 10g to 11g” chapter:

“Oracle 11g Compatibility with Some Applications” on page 136



## ***Appendix: Oracle Tuning Parameters***

After installing the Oracle database, there are a variety of parameters that can be altered that may enhance performance of certain database operations. These can either be actively managed by a database administrator (DBA) or using Oracle's automatic tuning options.

This appendix provides general information on how to set up the OpenWorks® database for automatic tuning. Some of these settings, such as those that affect shared memory, may depend on hardware available to the database.

## Example Parameters

This is an example of parameter recommendations for a machine that has 8 GB of RAM and that will mainly be used for running the Oracle database.

The parameters `sga_max_size`, `sgo_target`, and `pgc_aggregate_target` should be altered if your machine has more or less RAM than the example.

Parameter	Default in the OpenWorks® Instance	Recommendations
<code>statistics_level</code>	BASIC	TYPICAL
<code>compatible</code> — <i>10g</i>	10.1.0.2.0	10.2.0.5.0
<code>compatible</code> — <i>11g</i>	11.1.0.0.0	11.1.0.0.0
<code>Db_cache_advice</code>	OFF	ON
<code>sec_case_sensitive_logon</code>	false	false
<code>sga_max_size</code> *	1024 MB	3 GB
<code>pga_aggregate_target</code> *	24 MB	1 GB
Redo Log Size**	100 MB	150 MB

\*These values should be modified depending on expected workload and available hardware.

\*\*This is not an Oracle parameter, and it can be modified during the OpenWorks® database installation.

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## Setting Tuning Parameters

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Tuning parameters that can be set include the following.

- **compatible:** For Oracle 10g, setting this parameter to 10.2.0.5.0 instead of 10.1.0.2.0 allows the Oracle software to use the 10.2.0.5.0 optimizer. For Oracle 11g, this parameter should be set to 11.1.0.0.0.
- **sga\_max\_size, sga\_target, and pga\_aggregate\_target:** Setting these parameters allow the Oracle software to automatically tune the System Global Area (SGA). The SGA is areas of shared memory dedicated to the database instance. With the SGA tuned, the Oracle software can also dynamically set the following parameters as needed: db\_cache, java\_pool, shared\_pool, and streams\_pool.

*Value of sga\_target:* The value for this parameter should be zero. Other values may risk a conflict with other settings.

- **sga\_max\_size:** This parameter sets the maximum value that the sga\_target can be set to. It is not recommended to increase this setting to more than 40% of the machine's available RAM.
- **pga\_aggregate\_target, and workarea\_size\_policy:** Setting these parameters allow the Oracle software to automatically tune the Program Global Area (PGA). PGA is an area of memory where data and control information for server process are stored.
- **statistics\_level:** Setting this allows the collection of statistics that are then used for the automatic tuning of both PGA and SGA.
- **Redo Log Size:** Optimizing the size of the redo logs will prevent bottlenecks that can be caused by some database operations when dealing with large data sets.

### Modifying Redo Log Size

The Redo Log Size parameter can be modified in the OpenWorks® database installer.

If the size of the redo log needs to be changed after the database has been created, use the following steps. The resizing of the redo logs can be done while the database is running.

1. Use the following command in a script to get an idea of the current size and location of the redo log files.

```
SELECT a.group#, a.member, b.bytes FROM v$logfile a, v$log b
WHERE a.group# = b.group#;
```

<b>GROUP#</b>	<b>MEMBER</b>	<b>BYTES</b>
1	/u03/app/oradata/OW5000/redo_g01a.log	16,777,216
1	/u04/app/oradata/OW5000/redo_g01b.log	16,777,216
2	/u03/app/oradata/OW5000/redo_g02a.log	16,777,216
2	/u04/app/oradata/OW5000/redo_g02b.log	16,777,216
3	/u03/app/oradata/OW5000/redo_g03a.log	16,777,216
3	/u04/app/oradata/OW5000/redo_g03b.log	16,777,216

The above shows six rows selected, each row with a different redo log file.

2. To perform this task it requires that you make the last redo log **CURRENT**. This script command shows you first how to query the status of the log groups and then how to force the log switch.

```
select group#, status from v$log;
```

<b>GROUP#</b>	<b>STATUS</b>
<b>1</b>	<b>CURRENT</b>
2	INACTIVE
3	INACTIVE

Followed by these script commands:

```
alter system switch logfile;
alter system switch logfile.
select group#, status from v$log;
```

<b>GROUP#</b>	<b>STATUS</b>
1	INACTIVE
2	INACTIVE
<b>3</b>	<b>CURRENT</b>



- Drop the first group of logs with the following script command.

```
alter database drop logfile group 1;
```

#### Possible error from dropping log group

Dropping the first group of logs could result in the following error:

```
ALTER DATABASE DROP LOGFILE GROUP 1
ALTER DATABASE DROP LOGFILE GROUP 1
*
ERROR at line 1:
ORA-01624: log 1 needed for crash recovery of instance
ORA920 (thread 1)
ORA-00312: online log 1 thread 1: 'FileName'
```

You can resolve this error by performing a checkpoint on the database:

```
ALTER SYSTEM CHECKPOINT GLOBAL;
```

- Recreate the dropped redo log files with the new size.

```
alter database add logfile group 1 (
  '/u03/app/oradata/OW5000/redo_g01a.log',
  '/u04/app/oradata/OW5000/redo_g01b.log') size 128m reuse;
```

- Force another log switch

```
select group#, status from v$log;
```

GROUP#	STATUS
1	UNUSED
2	INACTIVE
<b>3</b>	<b>CURRENT</b>

```
alter system switch logfile;
select group#, status from v$log;
```

GROUP#	STATUS
<b>1</b>	<b>CURRENT</b>
2	INACTIVE
3	ACTIVE

- Include script commands for steps 2 through 5 for log groups 2 and 3.
- Verify that the log switch was successful by using the query from step 1 again.

```
SELECT a.group#, a.member, b.bytes FROM v$logfile a, v$log b
       WHERE a.group# = b.group#;
```

<b>GROUP#</b>	<b>MEMBER</b>	<b>BYTES</b>
1	/u03/app/oradata/OW5000/redo_g01a.log	134,217,728
1	/u04/app/oradata/OW5000/redo_g01b.log	134,217,728
2	/u03/app/oradata/OW5000/redo_g02a.log	134,217,728
2	/u04/app/oradata/OW5000/redo_g02b.log	134,217,728
3	/u03/app/oradata/OW5000/redo_g03a.log	134,217,728
3	/u04/app/oradata/OW5000/redo_g03b.log	134,217,728

### ***More Performance Tuning Information***

For more information about tuning parameters, see the documentation from Oracle (such as *Oracle Database Performance Tuning Guide*).

## ***Appendix: Removing an Installation***

Use the procedures in this appendix to uninstall the Oracle server and the OpenWorks® database instance, and all recovery files; and to uninstall the OpenWorks® software.

The procedures in this section are for version 5000.8.1.0 of the OpenWorks software and database instance, and for the Oracle 11g server as embedded into the OpenWorks software. For information about uninstalling the OpenWorks software or the Oracle server from an earlier release, see the *OpenWorks® Software Installation Procedures* manual for that version.

See the following:

- “Removing the Oracle Server or OpenWorks Instance” on page 179
- “Removing OpenWorks® Software” on page 182

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### **Removing the Oracle Server or OpenWorks Instance**

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Sometimes before installing Oracle you may want to completely remove all vestiges of a previous installation of Oracle. The steps in this section will guide you through the process of completely removing Oracle Server.

This procedure has the following assumptions:

- All data in the database has been backed up in a location other than the database directories.
- You have backed up certain other files such as configuration files, database files, and scripts you have written. These files may be stored in Oracle’s home directory as well as other places.
- You want to cleanly uninstall Oracle.
- You want to delete all Oracle instances and databases.

## Warnings

Some of the steps in this procedure can cause trouble for the operating system if they are performed incorrectly or incompletely.

- Aborting the uninstall procedure in the middle of the procedure may leave the system in an undetermined condition.
- Some of the steps must be executed as Super User (or root). There is no undo for these steps.

## Deleting Oracle 11g

The uninstall program allows you to delete all of Oracle completely (the server software, the database, the OpenWorks database instance, and all recovery files), to delete the OpenWorks database instance and schemas, or to delete just the OpenWorks schemas.

To delete all of Oracle or to delete just a part, do the following:

1. Ensure the database is running. The database must be running for this procedure
2. Log in as the Oracle user.
3. Launch the uninstall program:

- In Windows select:

**Control Panel > Uninstall Programs > Landmark  
OpenWorks Database**

or

**Control Panel > Add Or Remove Programs > Landmark  
OpenWorks Database**

- In Linux, in a path similar to the following, execute:

```
OracleUserHome/Landmark/OpenWorksDatabase/  
Uninstall_Landmark_OpenWorks_Database/  
Uninstall_Landmark_OpenWorks_Database
```

4. Follow the prompts.

5. Reboot your system to complete the removal of the database software.

---

## Removing OpenWorks® Software

---

The procedure outlined below will delete anything in the OpenWorks® home directory (as well as other files), including any other applications or files installed in the OpenWorks® directory.

**Move customized files that you want to preserve**

Before performing an uninstall, move any files that you created and want to preserve to a location other than an OpenWorks® directory.

### Windows

Use the standard Windows program-removal utilities (Add/Remove Programs or Programs and Features/Uninstall, in Windows 7) to remove OpenWorks®. You must reboot to complete the removal of the software.

### Linux

1. Log on as root.
2. Set the OpenWorks® home environment variable, `OWHOME`. For example:

```
OWHOME=/Landmark/programs/OpenWorks
```

```
export OWHOME
```

3. Stop the NetD, PD, and license manager processes. Enter the following commands in the OpenWorks® home directory:

```
./bin/stop_pd
```

```
./bin/stop_netd
```

```
./lam/bin/stoplmgrd
```

4. Run `owremove`, located in the `install` subdirectory in the OpenWorks® home directory. For example:

```
/Landmark/programs/OpenWorks/install/owremove
```

The following folders are removed in the uninstall process.

<b>app- defaults</b>	<b>lib</b>	<b>mksnt</b>
<b>bin</b>	<b>lib64</b>	<b>revisions</b>
<b>dat</b>	<b>lib64rh5</b>	<b>files</b>
<b>conf*</b>	<b>jre</b>	<b>install*</b>
<b>docs</b>	<b>bitmaps</b>	<b>*.log</b>
<b>jar</b>	<b>X11</b>	

5. After `owremove` has finished, delete the OpenWorks® home directory if it still exists. For example:

```
rm -rf /Landmark/programs/OpenWorks
```

