

Oracle® E-Business Suite

Upgrade Guide

Release 12.0 and 12.1 to 12.2

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Oracle E-Business Suite Upgrade Guide, Release 12.0 and 12.1 to 12.2

Part No. E73540-22

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Oracle E-Business Suite Upgrade Guide, Release 12.0 and 12.1 to 12.2

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- Are the implementation steps correct and complete?
- Did you understand the context of the procedures?
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- Do you need different information or graphics? If so, where, and in what format?
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Note: Before sending us your comments, you might like to check that you have the latest version of the document and if any concerns are already addressed. To do this, access the new Oracle E-Business Suite Release Online Documentation CD available on My Oracle Support and www.oracle.com. It contains the most current Documentation Library plus all documents revised or released recently.

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Preface

Intended Audience

Welcome to Release 12.0 and 12.1 to 12.2 of the *Oracle E-Business Suite Upgrade Guide*.

This book provides instructions for upgrading existing Oracle E-Business Suite Release 12.0 and 12.1 instances to Oracle E-Business Suite Release 12.2. This book also provides instructions for upgrading an existing Oracle E-Business Suite Release 12.1.3 instance to Oracle E-Business Suite Release 12.2 on Oracle Cloud infrastructure. This delivers the unified driver that you use to upgrade the technology stack and products to Release 12.2.

This book is intended as a guide for the database administrator and the application specialists who are responsible for upgrading to Release 12.2 of Oracle E-Business Suite.

See Related Information Sources on page x for more Oracle E-Business Suite product information.

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Structure

- 1 Overview of the Upgrade
- 2 Understanding Upgrade Impact and Changes
- 3 Planning and Performing Pre-Upgrade Tasks
- 4 Performing the Upgrade
- 5 Performing Post-Upgrade Tasks
- A Managing Concurrent Processes

Related Information Sources

This book was current as of the time it was initially published. It is included in the Oracle E-Business Suite Document Library, which is supplied in the Release 12.2 software bundle. Later versions of this and other documents that have changed sufficiently between releases to warrant re-publishing are made available at the following URL:

<https://www.oracle.com/technical-resources/documentation/applications-doc.html>

A full list of documentation resources is also published on *My Oracle Support* [<https://support.oracle.com/>]. See *Oracle E-Business Suite Documentation Resources, Release 12.2*. You should be familiar with a basic subset of references before you upgrade. Related Information Sources include:

Oracle E-Business Suite User's Guide

This guide explains how to navigate, enter and query data, and run concurrent requests using the user interface (UI) of Oracle E-Business Suite. It includes information on setting preferences and customizing the UI. In addition, this guide describes accessibility features and keyboard shortcuts for Oracle E-Business Suite.

If you are looking for information about...	Refer to these documents...
System setup and procedures	<i>Oracle E-Business Suite Concepts</i>
	<i>Oracle E-Business Suite Setup Guide</i>
	<i>Oracle E-Business Suite Maintenance Guide</i>
	<i>Oracle E-Business Suite Security Guide</i>
	<i>Oracle Workflow Administrator's Guide</i>
	<i>Oracle XML Gateway User's Guide</i>

If you are looking for information about...	Refer to these documents...
Installation and upgrade	<p><i>Oracle E-Business Suite Installation Guide: Using Rapid Install</i></p> <p><i>Oracle E-Business Suite Upgrade Guide: Release 11i to Release 12.2</i></p> <p><i>Oracle E-Business Suite Installation and Upgrade Notes*</i></p> <p><i>Oracle E-Business Suite Release Notes*</i></p> <p><i>Oracle E-Business Suite NLS Release Notes*</i></p> <p><i>Oracle Applications Release 11.5.10.2 Maintenance Pack Installation Instructions (Doc ID: 316365.1)</i></p> <p><i>Patch Requirements for Sustaining Support for Oracle E-Business Suite Release 11.5.10 (Doc ID: 883202.1)</i></p>
Product-specific features	<p><i>Electronic Technical Reference Manual (eTRM)*</i></p> <p>Release Content Documents (RCDs)*</p> <p>Product-specific implementation and upgrade guides</p>
DB	<p><i>Database Preparation Guidelines for an Oracle E-Business Suite Release 12.2 Upgrade (Doc ID: 1349240.1)</i></p> <p><i>Oracle E-Business Suite Release 12.2: Consolidated List of Patches and Technology Bug Fixes (Doc ID: 1594274.1)</i></p> <p><i>Interoperability Notes: Oracle E-Business Suite Release 12 with Oracle Database 11g Release 2 (11.2.0) (Doc ID: 1058763.1)</i></p> <p><i>Interoperability Notes: Oracle E-Business Suite Release 12.0 or 12.1 with Oracle Database 12c Release 1 (12.1.0) (Doc ID: 1524398.1)</i></p> <p><i>Interoperability Notes: Oracle E-Business Suite Release 12.1 with Oracle Database 19c (Doc ID: 2580629.1)</i></p> <p><i>Installing Database Patch Updates for Oracle E-Business Suite on Single Instance VM DB System in Oracle Cloud Infrastructure (Doc ID: 2360215.1)</i></p> <p><i>Installing Database Patch Updates for Oracle E-Business Suite on Oracle RAC VM DB Systems in Oracle Cloud Infrastructure (Doc ID: 2476292.1)</i></p> <p><i>Installing Database Patch Updates for Oracle E-Business Suite on Oracle Cloud Infrastructure Exadata Cloud Services and Oracle Exadata Cloud@Customer (Doc ID: 2368508.1)</i></p>

* Available only on *My Oracle Support*.

Patch readme files may also contain information about additional recommended documentation.

Do Not Use Database Tools to Modify Oracle E-Business Suite Data

Oracle **STRONGLY RECOMMENDS** that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle E-Business Suite data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle E-Business Suite data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle E-Business Suite tables are interrelated, any change you make using an Oracle E-Business Suite form can update many tables at once. But when you modify Oracle E-Business Suite data using anything other than Oracle E-Business Suite, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle E-Business Suite.

When you use Oracle E-Business Suite to modify your data, Oracle E-Business Suite automatically checks that your changes are valid. Oracle E-Business Suite also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

Overview of the Upgrade

This chapter covers the following topics:

- Upgrade and Requirements
- Understanding the Upgrade Flow and Process
- Scheduling Time for an Upgrade
- Testing the Upgrade

Upgrade and Requirements

This guide provides instructions for upgrading existing Oracle E-Business Suite technology stack and products from Release 12.0 and Release 12.1 to Release 12.2, and supports on premises upgrades. This guide also provides instructions for upgrading an existing Oracle E-Business Suite Release 12.1.3 instance to Oracle E-Business Suite Release 12.2 on Oracle Cloud infrastructure.

This and other Release 12.2 documents are updated as required. Ensure that you have the most current version of all guides and documents before you begin your system upgrade.

Additional Resources: Refer to Oracle E-Business Suite Documentation Web Library [http://docs.oracle.com/cd/E26401_01/index.htm] for the latest versions of relevant guides.

Supported Upgrade Paths

Oracle supports direct upgrades from Oracle E-Business Suite Release 12.0 and 12.1 to Oracle E-Business Suite Release 12.2.

Upgrading to Oracle E-Business Suite Release 12.2 requires your database to be at the minimum version 11.2.0.4. To complete the upgrade to Release 12.2, you must upgrade your database to 11.2.0.4 or higher. Additional details are covered in Chapter 4,

Performing the Upgrade, Preparing the Database for the Upgrade, page 4-1.

Additional Resources: Database de-support schedules have important operational and planning implications for Oracle E-Business Suite environments. Oracle recommends that you review the following My Oracle Support Knowledge document that details the latest database support policies and de-support schedules: *Release Schedule of Current Database Patch Sets* (Doc ID: 742060.1).

Understanding the Upgrade Flow and Process

The upgrade process has been enhanced and streamlined. New features have been added to Rapid Install and AutoPatch to increase their capabilities.

Rapid Install provides the latest certified versions of Oracle E-Business Suite products, including technology stack components. In an upgrade, it creates the new file system for the application tier components and the new file system for the database. After the upgrade, run Rapid Install again to configure the application tier.

An upgrade also includes various manual steps, including some that direct you to run scripts or apply patches. Use `adpatch` to apply Oracle E-Business Suite patches, including the unified driver which upgrades the Oracle E-Business Suite Database objects to Release 12.2.0. After Online Patching Enablement is complete, `adop` is used to apply all Oracle E-Business Suite patches.

This guide contains information regarding technical and functional impact and changes due to the upgrade. It is very important that your DBA and your functional specialists work together to review this information carefully as a part of upgrade planning. Doing so will help to prevent unexpected delays during and after the upgrade.

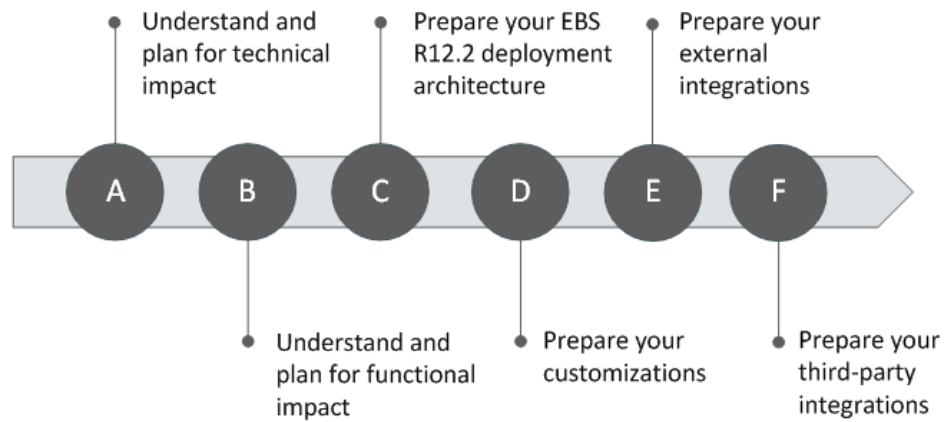
Overview of Planning and Preparing for the Upgrade

There are a number of tasks that should be performed prior to starting the upgrade. The information to help you plan for and prepare for the upgrade are documented in the following chapters within this guide:

- Understanding Upgrade Impact and Changes
- Planning and Performing Pre-Upgrade Tasks

The following diagram describes the high-level overview of the tasks described in this guide:

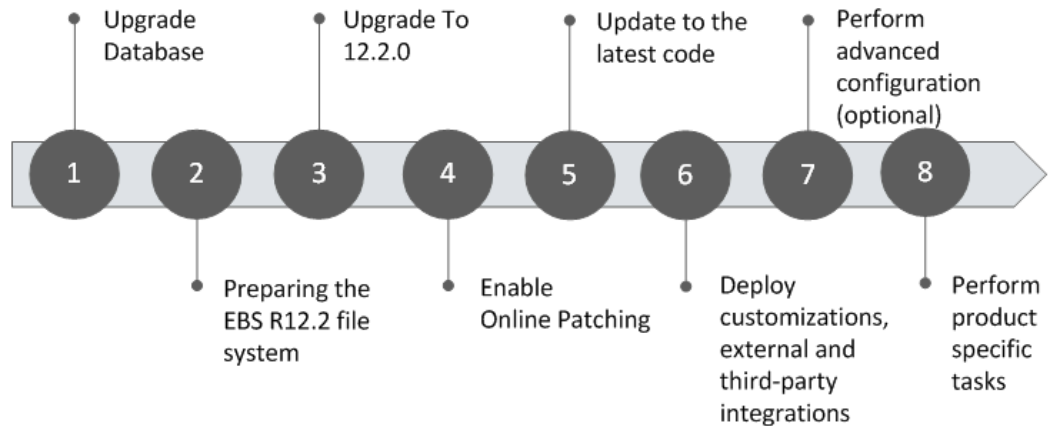
Overview: Preparing for the Oracle E-Business Suite Release 12.2 Upgrade



Overview of the Oracle E-Business Suite Release 12.2 Upgrade Process

The steps required to upgrade to Oracle E-Business Suite Release 12.2 are documented in the *Performing the Upgrade* chapter. The upgrade includes a number of steps that can be categorized into the following high level steps:

Overview: Upgrading to Oracle E-Business Suite Release 12.2



The following is a summary of the steps for each category:

1. Prepare the Database.
 - Upgrade the database to the minimum version or latest certified version

- Migrate to a new platform (optional)
 - Apply the latest database patches
2. Lay Down the Oracle E-Business Suite Release 12.2 File System.
 - Use Rapid Install to lay down the file system and technology stack
 - Apply the latest application tier technology stack patches
 3. Upgrade to Release 12.2.0.
 - Apply the latest AD upgrade patch and Oracle E-Business Suite Consolidated Upgrade Patch (CUP)
 - Apply the latest Oracle E-Business Suite pre-install patches
 - Apply the 12.2 merged upgrade driver
 - Run Rapid Install in 'configure' mode
 4. Enable Online Patching.
 - Apply the latest Online Patching Readiness Report Patch
 - Apply required updates to custom code according to the readiness reports
 - Apply the enablement patch
 5. Upgrade to the latest code.
 - Apply the latest AD-TXK RUP
 - Apply the latest Oracle E-Business Suite Release 12.2 Release Update Pack (RUP)

Note: You must apply the 12.2.3 or later Release Update Pack (RUP) to your existing Release 12.2 system for production use.

RUPs are released periodically. Each one is cumulative and delivers error corrections and system updates, not only for the most current release update pack, but also for all the RUPs that precede it. Oracle highly recommends that when planning your upgrade you plan to upgrade to the latest RUP available.

You can keep current on the latest release information, as well as new RUP announcements and other updates that may affect

your upgrade by reviewing the latest version of Oracle Applications Manager Release Notes for Release 12.2.

- Complete post-upgrade steps
 - Apply the latest security patches
 - Apply all recommended patches
 - Apply NLS patches (conditional)
6. Deploy custom code, external integrations and third-party integrations.
 7. Perform advanced configurations.
 - Scaling up and scaling out, such as adding additional managed servers, adding application tier nodes, or adding Oracle RAC nodes.

Supported in EURC-DT: Yes

Note: The upgrade process is performed with one application tier and one database tier. If you are using an Oracle RAC environment, then you should run the Release 12.2 upgrade on a single Oracle RAC node. The reason for upgrading with a single Oracle RAC node is that most of the elapsed time in the upgrade will be taken by jobs running DML (INSERT, UPDATE, DELETE). These jobs use multiple workers and parallel servers, which typically attempt to access the same objects and blocks concurrently. The consequent additional communication between cluster nodes (and associated cluster waits) significantly outweigh any gains from using the additional CPU's to increase throughput. Scaling out is a post-upgrade step.

- Secure configuration
 - DMZ configuration
 - Disaster recovery setup
 - Reporting environment setup
8. Perform product specific tasks.
 - Some products include tasks that must be performed after the upgrade is

complete

The required steps are covered in detail in the following chapters in this upgrade guide:

- Performing the Upgrade
- Performing Post Upgrade Tasks

Scheduling Time for an Upgrade

Before scheduling a time for the upgrade, you should perform several iterations of the upgrade in a non-production environment. The goal of multiple iterations is to confirm the required steps and reduce the time required to perform the upgrade.

In an upgrade, *critical system downtime* refers to the period of time when users cannot log on to the system or use Oracle E-Business Suite. There are several actions you can take to reduce this downtime period.

Suggested Reading: Some tasks and steps in subsequent chapters may be performed in parallel. There are also steps you can take to improve the timing of certain tasks. For guidelines to improve the performance of the upgrade and reduce the downtime required to perform the upgrade, refer to the following:

- *Best Practices for Minimizing Oracle E-Business Suite Release 12.2.n Upgrade Downtime* (Doc ID: 1581549.1)
- *Express Diagnosis of Oracle E-Business Suite Release 12.2.n Upgrade Performance Issues* (Doc ID: 1583752.1)

After you have optimized your upgrade plan and finalized testing, you will have an estimate for the amount of time required to perform the upgrade in production. You can then schedule the time required for the upgrade to your production environment.

Testing the Upgrade

Oracle suggests that you perform a test upgrade using a copy (clone) of your existing system, and hardware that is similar to your production system to provide a baseline for upgrade execution times and an opportunity to work out any upgrade issues ahead of time. Oracle also recommends several upgrade tests, especially for customized systems.

When upgrading Oracle E-Business Suite, it is essential to ensure that the performance of key operations continues to meet requirements after the upgrade. Oracle recommends that you upgrade Oracle E-Business Suite in a test environment, and then conduct a benchmark test with the configuration, product mix, and user load that

simulates current and expected workloads. Controlled conditions help verify performance prior to the upgrade of your production environment.

Additional Information: For additional information, refer to *Oracle E-Business Suite Performance Best Practices* (Doc ID: 2528000.1).

Understanding Upgrade Impact and Changes

This chapter covers the following topics:

- Understanding Technical Impact and Changes
- Understanding Business Impact and Functional Changes

Understanding Technical Impact and Changes

The upgrade to Oracle E-Business Suite Release 12.2 introduces a number of technical changes to the architecture and technology stack. The method by which Oracle E-Business Suite is patched has also changed with Release 12.2. This section will provide an overview of the key technical impact and changes introduced with Oracle E-Business Suite Release 12.2.

Release 12.2 Architecture

The upgrade process introduces changes to the system architecture and the way you administer and patch the system after the upgrade. This section provides an overview of key technical changes introduced with the upgrade.

Additional Resources: *Oracle E-Business Suite Concepts* contains a complete discussion of the architecture in this release, including information about the Oracle E-Business Suite multi-tiered architecture, enhancements, language support, file system structure, and the basic data model.

12.2 Dual File Systems

Two complete file systems are always present in an Oracle E-Business Suite Release 12.2 environment. It is important to distinguish between the file system (fs1 or fs2) itself and

its current role, which alternates between 'patch' and 'run' with every patching cycle.

The 'run' file system is the current system in use by the running application, while the 'patch' file system is the other system being patched or awaiting the start of the next online patching cycle.

The dual file system approach caters to application code, but applications also use the file system to read and write business data. In Release 12.2, application data files are stored in a third area, the non-editioned file system (fs_ne), which is used to store data that is needed across all file systems. Non-editioned files are not copied or moved during patching. Their location remains constant across online patching cycles.

Oracle E-Business Suite Architecture: The Application Tier

The *application tier* has a dual role: hosting the various servers and service groups that process the business logic, and managing communication between the desktop tier and the database tier. The architecture of this tier (unlike that of the database and desktop tiers) has changed significantly in Oracle E-Business Suite Release 12.2.

Three servers or service groups comprise the basic application tier for Oracle E-Business Suite:

- Web services
- Forms services
- Concurrent Processing server

In Release 12.2, Web and Forms services are provided by *Oracle Application Server*. They are no longer servers in the sense of being a single process.

Web Services

The Web services component of Oracle Application Server processes requests received over the network from the desktop clients, and includes the following major components:

- Web Listener (Oracle HTTP Server powered by Apache)
- Java Servlet Engine (Oracle WebLogic Server, WLS)

The Web listener component of the Oracle HTTP server accepts incoming HTTP requests (for particular URLs) from client browsers, and routes the requests to WLS. When possible, the Web server services the requests itself. For example, returning the HTML to construct a simple Web page. If the page referenced by the URL requires advanced processing, then the listener passes the request on to the servlet engine which contacts the database server as needed.

An important change in Release 12.2 is the employment of the Oracle WebLogic Server for many system management and configuration tasks. Configuration using the Oracle WLS Console in Release 12.2 supplements, but does not replace the traditional use of

the AutoConfig tool. Together, these tools provide comprehensive management capabilities for a Release 12.2 system.

It is important to understand the role of each and how they complement one another.

Additional Resources: See the *Oracle E-Business Suite Concepts Guide Release 12.2* and the *Oracle E-Business Suite Release 12.2 Setup Guide* for additional information regarding WebLogic Server and AutoConfig.

Application Tier ORACLE_HOMEs in Release 12.2

Oracle E-Business Suite Release 12.2 uses two application tier ORACLE_HOMEs. The first is the OracleAS ORACLE_HOME, and the second is the Oracle Fusion Middleware (FMW) ORACLE_HOME.. This combination enables Oracle E-Business Suite to take advantage of the latest Oracle technologies.

Notable features of this architecture include:

- The Oracle E-Business Suite modules are deployed out of the OracleAS 10.1.2 ORACLE_HOME, and the frmweb executable is also invoked out of this ORACLE_HOME.
- All major services are started out of the FMW ORACLE_HOME.

Key changes from earlier releases include:

- The FMW ORACLE_HOME (sometimes referred to as the Web or Java ORACLE_HOME) replaces the OracleAS 10.1.3.-based ORACLE_HOME used in Oracle E-Business Suite 12.x releases prior to 12.2.

Technology Stack Components

On the database tier, the technology stack includes:

- Oracle Database 12c Release 1 (12.1.0.2)

On the application tier, the technology stack includes:

- Oracle Fusion Middleware 11g PS7 (11.1.1.9.0)
 - Oracle WebLogic Server 11g PS5
 - Oracle WebLogic JSP compiler
 - Oracle FMW 11g Java Required Files (JRF) libraries (except the use of ADF and MDS 11g)
 - Oracle WebLogic Portlet 11g PS3 Container
- JDK 7.0

- Apache version 2.2
- Oracle 10g (10.1.2) Applications Server for Oracle E-Business Suite Forms based Applications

Online Patching

Oracle E-Business Suite Release 12.2 introduces Online Patching, a new feature that greatly reduces the downtime that was needed in previous releases for application of Release Update Packs (RUPs), Critical Patch Updates (CPUs), and other patches and bug fixes of various kinds.

Key Features

- In Release 12.2, *all* patching operations are carried out while the applications are in use and users are online.
- Patching is performed using the new *adop* (AD Online Patching) utility.
- A short period of downtime is required, but this amounts to little more than a restart of the services: the time the applications are unavailable is measured in minutes rather than hours, and this can be specified to be at the most convenient time.

Note: The classic patching model is designed to minimize downtime by running as fast as possible, using whatever resources are needed. In contrast, the online patching model is designed to minimize downtime by allowing patching operations to be performed while users remain on the system.

Principles

In essence, online patching is performed as follows:

1. A copy is made of the running system.
2. Patches are applied to the copy while users continue to access the running system.
3. Transparently to users, the copy becomes the new running system.
4. What was the original running system (now obsolete) is deleted.

This introduces the concept of a *patching cycle* that consists of several phases, in contrast to the model used in previous releases. These phases are denoted prepare, apply, finalize, cutover, and cleanup.

Note: For more information about online patching principles, see *Oracle*

Implementation

Any mechanism that uses a copy of the running application must take into account that an Oracle E-Business Suite application comprises both code and data, stored in the file system and database.

The file system is the easier of the two to cater for, simply requiring an additional copy to be created and maintained. The resulting *dual file system* consists of one file system that is used by the running system and another one that is either currently being patched, or (as will be the case for most of the time) standing ready to be patched. The two file systems swap roles at the end of each *patching cycle*, with the transition between them being managed by AutoConfig.

Creating a copy of the database portion of the running applications system is more complex. It has been accomplished by taking advantage of the Oracle Database 11g R2 *Edition-Based Redefinition* (EBR) feature. This allows an application to efficiently store multiple copies (*editions*) of its application definition in the same database, and thereby enables online upgrade of the database tier.

The database patch edition only comes into existence during a patching cycle, and becomes the new run edition at end of the cycle. The former database run edition (the old edition) and the obsolete objects it contains are discarded at the end of a patching cycle, and the space reclaimed during the cleanup phase.

Tools

Patching is performed by running the new *adop* (AD online patching) tool. This tool invokes the *adpatch* utility that was run directly in previous releases of Oracle E-Business Suite.

Warning: Running *adpatch* directly is **not supported** in an online patching environment, except under explicit instruction from Oracle.

The *adop* tool orchestrates the entire patching cycle, and can be used to run individual phases as required.

Note: For full details of *adop* features and options, refer to the Patching section of *Oracle E-Business Suite Maintenance Guide*.

There are also implications for general (non-patching) maintenance activities.

Additional Resources: For information on choosing the appropriate file system to run AD tools from, refer to: *Choosing the Correct File System For Maintenance Tasks* in Chapter 7 of the *Oracle E-Business Suite Maintenance Guide, Release 12.2*.

Additional Information: For additional information, refer to: *Online Patching, Oracle E-Business Suite Concepts, Release 12.2.*

Customizations

Customized environments require additional attention during an upgrade. The instructions in this guide assume that you have followed the standards for customizing Oracle E-Business Suite.

Suggested Reading: See the *Oracle E-Business Suite Release 12.2 Developer's Guide* and the *Oracle E-Business Suite Release 12.2 User Interface Standards* guide for additional information regarding customization standards.

Oracle E-Business Suite 12.2 introduces a new set of compliance, code, and patching standards that customizations must adhere to. The Online Patching Readiness Reports provide a set of utilities that report any compliance issues.

Suggested Reading: Refer to *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2* (Doc ID: 1531121.1) to run the Online Patching Readiness Reports.

Tip: Detailed information on preparing your customizations is covered in Chapter 3, *Planning and Performing Pre-Upgrade Tasks, Preparing Customizations*, page 3-20.

There are two levels of compliance that can be targeted:

- **Minimal Compliance (Minimal)** - These checks represent the minimum requirement for correct operation of Oracle E-Business Suite Release 12.2. Do not attempt to operate the system if there are P1 minimal compliance violations. Custom code should pass the minimal compliance checks before being used in a Release 12.2 system.
- **Full Compliance (Full)** - These checks indicate whether an object can be patched using Online Patching. Objects which do not meet full compliance may have limitations in how they can be patched, or may need to be patched using downtime patching. Full compliance also requires that all minimal compliance checks are passed. Custom code that will only be patched using downtime patching does not need to meet the full compliance level.

To preserve customizations and minimize the impact during the upgrade:

- Follow *Oracle E-Business Suite Customizations Standards* for customizing your system

and upgrading your customizations.

- Maintain complete documentation for customizations
- Back up customizations before the upgrade

Caution: Customizing any concurrent program definitions, menus, value sets, or other seeded data provided by Oracle E-Business Suite is not supported. The upgrade process overwrites these customizations.

Oracle E-Business Suite Cloud Manager

If you use Oracle E-Business Suite Cloud Manager to manage your environments, then refer to *Upgrading Oracle E-Business Suite in Getting Started with Oracle E-Business Suite on Oracle Cloud Infrastructure*, My Oracle Support Knowledge Document 2517025.1. This describes important information about the use of Cloud Manager after the upgrade to Release 12.2.

Understanding Business Impact and Functional Changes

In addition to the technical impact and changes described in the previous section, an upgrade also initiates specific changes that affect the way your existing products work after the upgrade, and the look and feel of the user interface. These functional (business-related) changes have an impact on the way you use the products as you conduct daily business.

Functional topics in this guide that pertain to a Release 12.2 upgrade include:

- Reasons for the change and areas that benefit from new functionality
- Functionality that is temporarily disabled or has been made obsolete
- Changes to user interfaces, terminology or concepts, and menu options
- Steps you can take to verify that all transactional data is upgraded as expected
- Suggestions for reducing downtime

Upgrade By Request

For some Oracle E-Business Suite products, upgrade planning includes choosing the most active set of data for upgrade processing. Then, you can upgrade historical data that was omitted from the upgrade at a later date, or when it is needed. For example, you might include only the last fiscal year in the upgrade to Release 12.2, and then

upgrade the remaining data outside the 12.2 downtime window.

Obsolete Products in Release 12.2

This section lists obsolete products in Release 12.2.

Product Name
*** Oracle Balanced Scorecard
* Oracle CAD-View 3D
* Oracle Contracts Intelligence
Oracle Customer Intelligence (bic)
*** Daily Business Intelligence
Demand-Side Product Data Synchronization for GDSN
Document Management and Collaboration
*** Embedded Data Warehouse
Global Accounting Engine
Information Technology Audit
Supply-Side Product Data Synchronization for GDSN
* Oracle Demand Planning (obsolete in release 12.2.5)
* Oracle E-Business Intelligence
* Oracle Enterprise Planning and Budgeting
* Oracle Enterprise Performance Foundation
Oracle Financial Aid
* Oracle Financial Consolidation Hub
* Oracle Financials and Sales Analyzers

Product Name

* Oracle Financials Intelligence

Oracle Funds Pricing

* Oracle Grants Proposal

* Oracle HR Intelligence

* Oracle Install Base Intelligence

* Oracle Interaction Center Intelligence

* Oracle Internal Controls Manager

* Oracle Manufacturing Scheduling (obsolete in release 12.2.5)

* Oracle Marketing Intelligence

* Oracle Operational Intelligence

Oracle Personal Portfolio

* Oracle Process Manufacturing Intelligence

* Oracle Procurement Intelligence

* Oracle Product Intelligence

* Oracle Product Lifecycle Management

* Oracle Profitability Manager

* Oracle Projects Intelligence

* Oracle Public Sector Budgeting

* Oracle Sales Intelligence

* Oracle Service Intelligence

Product Name

** Oracle Student Recruiting

** Oracle Student Systems

* Oracle Supply Chain and Order Management Intelligence

* Oracle Transportation Execution

* Oracle Transportation Planning

Web Analytics Daily Business Intelligence for iStore

* A migration plan exists for customers who have purchased these products in earlier releases. Contact your Sales Representative or Account Manager for more information.

** Customers continuing to use Oracle Student Recruiting and Oracle Student Systems should not upgrade to this release.

Support will be provided to existing customers on earlier releases, in accordance with the Oracle Lifetime Support Policy.

*** Oracle's Daily Business Intelligence (DBI), Balanced Scorecard (BSC), and Embedded Data Warehouse (EDW) are not offered with Oracle E-Business Suite Release 12.2. Support will be provided to existing customers on Oracle E-Business Suite Release 12.1.x, 12.0.x and older versions of DBI, BSC, and EDW according to Oracle's published lifetime support policies.

Additional Information: For additional information, refer to *DBI: Announcing the Desupport of Daily Business Intelligence (DBI), Balanced Scorecard (BSC), and Embedded Data Warehouse (EDW)* (Doc ID: 1351505.1) on My Oracle Support.

Financials Upgrade Impact

About Business Impact and Functional Changes

An Applications upgrade alters both the technical and functional aspects of your Oracle E-Business Suite system. In addition to changes to the technology stack and file system, an upgrade also initiates specific changes that affect the way your existing products work after the upgrade and the way they look and feel. These functional changes have an impact on the way you use the products as you conduct your daily business.

Note: This section describes some of the ways in which the upgrade changes your existing products. Oracle assumes that you have read about the new features and products delivered in this release that are included in the product-specific Release Content Documents (RCDs) and TOI, on *My Oracle Support*.

The discussions of the functional aspects of the upgrade in this section are arranged by products within the Financials and Procurement product family.

Financials and Procurement Products

Changes to the products in this section affect Financials and Procurement products. Before you begin the upgrade, your Financials and Procurement application specialists should have made plans to accommodate the relevant changes.

Subledger Accounting

This section is applicable to those scenarios where historical release 11i data was not completely upgraded to release 12 during Oracle E-Business Suite Release 12.0 and Release 12.1 upgrades. You can upgrade this data anytime, or after upgrading to Release 12.2. For more information, refer to *SLA: Upgrade Historical Subledger Transaction Accounting Program (XLAONDEUPG)* (Doc ID: 1376752.1) and *Oracle E-Business Suite Upgrade Guide - Release 11i to 12.2*.

Advanced Collections

Changes to Oracle Advanced Collections in the upgrade are described in this section.

Multiple Level Strategy Support

Advanced Collections allows you to define different strategy levels by Operating Unit separate from the System level. The strategy levels can also be overridden at Party level. Advanced Collections supports the setting for certain Operating Units by Dunning and certain Operating Units by Strategy.

Stage Dunning Support

Advanced Collections supports the Staged Dunning method separate from the Days Overdue method. In addition, while creating Overdue Dunning Plans, you can specify the Include Current, Include Disputed Items, Include Unapplied Receipts, and Use Grace Days options.

Collections Manager Functionality

Collections Manager Functionality has been rewritten using OA Framework which allows sorting and filtering for a particular account.

New Scoring Engines

A new scoring engine is seeded with Pre-delinquency status at Invoice level. In addition, a Quick scoring engine has been added that only processes invoices closed in

the last 60 days rather than all invoices. You can test the Scoring Engine for a particular account from the Collections Scoring Admin window instead of running the batch program to verify the score engine setup.

Strategy Improvements

Advanced Collections allows editing of 'To be created' work items. The 'To be created' work items in the current strategy can be overwritten with new Pre-wait/Post-waits and Collector without creating new Work Items.

Lease and Finance Management

Improved Disbursements and Payables

oklupdpassthruPAYdate.sql: This script updates the contracts having a NULL pass-through pay start date. It updates the pass-through pay start date with the Effective from date of Fee/Service.

oklcrctptpaygrouppmntterm.sql: This script identifies contracts having a NULL pay group or payment term for base and evergreen pass-through terms, and updates those values based on supplier and supplier site setup. If the supplier setup does not exist, then it defaults the pay group and payment term appropriately.

Improved Customer Billing

oklupdinvmfrmtid.sql: This script upgrades the contract billing invoice format rules and replaces the invoice format information from name to id.

oklvarast.sql: This script upgrades interest billing streams with stream purposes VARIABLE_INTEREST, INTEREST_CATCHUP and VARIABLE_LOAN_PAYMENT. It historicizes the contract level streams and generates streams at the asset level by prorating the contract level streams. It also upgrades the calculated variable rate parameters to be at asset level by prorating the contract level calculated variable rate parameters.

Improved Pricing

oklupdincomefee.sql: This script upgrades contracts that have Income Fees with a single payment. It updates the origination income on Income Fee lines with the fee line amount. Income fees with recurring payments continue to have origination income as NULL.

Improved Contract Authoring

oklreamg.sql: This script upgrades contracts that have re-leased assets. It updates the re-leased asset indicator for assets based on the re-leased asset indicator on the contract header.

okltxsalmg.sql: This script upgrades contracts that have not yet been booked, including contracts undergoing revision that have not yet been completed. It updates the salvage value for tax books in the internal asset transaction tables based on salvage value rules applicable to the tax book.

Human Resource Management Upgrade Impact

This section describes the way the upgrade affects your existing Oracle Human Resource Management System (HRMS) products, and highlights the impact of these functional changes on your day-to-day business. This section contains products in the HRMS product family, arranged alphabetically.

About Business Impact and Functional Changes

An Applications upgrade alters both the technical and functional aspects of your Oracle E-Business Suite system. In addition to changes to the technology stack and file system, an upgrade also initiates specific changes that affect the way your existing products work after the upgrade, and the way they look and feel. These functional changes have an impact on the way you use the products as you conduct your daily business.

Note: This appendix describes some of the ways the upgrade changes your existing products. Oracle assumes that you have read about the new features and products delivered in this release, which is included in the product-specific Release Content Documents (RCDs) and TOI on *My Oracle Support*.

The discussions of the functional aspects of the upgrade in this chapter are arranged by products within the HRMS product family.

Human Resource Management Systems (HRMS)

Your HRMS applications specialists should be completely familiar with the information in this section and should make appropriate plans to accommodate the associated changes before you begin your upgrade.

Oracle Payroll

Sparse Matrix

Sparse Matrix functionality is automatically enabled in Release 12.2. This effectively prevents the creation of null run result values if all run result values are null for the given run result. There is no need to run the ENABLE_SPARSE_MATRIX upgrade program.

Review the *Sparse Matrix Null Result Values Upgrade* program.

It is enabled for each legislation and requires a row in the pay_upgrade_legislations table for the definition SPARSE_MATRIX. The process purges old (null) run result values that would not have been created if the Sparse Matrix functionality had been used within the Payroll processes (such as Run, QuickPay, and so on.)

Oracle iRecruitment

Improved Performance of the Recruitment Summary Report

To improve performance and display recruitment summary details faster when handling huge volumes of recruitment data, iRecruitment now summarizes the recruitment data into summary tables. You must run the new iRecruitment Recruitment Summary program to populate the recruitment summary data in summary tables.

Oracle Performance Management

This section outlines changes made to Oracle Performance Management.

Reference to Talent Management Replaced with Performance Management

Oracle Performance Management is licensed as a separate product as of June 18th, 2007. If you purchased a Self-Service HR license before June 18th, 2007 and have an Oracle Human Resources (HR) license, then you can use Oracle Performance Management. The purchase of a Self-Service HR license on or after June 18th, 2007 does not permit the use of Performance Management. You must purchase a separate Performance Management license in addition to an Oracle Self-Service HR license to use the Appraisals, Questionnaire Administration, and Objectives Management self-service functions. With this change, all references to Talent Management are replaced with Performance Management.

Oracle Succession Planning

UI for Succession Planning

Oracle Succession Planning is a newly licensable product that is available for Oracle E-Business Suite 12.1.1 customers. Oracle Succession Planning includes the following three functions:

1. Succession Plans
2. Suitability Matching
3. Talent Profile

Supply Chain Management Upgrade Impact

About Business Impact and Functional Changes

An Applications upgrade alters both the technical and functional aspects of your Oracle E-Business Suite system. In addition to changes to the technology stack and file system, an upgrade also initiates specific changes that affect the way your existing products work after the upgrade and the way they look and feel. These functional changes have an impact on the way you use the products as you conduct your daily business.

Note: This appendix describes some of the ways the upgrade changes your existing products. We assume that you have read about the new features and products delivered in this release, which is included in the product-specific Release Content Documents (RCDs) and TOI on *My Oracle Support*.

The discussions of the functional aspects of the upgrade in this chapter are arranged by products within the Supply Chain Management product family.

Oracle Process Manufacturing

If you are using Oracle Process Manufacturing's Formula Security functionality, then you must temporarily turn off Formula Security when upgrading to 12.2, and turn it back on after the upgrade.

Oracle Product Hub

Changes for Oracle Product Hub (previously known as Oracle Product Information Management or PIM) are described in this section.

Structures

In prior releases, you could only update structure attributes for common structures (also known as common bills of material) in the source bill. You can now edit structure attributes, and can have different values from the source bill. These attribute fields include:

- Operation Seq.
- Include in Cost Rollup
- Supply Type
- Subinventory
- Locator

You can choose to change these attributes when you create a new common structure, change an existing common structure, or add or update a common structure when using the Bill Import open interface program.

The profile option EGO: Enable Oracle Collaborative Development should not be enabled from Release 12 onwards.

You can now only update structure and component attribute values using the Product Workbench.

Suggested Reading: For additional information, refer to *Editing*

Advanced Search

The advanced search function has been enhanced so that searches using the operator "contains" are now case-insensitive.

Web ADI Integration

Columns created within a Microsoft Excel spreadsheet during the information export process now match the column formats of the display format selected.

Item Organization Assignments

In prior releases, when assigning items to organizations, some of the item primary attributes were defaulted from the master item during organization assignment and could not be changed. In this release, you can now edit the following attributes during organization assignment:

- Tracking
- Pricing
- Secondary Unit of Measure
- Defaulting
- Positive Deviation Factor
- Negative Deviation Factor

Simplified Item Creation Process

The item creation process in releases prior to 12.1.1 involved multiple steps and different user interfaces. You can now create one or more items using a one-step process for entering basic item information. You can then go to the item's **Overview** page to provide additional details.

Ad-hoc New Item Request

As of Release 12.1.1, the new item request process enables users to create items and then submit a new item request for the item or group of items at a later date. The new item request is no longer created automatically at the end of the item creation process. This enables a user to work on an item or set of items as a draft, then request further definition and approval using workflow when appropriate.

Versioning of Item Catalog Categories and Value Sets

You can now create versions for item catalog categories and certain types of value sets. Versioning is possible only if the profile option *Enable PIM for Telco Features* is set to Yes. For versioning pre-upgrade item catalog categories, see the post-upgrade tasks section. For versioned item catalog categories, only transaction attributes and structures can be

maintained within versions.

Global Data Synchronization Network (GDSN)

Both Demand-Side Product Data Synchronization for GDSN and Supply-Side Product Data Synchronization for GDSN are obsolete. Functionality related to this is not visible.

Value Set Security

When you initially install or upgrade Oracle Product Hub to Release 12.2.4 or later, users cannot view, insert or update any value set values. You must explicitly set up access for specific users by enabling appropriate grants and roles for those users.

Suggested Reading: Refer to *Flexfield Value Set Security, Oracle E-Business Suite Flexfields Guide*.

Additional Information

For additional information, refer to the *Oracle Product Hub Implementation Guide* and the *Oracle Product Hub User's Guide*.

NLS Upgrade Considerations

This section discusses some important considerations for managing your translations, languages, and character sets during the upgrade.

Language Status

Additional space for each non-American English language will be required in the database to complete the upgrade. It is not possible to predict the amount of additional space your system will need, because the space depends on factors such as the database character set, the number of active languages other than American English, and in particular the volume of transaction data in the system.

Conditional Action: For the recommended minimum space required for each active language in the APPL_TOP, see the *Oracle E-Business Suite NLS Release Notes* for your release level.

You must retain your existing Applications Release status until the entire upgrade process (including the post-upgrade and finishing steps) is complete. The base language must also remain the same, and new languages cannot be activated.

After the upgrade process is complete, you can activate new languages or change the base language. Oracle does not support disabling or removing installed or enabled languages.

Conditional Action: See Adding and Maintaining NLS Languages section in *Oracle E-Business Suite Maintenance Guide*.

Character Sets

You cannot set the APPL_TOP character set. It is automatically set to the same value you selected as the db character set.

Additional Information: Refer to *License Manager* in the *Oracle E-Business Suite 12.2 Maintenance Guide* and *Migrating to Unicode* in the *Globalization Guide for Oracle Applications Release 12* (Doc ID: 393861.1)

General Information and Required Tasks

Before you prepare your system and product data, you should gather information about the upgrade process, the tools required, the number and types of tasks involved, and the way your system and products will look in Release 12.2.

Reference Information

It is very important that you read the documentation associated with this release. In addition, you may also find it useful to review any presentation materials on upgrade technology and white papers on Multi-org, and links to various Consulting services as well as Oracle University training courses.

Application specialists and functional users should pay special attention to the Release Content Documents (RCDs), Electronic Technical Reference Manuals (eTRMs), and Transfer of Information (TOI) documentation for the products that are active in your system. This information describes new features and functionality in Release 12.2.

Planning and Performing Pre-Upgrade Tasks

This chapter covers the following topics:

- Planning Oracle E-Business Suite 12.2 Deployment Architecture
- Preparing Customizations
- Preparing External Integrations
- Preparing Third-Party Integrations
- EBS 12.2 Upgrade Readiness Checker - Database Tier (EURC-DT)

Planning Oracle E-Business Suite 12.2 Deployment Architecture

An upgrade to Oracle E-Business Suite Release 12.2 may require upgrades to your operating system and hardware. This section provides requirements to address hardware that will run Oracle E-Business Suite Release 12.2.

Technology Stack Components

Rapid Install automatically installs and configures the required technology stack components for both the database node and the application tier node.

The database tier technology stack for a new Oracle E-Business Suite Release 12.2 installation consists of an Oracle Database 12c Release 1 (12.1.0.2) Oracle home. We strongly recommend that you upgrade to Oracle Database 19c after the installation, following the process documented in My Oracle Support Knowledge Document 2552181.1, *Interoperability Notes: Oracle E-Business Suite Release 12.2 with Oracle Database 19c*.

Note: For a database remaining at Oracle Database 12c Release 1 (12.1.0.2), you should ensure that you have a Market Driven Support

contract to continue receiving patches for your database.

Important: For databases running on-premises or on Oracle Cloud Infrastructure, Oracle E-Business Suite requires Oracle Database Enterprise Edition. No other Oracle Database editions are certified for use with Oracle E-Business Suite environments on-premises or on Oracle Cloud Infrastructure.

The application tier node technology stack includes, among other components:

- Oracle Application Server 10g (10.1.2.3), which includes:
 - Oracle Forms
 - Oracle Reports
- Oracle Fusion Middleware 11g, which includes:
 - Oracle WebLogic Server

Note: In Release 12.2, the required Java Development Kit (JDK) is automatically installed by Rapid Install. You do not need to install the JDK separately.

Note: Oracle E-Business Suite requires Oracle homes to be writable, not read-only.

Product-specific documents on My Oracle Support [<https://support.oracle.com>] describe use of these components with Oracle E-Business Suite.

You can also check product certifications from My Oracle Support by clicking the *Certifications* tab (which may be under the *More* tab).

Note: If you are performing an Oracle E-Business Suite upgrade to Release 12.2 on Oracle Cloud Infrastructure, it is strongly recommended that you follow the standards listed in Sections 3 and 4 of My Oracle Support Knowledge Document 2656874.1, *Standards Used by the Oracle E-Business Suite Cloud Manager for Provisioning Oracle E-Business Suite on Oracle Cloud Infrastructure*.

Important: Do not deploy custom applications into the Oracle E-Business Suite technology stack. The Oracle E-Business Suite database

Oracle home must be used exclusively for that database, and not shared either with other Oracle E-Business Suite databases or with other applications. Similarly, the Oracle E-Business Suite application tier Oracle homes should be used exclusively to run Oracle E-Business Suite services.

Sharing a database Oracle home between multiple Oracle E-Business Suite instances is not recommended because Oracle E-Business Suite tools are designed to work with a single database associated with a single Oracle E-Business Suite instance. Running these tools in an environment where multiple Oracle E-Business Suite instances are associated with the same database Oracle home can have unpredictable results.

Combining custom applications into the Oracle E-Business Suite technology stack is not recommended for the following reasons:

- Difficulty in isolating and debugging performance or stability issues
- Increased security risk if either a custom application or Oracle E-Business Suite is compromised
- Complexity in maintaining the technology stack if either a custom application or Oracle E-Business Suite has dependencies on older component versions
- Complexity in obtaining support for issues on nonstandard environments

Instead, it is recommended that you deploy a custom application and its required technology stack prerequisites on a separate server.

System Software, Patch Level, and Networking Requirements

This section describes system software requirements, patch level requirements in multinode installations, and essential networking requirements.

Operating System

Oracle E-Business Suite Release 12.2 requires a 64-bit operating system. If you have not already done so, then you must plan for and upgrade the operating system of your Oracle E-Business Suite application and database tiers to a 64-bit operating system.

Action: Follow the instructions in the Oracle E-Business Suite Installation and Upgrade document for your platform to ensure that

you meet all operating system requirements:

- *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for Linux x86-64* (My Oracle Support Knowledge Document 1330701.1)
- *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for Oracle Solaris on SPARC (64-bit)* (My Oracle Support Knowledge Document 1330702.1)
- *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for IBM AIX on Power Systems (64-bit)* (My Oracle Support Knowledge Document 1330703.1)
- *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for HP-UX Itanium* (My Oracle Support Knowledge Document 1330704.1)
- *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for Microsoft Windows x64 (64-bit)* (My Oracle Support Knowledge Document 1330706.1)

Tip: In addition to the platform-specific maintenance tools listed in the *Installation and Upgrade Notes*, the following utilities are required on all UNIX-based operating systems: `unzip`, `df`, `ps`, and `wall`.

Note: In this guide, the term "UNIX" refers to all variants of that operating system, including Linux.

Conditional Action: If you are installing on Exadata or Exalogic, follow the instructions in *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for Linux x86-64* (My Oracle Support Knowledge Document 1330701.1) above, taking note of the exceptions listed for packages that are already contained in Exadata systems.

Operating System Requirements in a Multinode Installation

In a multinode installation, all application tier nodes are required to be on the same platform and operating system. This is a requirement for adding nodes by cloning in a multinode deployment.

Additional Information: Refer to My Oracle Support Knowledge

For all the nodes of a particular tier, either application tier nodes or database RAC nodes, Oracle recommends that you use the same operating system kernel parameter settings when using identical machines, or adjust the settings based on the machines' load. Using the same operating system kernel parameter settings simplifies management and maintenance.

Note: When you run Rapid Install as part of an upgrade, the upgrade process is performed with only one application tier and one database tier. You must complete the upgrade to the latest Oracle E-Business Suite code before you can perform optional advanced configurations, such as scaling your environment by adding application tier nodes and database RAC nodes, as a post-upgrade step. However, if you plan to use a multinode deployment after the upgrade, it is recommended that you prepare the hardware infrastructure in advance as part of the preparation for the upgrade.

Networking

The key networking requirement is for the `hosts` file to include an entry for the installation machine, formatted as follows:

```
<IP address> <host name>.<domain name> <host name>
```

Note: If you are performing an Oracle E-Business Suite upgrade to Release 12.2 on Oracle Cloud Infrastructure, it is strongly recommended that you follow the standards listed in Section 2 of My Oracle Support Knowledge Document 2656874.1, *Standards Used by the Oracle E-Business Suite Cloud Manager for Provisioning Oracle E-Business Suite on Oracle Cloud Infrastructure*.

Shared Memory Permissions

On applicable UNIX platforms, ensure that the `/dev/shm` directory has neither the 'noexec' nor 'nosuid' permissions set. If it has, you may encounter the following Oracle JVM JIT runtime error:

```
ORA-29516: Aurora assertion failure: Assertion failure at joez.c:  
Bulk load of method java/lang/Object.<init> failed; insufficient shm-  
object space
```

Hardware Requirements

The following section describes hardware requirements for upgrading to Oracle E-

CPU, Memory, and Disk Space Requirements

Because there are different product combinations, different user profiles, and different configurations, there is no one sizing answer for all hardware platforms. Some hardware vendors have sizing worksheets that model the CPU and memory requirements of Oracle E-Business Suite on their hardware.

The most reliable strategy to ensure that the hardware is sized appropriately is to install a test environment, and then conduct a benchmark test with a configuration, product mix, and user load that simulates your own current and expected workloads. These conditions can help verify performance before you install your production-ready environment. An alternative is to ask Oracle Consulting Services or your hardware vendor to find another Oracle E-Business Suite system running a product mix, throughput, and user profile similar to yours.

CPU Requirements

Note: Unless explicitly noted otherwise, Oracle E-Business Suite documentation uses the term "CPU" to mean an actual CPU core rather than a logical core.

CPU requirements for running Oracle E-Business Suite for the database and application tiers depend on the following factors, which are listed in no particular order:

- Required response times of the business
- Number of concurrent users and their usage profiles
- Number of concurrent manager processes and the types of jobs that they are running
- Load of activities other than Oracle E-Business Suite
- Size of the database
- The chosen deployment topology

The number of CPUs and cores needed to support Oracle E-Business Suite depends on the specific platform implementation, and whether or not hyperthreading is in use.

Two useful formulae are:

- $\text{Actual Cores Count} = \text{Processor Count} * \text{CoresCountPerProcessor}$
- $\text{Logical Processor Count} = \text{Actual CoresCount} * \text{ThreadCount}$

You should also consult your platform vendor as required.

Memory Requirements

Memory requirements for Oracle E-Business Suite depend on both the application and database tiers.

Minimum Memory for an Oracle E-Business Suite Installation

The minimum amount of memory needed to run Oracle E-Business Suite is about 6 GB for the database tier machine, and 10 GB for a single application tier machine. This configuration would typically support no more than ten users.

Tip: For additional guidance, see Database and Application Tier Sizing Guidelines, page 3-13.

Single-User Single-Machine Non-Production System

For the special case of a system that will only be employed by a single user to develop or test patches, the minimum memory requirement is 8 GB.

Important: This figure represents the minimum amount of memory that can be employed, and may rise either to meet the needs of new releases or the deployment of components such as additional managed servers.

Application Machine Memory Requirements

The total RAM memory for the application tier is the sum of:

- Technology Stack Memory
- JVM Memory
- Forms Memory
- Concurrent Manager Memory
- Other Running Processes
- Resident Memory
- OS Kernel Memory

Aside from the stack, the two main contributors to the application tier memory are the JVM memory and Forms memory (the frmweb process). For every 150 to 180 self-service users, you should allow 2 GB of JVM heap and 2 CPUs. The Forms Processes memory is equal to the (Number of Forms users) * 40 MB.

Important: These figures represent average usage. Your instance may

use more or less memory depending on the applications you use.

The memory required per machine also depends on the number of application machines in your deployment. For general usage, it is not recommended that you allocate very large heap sizes. Instead, add more managed instances in the cluster to scale up to the target concurrency levels.

Note: Some transactions, such as those for Oracle Configurator, may require more memory.

Database Machine Memory Requirements

To determine the total memory requirements on the machine where the Oracle E-Business Suite database is installed, you must take the following into account:

- Oracle Database overhead
- Size of System Global Area (SGA)
- Number of concurrent users
- Any non-Oracle software that has to run on the machine (this is not recommended)

When sizing the environment in which you will install Oracle E-Business Suite, you should aim to allow for any expected growth in usage over the planned lifetime of your system. It is, however, possible to scale up a system later to meet additional requirements subsequent to installation, either by adding nodes (machines) to the application tier or employing Oracle Real Application Clusters (Oracle RAC) on the database tier.

Action: To help determine your memory requirements for the various Oracle E-Business Suite database components, refer to My Oracle Support Knowledge Document 396009.1, *Database Initialization Parameters for Oracle E-Business Suite Release 12*.

Disk Space Requirements

Rapid Install installs the file system and database files for all products, regardless of their licensed status. The approximate file system disk space requirements for a standard installation are:

File System Space Requirements for Standard Installation

Node	Space Required
Database node file system (Fresh install)	90 GB (includes database files and 12cR1 database Oracle home).
Database node file system (Vision Demo database)	200 GB (includes database files and 12cR1 database Oracle home).
Application tier node file system (OracleAS 10.1.2 Oracle home, Oracle Fusion Middleware Oracle home, COMMON_TOP, APPL_TOP, and INST_TOP)	64 GB (for dual file system). Also, see note for language (NLS) considerations.

Tip: The minimum recommended space required for each active language is 16 GB in the file system for both APPL_TOPs, and 3 GB in the database.

Additional Information: For more information, refer to My Oracle Support Knowledge Document 1314621.1, *Oracle E-Business Suite NLS Release Notes, Release 12.2*.

Warning: At present, Rapid Install does not support installing Oracle E-Business Suite into a directory that has more than 2 TB of free space. This is because of address space restrictions.

Stage Area

For a production database installation, running Rapid Install from a stage area requires at least 48 GB to accommodate the file system and database files in the stage area. See *Setting Up the Stage Area*, page 4-7.

Oracle E-Business Suite Log and Output Files

Many Oracle E-Business Suite products generate log and output files during runtime. The disk space needed varies with the number of users and transactions, and depends on how frequently you purge these files.

Tip: Log and output files are not automatically purged. The size of these files can increase quickly, which can impact the performance of

your system. Determine a strategy for archiving and purging these files after the installation, particularly for files in the trace directories, and monitor the disk space they consume to determine how much space you may need in the future.

Temporary Disk Space Requirements

You should ensure that the \$TMPDIR environment variable points to /tmp, and that this directory has at least 5 GB of free space for use by Rapid Install. The equivalent variables on Windows are %TEMP% and %TMP%.

At runtime, Oracle E-Business Suite requires temporary disk space. For example, each concurrent manager writes temporary parameter files, Oracle Reports writes temporary format files, and Oracle Forms writes temporary buffer records. Rapid Install sets the temporary directory based on the value you supply on node-specific settings screens. The directory defined by the TMPDIR variable is also used for some temporary files, such as certain patches.

The amount of temporary space will depend on the number of forms and concurrent manager sessions writing on the temporary file system. It is recommended that you use separate disk partitions for operating system and user data (that is, separate partitions for /home, /tmp, /var/tmp, /oracle, and so on). This strategy can prevent a "file system full" issue from impacting operations. Establishing disk quotas can also prevent a user from accidentally or intentionally filling up a file system.

Updates and Patches

You will need adequate disk space for applying updates, patches, maintenance packs, family packs, and minipacks, as well as for any backup files that may be created.

Additional Information: For more information about the amount of disk space needed for the various types of patching operation, see *Patching Utilities, Oracle E-Business Suite Maintenance Guide* and *Patching Procedures, Oracle E-Business Suite Maintenance Guide*. Also see *Applications DBA System Maintenance Tasks and Tools, Oracle E-Business Suite Maintenance Guide*.

Other Files

The total disk space estimate must account for the requirements of files other than those directly related to Oracle E-Business Suite. For example:

- Operating system software
- Online backups
- Custom applications development files

- Files for any other software that you use

Input/Output (I/O) Subsystem

Performance during an upgrade depends heavily on the speed of the Oracle database system input/output (I/O) subsystem. Oracle recommends an average disk response time (average service time) below 10-15 milliseconds for better performance.

Additional Information: Detailed information, including input/output operations per second (IOPs) calculations, is available in My Oracle Support Knowledge Document 1597531.1, *Oracle E-Business Suite Release 12.2: Upgrade Sizing and Best Practices* and My Oracle Support Knowledge Document 2115481.1, *Oracle E-Business Suite Release 12.2.5 Upgrade Sizing and Best Practices*.

To monitor the I/O performance, you should use OS tools like *iostat* or *sar* (Unix) during your test upgrade. Use similar tools for other operating systems, for example Performance Monitor for Windows. You can also monitor I/O performance on your production system during peak load to get an idea about your I/O subsystem performance before the upgrade. However, you should note that the I/O load and, therefore, the average service time on existing applications, is different from that of an upgrade.

While you are monitoring the I/O performance, you should focus on the *average service time* (the average of elapsed time in milliseconds that the disk drive takes to complete an I/O request) and the *average wait* (the average amount of time requests are left outstanding). Higher averages for these two indicators signal an I/O bottleneck. An average service time longer than 50 milliseconds is reason for concern if it lasts too long or it is continuously at a high level. Small intervals of high average service time should not be of concern.

Additional Information: See the *Oracle Database Performance Tuning Guide* for your Oracle Database version.

Database Size

Database sizing is dependent on the following main factors:

- Current user distribution along with transaction rates
- Project workload and user increase
- Retention policies for historical data

You should ensure that proper planning is in place for database footprint management, in conjunction with appropriate purge and archive policies defined as part of your instance management strategy.

To estimate the increase in required disk space for upgrading, consider the products, the number of languages being installed, and changes in the data model. For example, in a test upgrade of the largest Oracle production system (oraprod), the database increased 10-20 percent. In a test upgrade, the Vision database increased 5 percent.

Additional Information: For guidelines based on an upgrade of the Oracle production system, see My Oracle Support Knowledge Document 1597531.1, *Oracle E-Business Suite Release 12.2: Upgrade Sizing and Best Practices* and My Oracle Support Knowledge Document 2115481.1, *Oracle E-Business Suite Release 12.2.5 Upgrade Sizing and Best Practices*.

Tablespace Sizing

Make sure you allocate sufficient tablespace.

Additional Information: For guidelines based on an upgrade of the Oracle production system, see My Oracle Support Knowledge Document 1597531.1, *Oracle E-Business Suite Release 12.2: Upgrade Sizing and Best Practices* and My Oracle Support Knowledge Document 2115481.1, *Oracle E-Business Suite Release 12.2.5 Upgrade Sizing and Best Practices*.

Block Size

This release requires a database block size of 8K. In addition to providing significant performance improvement, this setting accommodates the Oracle E-Business Suite indexes that require this block size.

Configure and Use /dev/urandom on the Application Tier (applicable for UNIX platforms)

In Oracle Database releases 11.2.x and later, JDBC connection establishment uses a new connection mechanism called o5logon that requires the use of random numbers. These numbers are typically generated by a special device, /dev/random. However, this random number generator relies on entropy in order to generate sufficiently random numbers. Unlike /dev/random, /dev/urandom is an unlimited, non-blocking random source.

Before you begin an Oracle E-Business Suite installation using Rapid Install, you must configure /dev/urandom and use it for the duration of the installation. If you do not set this configuration, you may encounter issues with Oracle WebLogic Server domain deployment and Oracle HTTP Server instance setup if the entropy on your system is low. To avoid these issues, prior to running Rapid Install on the application tier, you must configure /dev/urandom and use it for the duration of the installation. After Rapid Install has completed, you can revert to your previous configuration.

If /dev/urandom is configured on your machine, you can temporarily replace

/dev/random with /dev/urandom by using a symbolic link. The following sample commands show an example of how to set up the symbolic link:

```
mv /dev/random /dev/random_orig  
ln -sf /dev/urandom /dev/random
```

Note: This configuration must be in place while you are running Rapid Install to perform the following actions as part of an upgrade to Oracle E-Business Suite Release 12.2.0:

- Create Upgrade File System
- Configure Upgraded Release 12.2.0 Instance

For information on keeping this setup for the remainder of the upgrade process when running Rapid Install as part of an upgrade, review the recommendations in My Oracle Support Knowledge Document 1581549.1, *Best Practices for Minimizing Oracle E-Business Suite Release 12.2.n Upgrade Downtime*.

If the /dev/urandom file is not available and configured, refer to My Oracle Support Knowledge Document 1065393.1, *Upgrade From 11.5.10.2 Is Very Slow as XDOLoader Task Hangs*, which is referenced from My Oracle Support Knowledge Document 1581549.1, *Best Practices for Minimizing Oracle E-Business Suite Release 12.2.n Upgrade Downtime*.

Note: You should check the use of /dev/urandom with the relevant security team in your organization, as the keys produced by /dev/urandom are pseudo-random. However, provided that the entropy pool has started using genuine randomness (from entropy), /dev/urandom is not predictable or less secure, even though it uses a reduced number of bits. Only the most sensitive uses of random numbers need the entropy guarantee that /dev/random provides.

Database and Application Tier Sizing Guidelines

This section includes the following:

- General sizing guidelines
- JVM parameter settings for Java on WLS Web Tier
- Database and application tier sizing information, based on a test upgrade from Oracle E-Business Suite Release 12.1.3 (with a 146 GB database) to Release 12.2.5

General Sizing Guidelines for the Database and Application Tier

Below are some general sizing guidelines for Oracle E-Business Suite.

Be aware of the following important points:

- These guidelines were derived using Oracle's hardware and networking infrastructure, and should only be used as a starting guide.
- You should always size your systems based on tests using representative data and workloads for your own environments. The most reliable strategy to ensure that the hardware is sized appropriately is to install a test environment, and then conduct a benchmark test with a configuration, product mix, and user load that simulates your own current and expected workloads. These conditions can help verify performance before you install your production-ready environment.
- In addition to the memory needed based on the sizing guidelines given, you should allow an extra 2 GB of free memory for the database tier machine, and an extra 3 GB of free memory for the application tier machine (for Online Patching).
- The sizing of transactions depends on the transaction type (such as Oracle Application Framework, Forms, or batch programs), and the expected transaction workload (light, medium, or heavy). Some transactions may require more memory (such as those for Oracle Configurator). The transactional workload is a function of user concurrency levels, user transaction frequency, and user adeptness. For instance, less adept users may increase the load on the system by performing less exact searches that would cause a full table scan instead of performing an index lookup.

Oracle Application Framework Transactions

The following table shows the machine memory used for Oracle Application Framework-type transactions with light to medium workload characteristics:

Note: The figures in this table do not take into account any Online Patching requirements.

Machine Memory for Oracle Application Framework Transactions

Number of Concurrent Users	Database Machine Memory	Number of Database Machine CPUs	Application Tier Machine Memory	Number of Application Tier Machine CPUs
0-10	4 GB	2	6 GB	2

Number of Concurrent Users	Database Machine Memory	Number of Database Machine CPUs	Application Tier Machine Memory	Number of Application Tier Machine CPUs
100-200	8 GB	2	8 GB	2
200-400	12 GB	4	10 GB	4
400-800	20 GB	8	14 GB	8

You should plan your resources using these figures as guidelines.

Important: Figures of this kind represent a *minimum* amount of memory, and your specific requirements may need more.

Oracle Forms Transactions

On the application tier, each Oracle Forms process requires approximately 40 MB of memory. So the total memory required, using the average, is given by the formula:

(Number of concurrent Oracle Forms users) * 40 MB

The following table lists the additional machine memory needed for different numbers of users:

Machine Memory for Oracle Forms Users

Number of Users	Required Machine Memory
100	4 GB
200	8 GB
400	16 GB
800	32 GB

On the database tier, there is one Oracle Forms session per open form, and each of these sessions requires approximately 30 MB of PGA memory.

The following table lists the memory required for different numbers of sessions:

Machine Memory for Oracle Forms Sessions

Number of Oracle Forms Sessions	Required Machine Memory
100	3 GB
200	6 GB
400	12 GB
800	24 GB

JVM Parameter Settings for Java on WLS Web Tier

If you are running Oracle E-Business Suite on 64-bit Java, bear in mind the following points:

- For both Oracle Application Framework and Oracle Forms applications, you can support 150-180 users per 2 GB of JVM heap. The initial heap size (Xms) and maximum allocated heap (Xmx) should both be set to at least 2GB per 150-180 users.
- Only the value of Xmx has an effect on response time. Changing the value of Xms does not have an effect.
- Usually, one JVM is allocated for every 2 CPUs.
- For best results, use multiple managed instances. For example, two managed instances with a 4 GB heap size for each will provide better response times than one JVM with a total heap size of 8 GB.

Note: These guidelines are provided here to aid in your resource planning prior to installation. By default, Xms and Xmx are both set to 1024 MB during installation. You can configure the JVM parameters to alter these settings as part of performance tuning after the installation.

Suggested Reading: For more information, see Customizing the number of instances of a particular service type, Technical Configuration, *Oracle E-Business Suite Setup Guide* and *Oracle E-Business Suite Performance Best Practices*, My Oracle Support Knowledge Document 2528000.1.

If you need to accommodate more users, we recommend doing so by adding managed

instances to the cluster. The maximum heap size should be no more than 4 GB. The JVM heap size is dependent on the number of CPUs available for the JVM to support incremental and full garbage collection cycles, in addition to the actual concurrency workload. There are two benefits from scaling by using additional managed instances:

- Garbage collection (GC) activity is more easily balanced (automatically) with multiple managed instances.
- Each instance will be able to utilize a separate connection pool. In essence, you need to maintain a balance between the allocated JVM heap size per instance and the available connection pool for that instance.

Careful sizing is needed for the concurrent manager components, especially Java concurrent programs. If you will be processing relatively large volumes of data, you may need to increase the Xms/Xmx settings for the Java concurrent programs. This is normally done via the options field of the define concurrent program screen. Note that when you increase the number of workers, the memory requirements may increase significantly: this is because each Java concurrent worker will require at least an amount of memory specified by the value of Xms.

Example Upgrade

This section provides sample figures for an upgrade from Oracle E-Business Suite Release 12.1.3 to Release 12.2.5. The figures were derived using Oracle's hardware and networking infrastructure, and are provided for general guidance only.

Automatic Workload Repository Advisory sections from test runs should be used to size relevant database memory components for the actual upgrade.

Tip: To minimize unforeseen contingencies, prior to the actual upgrade it is essential to perform pre-production testing and validation on a comparable system to the production system.

Example Upgrade - Environment Details

The environment details for this upgrade were as follows:

- Operating system: Oracle Linux Release 5.8
- Server memory: 141 GB
- Number of CPUs: 24
- Oracle Database Release: 12.1.0.2
- Oracle E-Business Suite Release: 12.1.3

Note: The database tier and application tier are on the same machine in this example.

Database configuration was as follows:

- SGA: 10 GB
- Shared pool: 1 GB
- PGA: 10 GB
- Log buffer: 30 MB
- job_queue_processes: 24

Note: During the upgrade of the Admin Tier, the batchsize and number of workers used were 1000 and 24 respectively.

Example Upgrade - Database Size

The following table shows the data for the example upgrade from Release 12.1.3 to Release 12.2.5:

Database Size Data for Example Upgrade

Before Upgrade Database Size (GB)	After Upgrade Database Size (GB)	Delta (GB)	% Growth
146	121	-25	-17.12

The reduction in database size is a result of obsolete schemas and objects being removed from the upgraded system. See Schemas Not Used by Oracle E-Business Suite Release 12.2, page 3-24.

Example Upgrade - Application Tier Size

Oracle E-Business Suite Release 12.2 is installed with three file systems, to accommodate the Online Patching feature.

- fs1 (production file system) - Used by the current users of the system.
- fs2 (copy of production file system) - Used by the patching tools.
- fs_ne (non-editioned file system) - Used to store data that is kept in the file system (such as data import and export files, reports, and output and log files).

In addition, the pre-upgrade file system has a requirement for an INST_TOP.

All three file systems in the Release 12.2 installation serve a single database. The file system in use by the running application is never patched. All patches are applied to the secondary file system.

The following table shows the data for the example upgrade from Release 12.1.3 to Release 12.2.5:

Application Tier Size Data for Example Upgrade

Component	Size Before Upgrade	Size After Upgrade
ORACLE_HOME	9 GB	9.3 GB
APPL_TOP	51 GB	N/A
INST_TOP	27 MB	N/A
fs1 (APPL_TOP+ INST_TOP)	N/A	41 GB
fs2 (APPL_TOP+ INST_TOP)	N/A	34 GB
fs_ne	N/A	1 GB

Suggested Reading: For further examples, see *Oracle E-Business Suite Release 12.2: Upgrade Sizing and Best Practices*, My Oracle Support Knowledge Document 1597531.1, and *Oracle E-Business Suite Release 12.2.5 Upgrade Sizing and Best Practices*, My Oracle Support Knowledge Document 2115481.1.

Advanced Configuration

Optional advanced configurations for Oracle E-Business Suite are deployed after you upgrade to Release 12.2. However, consideration of these options is a critical component of planning your upgrading to Oracle E-Business Suite 12.2.

Your requirements for advanced configurations of Oracle E-Business Suite may include the following:

- Scale up or scale out to address sizing and, or high availability requirements.
- Configure access from the Internet with a DMZ deployment.
- Create a disaster recovery site.

- Create a reporting environment.

Conditional Action: Review the following for the required steps to plan and set up your final Oracle E-Business Suite 12.2 deployment architecture:

- Configuring Oracle E-Business Suite Release 12.x Using Logical Host Names (Doc ID: 1968231.1)
- Using Load-Balancers with Oracle E-Business Suite Release 12.2 (Doc ID: 1375686.1)
- Sharing The Application Tier File System in Oracle E-Business Suite Release 12.2 (Doc ID: 1375769.1)
- Business Continuity for Oracle E-Business Suite Release 12.2 using Virtual Hosts with Oracle 12c Physical Standby Database (Doc ID: 2088692.1)
- Oracle E-Business Suite Release 12.2 Configuration in a DMZ (Doc ID: 1375670.1)
- Using Active Data Guard Reporting with Oracle E-Business Suite Release 12.2 and an Oracle 11g or 12c Database (Doc ID: 1944539.1)
- Business Continuity for Oracle E-Business Suite Release 12.2 using Virtual Hosts with Oracle 12c Physical Standby Database (Doc ID: 2088692.1)
- Using Active Data Guard Reporting with Oracle E-Business Suite Release 12.2 and an Oracle 11g or 12c Database (Doc ID: 1944539.1)

Preparing Customizations

Oracle E-Business Suite Release 12.2 introduces a new set of compliance, code, and patching standards that customizations must adhere to. This section describes the new standards and tools available for preparing your customizations for the Release 12.2 upgrade.

Creating a Customizations Inventory

All Oracle E-Business Suite customers should compile a comprehensive inventory of their existing customizations. Enhancements delivered with Release 12.2 may make some of these customizations unnecessary. Preparing customizations for the 12.2 upgrade include:

- Creating a catalog of your customizations
- Analyzing and Implementing code remediation
- Deploying revised customizations

Ensure that the catalog identifies all of the following artifacts:

- Database
- Application tier
- Technologies Used (OAF, Forms, Reports, Java, PLSQL, etc.)

Run the Online Patching Readiness Reports

Run the Online Patching Readiness Reports using the following process:

Apply the latest Oracle E-Business Suite Online Patching Readiness and GSCC Report Patch

Action: Before you proceed with the following steps, you must apply the Oracle E-Business Suite Online Patching Readiness and GSCC Report Patch (Consolidate Standalone Readiness Report Patch) applicable for Release 12.2 and higher by referring to *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2* (Doc ID: 1531121.1).

Important: As part of planning and preparation, the Oracle E-Business Suite Online Patching Readiness and GSCC Report patch corresponding to your existing Oracle E-Business suite instance must be applied using adpatch. For example, if you are at the Oracle E-Business suite Release 12.1.3 level, then you must apply the patch marked for Release 12.1.

Run the Online Patching Enablement - Readiness Reports

Refer to *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2* (Doc ID: 1531121.1) for instructions on how to download these utilities.

You must run the following utility from the application tier APPL_TOP. It reports EBR violations that include objects not complying with the EBR rule about Non-Editted Objects (data storage objects such as Tables and Materialized Views), and referencing edited objects (code objects such as: Packages, Triggers, Object Types, and so on). This report also lists several naming standard violations that must be fixed prior to applying the online patching enablement patch.

1. Source the environment file of current APPL_TOP

UNIX

```
$ . ./<APPL_TOP>/APPS<CONTEXT_NAME>.env
```

Windows

```
C:\> <APPL_TOP>\envshell<CONTEXT_NAME>.cmd
```

Note: The subsequent steps assume that you are running in the same session which was initialized with this environment file. If you need additional operating system level sessions, ensure that you initialize the environment with this same environment file.

2. Create the online patching log file location and set it as the current directory:

```
$ mkdir $LOG_HOME/appl/op  
$ cd $LOG_HOME/appl/op
```

3. Run the following Readiness reports:

- ADZDPSUM.sql - Provides a summary of the schemas that will be editioned and also schemas with objects that depend on Oracle E-Business Suite code that is recommended to be editioned. You can register these schemas with the application by running the commands that will be listed in the last section of this report. Oracle recommends that you run this report again after the custom schemas are registered with the application. You should run ADZDPSUM.sql repeatedly to handle dependent schemas until no further EBR violations are reported.

Note: Enter the system password when prompted. You can ignore APPS_NE, and ODM schemas which may appear in section 2 of the report.

```
$ sqlplus system @$AD_TOP/sql/ADZDPSUM.sql  
$ mv adzdpsum.txt adzdpsum_pre_dbprep.txt
```

- ADZDPMAN.sql - Lists objects with different categories of violations to EBR rules that must be fixed prior to running the enablement process to avoid errors during this process. Oracle recommends that you run this report after all custom schemas are registered with the application according to instructions in the above report ADZDPSUM.sql.

Note: Enter the system password when prompted.

```
$ sqlplus system @$AD_TOP/sql/ADZDPMAN.sql  
$ mv adzdpman.txt adzdpman_pre_dbprep.txt
```

- ADZDPAUT.sql - This report lists all the objects with violations to the EBR rules that will be fixed automatically from the enablement process. This report is provided for information purposes and no action should be taken from this report.

Note: Enter the system password when prompted.

```
$ sqlplus system @$AD_TOP/sql/ADZDPAUT.sql
$ mv adzdpaut.txt adzdpaut_pre_dbprep.txt
```

Implementing Code Remediation

Fix Violations Listed in the Online Patching Readiness Report that Require Manual Intervention

The Online Patching Readiness Report contains sections with different violation types.

1. Review all sections listed from the ADZDPMAN.sql report. Follow instructions in each section to fix violations.

Note: Many violations in the Readiness report can be automatically fixed by registering your custom schemas. Review the last section of the Summary Readiness Report (ADZDPSUM.sql) for sample commands on how to register your custom schemas.

The following schema should NOT be registered:

- SYS
- SYSTEM
- CTXSYS

Any dependency between these schemas and Editioned Objects is a coding standards violation and must be fixed manually.

2. Oracle recommends that you perform the chosen fix by customizing template file \$AD_TOP/sql/ADZDPCUST.sql
3. Repeat the *Run the Online Patching Enablement - Readiness Report* step above until all violations have been addressed.

Database Object Development Standards for Oracle E-Business Suite System Schema Migration

The Oracle E-Business Suite Release 12.2 database architecture has been modernized by

adoption of the Oracle E-Business Suite System Schema, EBS_SYSTEM. Prior to the introduction of the EBS_SYSTEM schema, Oracle E-Business Suite installed application objects in the Oracle Database SYS and SYSTEM schemas. Migration to the EBS System Schema obviates the need for any EBS-owned objects to reside in the SYS or SYSTEM schemas.

As part of your upgrade to Oracle E-Business Suite Release 12.2, you should prepare your customizations for mandatory compliance requirements introduced with the EBS System Schema Migration. EBS System Schema Migration development standards are either recommended guidelines or mandatory compliance requirements for custom-defined objects. Mandatory compliance requirements must be resolved so that your customizations will run without error after applying the completion patch. Failure to do so will result in invalid database objects for your custom code.

Additional Information: For additional information, refer to the following:

- *Oracle E-Business Suite Release 12.2 System Schema Migration* (Doc ID: 2755875.1)
- *Part 3: Database Object Development Standards for Oracle E-Business Suite System Schema Migration in Developing and Deploying Customizations in Oracle E-Business Suite Release 12.2* (Doc ID: 1577661.1)

Customizing Help Files

The help files in this release are in HTML format, making them easy to modify. You can reapply previously customized help files to your upgraded system if you convert them to HTML. If you don't convert customized help files to HTML and reapply, then it is important that you save the pre-upgrade customized help files as a reference.

Conditional Action: See *Customizing Oracle E-Business Suite Help* in the *Oracle E-Business Suite Setup Guide*.

Schemas Not Used by Oracle E-Business Suite Release 12.2

The following schemas are not used by Oracle E-Business Suite Release 12.2. If you have developed customizations that depend on these schemas, then you may recreate these customizations and delete the schemas after the upgrade is complete. Deleting schemas is a documented step in Chapter 5, *Performing Post Upgrade Tasks*.

Schema Name	Schema ID
Oracle Single Sign On	ORASSO
	ORASSO_DS
	ORASSO_PA
	ORASSO_PS
	ORASSO_PUBLIC
Oracle Internet Directory	ODS
OracleAS Certificate Authority	OCA
	ORAOCA_PUBLIC
Discoverer OLAP	D4OSYS
Discoverer Portlet Provider Metadata	DISCOVERER5
Oracle Portal-to-Go and OracleAS Wireless	PTG
	WIRELESS
Oracle Warehouse Builder	OWBRT_SYS
	OWBSYS_AUDIT
Oracle E-Business Suite product schemas DSR and MOC for Oracle Warehouse Builder integration	DDROWNER
	DDRUSER
	DSROWNER
	MTHUSER
Oracle Business Intelligence Applications	OBIA
MapView	MVDEMO
OracleAS UDDI Registry	UDDISYS
SOA Suite	ORABPEL

Preparing External Integrations

Obsolete Technology Integrations

In preparation for the upgrade, you must migrate your external integrations to releases or products that are certified with Oracle E-Business Suite 12.2. The following table identifies a migration path to certified releases or products:

Technology Integration	Description
OSSO 10g	For single sign-on integration, you must migrate to Oracle Access Manager 11gR1 or 11gR2. Oracle recommends that you migrate to Oracle Access Manager 11gR2.
OID 10g	You must upgrade to Oracle Internet Directory (OID) 11g. If upgrading to Oracle E-Business Suite 12.2.5 or greater, then you can also upgrade to OID 11g or Oracle Unified Directory (ODU) 11g.
OBIEE 10g	If you are using Oracle Business Intelligence Enterprise Edition (OBIEE) with products Oracle Incentive Compensation (OIC), Manufacturing Operations Center (MOC), Advanced Planning Command Center (APCC), or Demand Signal Repository (DSR), then you must migrate to OBIEE 11g.
ODI 10g	If you are using Oracle Data Integrator (ODI) with products Oracle Incentive Compensation (OIC), Product Information Management (PIM), Distributed Warehouse Management System (WMS), or Demand Signal Repository (DSR), then you must migrate to ODI 11g (11.1.1.5.0).
JPDK Portlet Producer	If you are using Oracle E-Business Suite Portlets based on the proprietary JPDK Portlet Producer implementation, then you must migrate these to use the WSRP standards compliant Portlet Producer implementation.

Technology Integration	Description
BPEL 10g	If you are using BPEL 10g, then you must migrate to SOA Suite 11g.
SES 10g	If you are using SES 10g, then you must upgrade to SES 11g.
Oracle Portal	You must migrate to Oracle WebCenter Portal 11gR2.

Oracle E-Business Suite Integrated SOA Gateway

Oracle E-Business Suite Integrated SOA Gateway enables service generation, deployment, and invocation.

Conditional Action: If you want to use the product features, then perform the steps documented in *Installing Oracle E-Business Suite Integrated SOA Gateway, Release 12.2* (Doc ID: 1311068.1).

In addition, Release 12.2 provides an ISG Diagnostics and Designer script allowing services to be upgraded from Oracle E-Business Suite Release 12.1. to Release 12.2.

Note: Oracle E-Business Suite Integrated SOA Gateway has product dependencies on Oracle SOA Suite and Oracle E-Business Suite Adapter for SOAP based web services. REST based web services do not have this dependency. You are not required to install Oracle SOA Suite if you plan to use only the REST based web services provided by Oracle E-Business Suite Integrated SOA Gateway.

Oracle XML Gateway

In Release 12.2, Oracle XML Gateway Web services are enabled through the Oracle E-Business Suite Integrated SOA Gateway Service Provider and can be viewed from the Integration Repository. If an earlier release of the Oracle XML Gateway Web service feature or Oracle E-Business Suite Integrated SOA Gateway has been leveraged, then install Oracle SOA Suite first, before the upgrade to Release 12.2.

Conditional Action: The Oracle XML Gateway Web service feature depends on Oracle E-Business Suite Integrated SOA Gateway. Oracle E-Business Suite Integrated SOA Gateway Release 12.2 has product

dependencies on Oracle SOA Suite and Oracle Adapter for Oracle Applications (informally known as Oracle E-Business Suite Adapter). See *Installing Oracle E-Business Suite Integrated SOA Gateway, Release 12.2* (Doc ID: 1311068.1).

Preparing Third-Party Integrations

Integrations with Oracle E-Business Suite may need to be modified to comply with new deployment and development standards to work correctly with Oracle E-Business Suite Release 12.2. Examples include:

- Custom and third-party integrations
- Integrations with other Oracle products, such as Oracle Application Express

Additional Resources: For information on integrating third-party products, refer to *Guidance for Integrating Custom and Third-Party Products With Oracle E-Business Suite Release 12.2* (Doc ID: 1916149.1).

EBS 12.2 Upgrade Readiness Checker - Database Tier (EURC-DT)

The EBS 12.2 Upgrade Readiness Checker - Database Tier (EURC-DT) performs checks based on key technical requirements as described in this guide.

Specific to: EURC-DT

- Verifies that critical system administration and other pre-upgrade technical steps have been performed.
- Can be used when upgrading to Oracle E-Business Suite Release 12.2 from any previous release.
- Compatible with Oracle database releases 19c, 12cR1, and 11gR2.
- Can be used for Oracle E-Business Suite on-premises, or Oracle Cloud Infrastructure (all database services) instances.

The system administration and other pre-upgrade technical steps in this guide have been tagged as *Supported in EURC-DT: Yes* if the check is part of the EURC-DT tool.

You can run EURC-DT as part of planning, test upgrades, and production upgrade.

For more information about EBS 12.2 Upgrade Readiness Checker - Database Tier, refer to My Oracle Support Knowledge Document 2749775.1, *EBS 12.2 Upgrade Readiness Checker - Database Tier (EURC-DT)*.

Additional Information: For additional information, refer to *EBS 12.2 Upgrade Readiness Checker - Database Tier (EURC-DT)*, (DocID: 2749775.1) on My Oracle Support.

Performing the Upgrade

This chapter covers the following topics:

- Preparing the Database for the Upgrade
- Preparing the Oracle E-Business Suite Release 12.2 File System
- Performing Mandatory Preparatory Tasks
- Setting Up the Stage Area
- Creating the Upgrade File System
- Preparing the System for Upgrade
- Customer Relationship Management Tasks
- Financials and Procurement Tasks
- Human Resource Management (HRMS)
- Supply Chain Management Tasks
- Database and System Administration Tasks
- Performing the Upgrade to Release 12.2.0
- Finishing the 12.2.0 Upgrade
- Enabling Online Patching
- Database Initialization Parameters
- Upgrading to the Latest Code Level

Preparing the Database for the Upgrade

These tasks pertain to all systems. You must complete them prior to the product-specific tasks in this chapter.

Back Up the Oracle E-Business Suite Database and Customizations (recommended):

Make a cold backup of the Oracle E-Business Suite database. You can use it to restore the database should you encounter problems during the upgrade process.

Note: Shut down the database with the NORMAL option. You may not be able to restore it from the backup if you use the IMMEDIATE or ABORT option.

In addition to the database files, back up the APPL_TOP, product customizations, and customized help files (in HTML).

Note: The upgrade process does not save customizations. You should copy all your customized files and put them in a safe place so you can reapply the customizations after the upgrade.

Migrate Existing Objects to New Tablespace Model (recommended):

Oracle E-Business Suite Release 12 environments contain the new Oracle Applications Tablespace Model (OATM). This model is based on database object type rather than product affiliation, making it simpler to manage and requiring far fewer tablespaces and operating system files.

If you previously upgraded your environment from Release 11*i* to Release 12, then the upgrade process created tablespaces for all new products, configured the database for the new tablespace model, and created new objects. However, it did not automatically migrate your existing objects. If you have not already done so, Oracle strongly recommends that you use the Tablespace Migration Utility to perform this migration now. Note that this utility is not supported for use after you enable Online Patching, so you cannot perform the migration after your environment is upgraded to Release 12.2. If you choose not to migrate to OATM now, then you must continue to manage your tablespaces separately.

Suggested Reading: For more information, refer to *Oracle E-Business Suite Setup Guide, Release 12.2*.

Upgrade Your Database and Apply Mandatory Oracle E-Business Suite 12.2 Database Patches (required):

1. **Migrate or Upgrade your Database to a Release supported with Oracle E-Business Suite Release 12.2:**

Applies to: All 12.0 releases (11.2.0.4, 12.1.0.2) and 12.1 releases (11.2.0.4, 12.1.0.2, 19c)

Supported in EURC-DT: Yes

Upgrading to Oracle E-Business Suite Release 12.2 requires your database to be at the minimum version 11.2.0.4. If you have not already upgraded your Oracle E-Business Suite database to 11.2.0.4 or 12.1.0.2 or 19c, then you can upgrade your database prior to the upgrade downtime. You will not only benefit by receiving the latest updates for security, performance, and stability before you move to Release 12.2, but will have one less step to perform when you upgrade to Release 12.2.

Conditional Action: If you are planning to enable TLS 1.2 only, then you must upgrade to database 12.1.0.2. Refer to the following for additional details: *Enabling TLS in Oracle E-Business Suite Release 12.2* (Doc ID: 1367293.1), Section 6.1.

Required Action: Follow the instructions in *Database Preparation Guidelines for an Oracle E-Business Suite Release 12.2 Upgrade* (Doc ID: 1349240.1).

Suggested Reading: Database de-support schedules have important operational and planning implications for Oracle E-Business Suite environments. Oracle recommends that you review the following document that details the latest database support policies and de-support schedules: *Release Schedule of Current Database Releases* (Doc ID: 742060.1).

Conditional Action: If you are upgrading to 11gR2 or 12cR1 from 10g or 9i, then you **MUST** set the database initialization parameter `sec_case_sensitive_logon` as follows:

For Release 12.0+ based environments, the `sec_case_sensitive_logon` must be FALSE for both 11204 & 12c. In addition, for 12c, the SQLNET.
`ALLOWED_LOGON_VERSION_SERVER = 8` must be present in `sqlnet_ifile.ora`. For Release 12.1+ based environments (both 11204 & 12c), customers have a choice to set it as either TRUE or FALSE. If true, then you must also apply Patch 12964564 and follow instructions in Patch 12964564:R12.FND.B - *Enabling the Oracle Database 11g Case-Sensitive Password Feature for Oracle E-Business Suite Release 12.1.1+* (Doc ID: 1581584.1).

In addition for Database 12c, depending on the value of True/False of this parameter, the `sqlnet_ifile.ora` value for SQLNET.
`ALLOWED_LOGON_VERSION_SERVER` will change as follows:

If FALSE, then value = 8

If TRUE, then value = 10

For Database 19c, the sqlnet_ifile.ora should have following - SQLNET.ALLOWED_LOGON_VERSION_SERVER=10. The sqlnet_ifile.ora value for SQLNET.ALLOWED_LOGON_VERSION_SERVER should be 10 irrespective of the value of the sec_case_sensitive_logon parameter.

2. Ensure that the required database patches for Oracle E-Business Release 12.2 have been applied.

Supported in EURC-DT: Yes

Required Action: Follow the instructions in the *Oracle E-Business Suite Release 12.2: Consolidated List of Patches and Technology Bug Fixes* (Doc ID: 1594274.1) to do the following:

- Check for missing database patches by executing the Oracle E-Business Suite Technology Codelevel Checker (ETCC) - checkDBPatch.sh.
- Apply the latest database patches identified in the report as missing.
- Confirm successful application of required database patches by re-executing the Oracle E-Business Suite Technology Codelevel Checker (ETCC) - checkDBPatch.sh.

Important: For Oracle Cloud Infrastructure Database Services, follow the instructions associated with the deployment type and ensure the appropriate Oracle Database patches are applied.

- *Installing Database Patch Updates for Oracle E-Business Suite on Single Instance VM DB System or DB System in Oracle Cloud Infrastructure* (Doc ID: 2360215.1)
- *Installing Database Patch Updates for Oracle E-Business Suite on Oracle RAC VM DB Systems in Oracle Cloud Infrastructure* (Doc ID: 2476292.1)
- *Installing Database Patch Updates for Oracle E-Business Suite on Oracle Cloud Infrastructure Exadata Cloud Services and Oracle Exadata Cloud@Customer* (Doc ID 2368508.1)

Application DBA (AD) Tasks (Conditional):

Supported in EURC-DT: Yes

If you are upgrading your Oracle E-Business Suite environment from Release 12.0.4 or Release 12.0.6, then you must apply the following AD patch as the very last patch on the application tier:

- Patch 11939659:R12.AD.A

Important: If there are any other patches to be applied on your Oracle E-Business Suite Release 12.0.4 or Release 12.0.6 environment, then you must complete those patches and then apply AD patch 11939659:R12.AD.A.

Review Sizes of Old and New Tablespaces (required):

Supported in EURC-DT: Yes

Ensure that all critical tablespaces contain sufficient space (below the threshold), including APPS_TS_TX_DATA. Resize the tablespace as necessary.

Required Action: For guidelines, see *Oracle E-Business Suite Release 12.2: Upgrade Sizing and Best Practices* (Doc ID: 1597531.1).

Preparing the Oracle E-Business Suite Release 12.2 File System

Oracle recommends using the latest startCD to install or upgrade to Oracle E-Business Suite Release 12.2.0.

Required Action: Follow the instructions in Section 1.2 "Current Version of startCD" in the *Oracle E-Business Suite Release Notes, Release 12.2*, My Oracle Support Knowledge Document 1320300.1, to obtain the latest startCD.

To prepare the Oracle E-Business Suite Release 12.2 file system, you must first prepare the system for installation using Rapid Install. You will then run Rapid Install to lay down the Oracle E-Business Suite Release 12.2 file system.

Note: When upgrading an existing Oracle E-Business Suite instance, use Rapid Install to lay down the Oracle E-Business Suite Release 12.2 file system for both on-premises environments and environments on Oracle Cloud Infrastructure.

Performing Mandatory Preparatory Tasks

Before running Rapid Install, you must follow the applicable instructions in several critical documents. If you do not do so, your installation or upgrade may fail.

Action: Follow the instructions in My Oracle Support Knowledge Document 1320300.1, *Oracle E-Business Suite Release Notes, Release 12.2* to prepare your environment for running Rapid Install. As described in Document 1320300.1, you must meet all operating system and software requirements before you install or upgrade to Oracle E-Business Suite Release 12.2. Ensure that you follow the instructions in the relevant Oracle E-Business Suite platform-specific Installation and Upgrade document as listed in the operating system requirements, page 3-3 and in Document 1320300.1.

Conditional Action: Deploying a role-separated Oracle Grid Infrastructure on Oracle E-Business Suite requires additional patches. See My Oracle Support Knowledge Document 1320300.1, *Oracle E-Business Suite Release Notes, Release 12.2* and Additional Bug Fixes Needed When Installing Oracle E-Business Suite Release 12.2 For Use With Oracle Grid, My Oracle Support Knowledge Document 1594274.1, *Oracle E-Business Suite Release 12.2: Consolidated List of Patches and Technology Bug Fixes*.

Conditional Action: This note applies only if you are upgrading from Oracle E-Business Suite Release 12.0 or 12.1. If you are planning to use a logical hostname for the application tier, then you must refer to Section 5.4: Upgrading to Oracle E-Business Suite Release 12.2 Using Physical and Logical Host Names on the Application Tier, and perform the steps in Section 5.4.1: Verifying Logical Host Name Configurations Prior to Upgrade to Oracle E-Business Suite Release 12.2, My Oracle Support Knowledge Document 1968231.1, *Configuring Oracle E-Business Suite Release 12.x Using Logical Host Name*.

In addition to meeting the prerequisites described in this book and in the platform-specific notes, you should also ensure you understand the licensing agreement for your organization.

Additional Information: For general Oracle E-Business Suite installation troubleshooting hints and tips, see My Oracle Support Knowledge Document 1378579.1, *Troubleshooting Rapid Install for E-Business Suite Release 12.2*.

Setting Up the Stage Area

This section describes the tasks you need to perform to download the Release 12.2 installation software and create the *stage area* where the software will reside in readiness for installation.

Caution: Network-attached storage devices (such as NFS-mounted disk volumes) can be used for the stage area. However, you must use the correct mount options to avoid possible installation failure or performance issues. Refer to My Oracle Support Knowledge Document 359515.1, *Mount Options for Oracle Files When Used With NAS Devices*, and Document 1375769.1, *Sharing The Application Tier File System in Oracle E-Business Suite Release 12.2*.

Creating the Stage Area

Creating a new stage area is a multiple-step process. You must first create a directory, called `stage122`, into which you will download the installation software mentioned above. Next you unzip the requisite files and run the build script. Then you patch the stage area with the latest consolidated fixes. After this, you are ready to run Rapid Install. This section describes the steps to follow.

Important: Do not attempt to reuse an existing stage area that was created with startCD 12.2.0.50 or earlier, as it will contain Oracle Fusion Middleware 11g PS6 (11.1.1.7.0) or earlier, while startCD 12.2.0.51 (Patch 22066363, RAPID INSTALL STARTCD 12.2.0.51) requires Oracle Fusion Middleware 11g PS7 (11.1.1.9.0) as well as Oracle Database 12cR1 (12.1.0.2) and the latest Oracle E-Business Suite Release 12.2 software distribution.

Tip: Ensure that the directory has sufficient space for the downloaded installation files and for the content that will be extracted from those files. See Stage Area, page 3-9.

Creating the Stage Area Directory

Issue the appropriate command for your operating system in the desired location on the file system.

For UNIX Users

In the following example, the stage area directory is created under a mount point called `/u01`:

```
$ cd /u01
$ mkdir Stage122
```

For Windows Users

In the following example, the stage area directory is created on the F: Drive:

```
C:\>F:
F:\>mkdir Stage122
```

Downloading Software and Unzipping Start Here Files

After creating the stage area directory, you must download into that directory the components of the latest Oracle E-Business Suite Release 12.2 software distribution (also known as a media pack) that are used by Rapid Install. The Oracle E-Business Suite Release 12.2 software distribution includes Oracle E-Business Suite, Oracle Database, and Oracle Fusion Middleware. It is obtainable in zip format from the Oracle Software Delivery Cloud [<https://edelivery.oracle.com>].

Suggested Reading: Before you download the files, read the Release Notes for the specific release you are installing.

To download the required components of the Oracle E-Business Suite Release 12.2 software distribution:

1. Sign in to the Oracle Software Delivery Cloud with your My Oracle Support credentials.
2. Select Download Package as the search category, enter Oracle E-Business Suite as the search term, and choose **Search**.
3. In the search results, select the latest Oracle E-Business Suite package for Release 12.2, such as Oracle E-Business Suite 12.2.13.0.0.
4. Choose **Continue**.
5. Select only the following releases:
 - Oracle E-Business Suite 12.2.0 Current
 - Oracle WebLogic Server 10.3.6.0.0
 - Oracle Web Tier 11.1.1.9.0
 - Oracle Database 12.1.0.2.0

Ensure that all other releases in the list are deselected.

6. Select the platform for each of the selected releases, and choose **Continue**.
7. Read and accept the license agreement, and choose **Continue**.

8. By default, all available files are selected. Update the file list to select only the required files. You must download the following specific components of the Oracle E-Business Suite Release 12.2 software distribution:
 - Oracle E-Business Suite Release 12.2.0 Rapid Install Start Here (all parts)
 - Oracle E-Business Suite Release 12.2.0 for <Platform> Rapid Install (all disks and parts)
 - Oracle E-Business Suite Release 12.2.0 for <Platform> Rapid Install Technology one-off Patches
 - Oracle WebLogic Server 10.3.6 (11gR1) Generic with Coherence 3.7.1
 - Oracle Web Tier 11.1.1.9.0 Utilities (11g Patch Set 7) - Oracle Fusion Middleware for <Platform>
 - Oracle Database 12.1.0.2.0 for <Platform>

Important: If your Oracle E-Business Suite installation is on Oracle Solaris on SPARC, HP-UX Itanium, or IBM AIX on POWER Systems, and if you have previously downloaded the "Oracle Database 12c Release 1 (12.1.0.2.0) EXAMPLES" component from the Oracle Software Delivery Cloud, then you must ensure that you download the latest components before proceeding further.

9. If you are performing an on-premises installation or upgrade, choose **Download** to start the download into your stage directory.
10. If you are performing an Oracle E-Business Suite upgrade from Release 12.1 to Release 12.2 on Oracle Cloud Infrastructure, you can download software to your Oracle Cloud Infrastructure Compute VM over an internet connection. For further instructions on downloading software or patches onto Oracle Cloud Infrastructure, see Section 6.4.6: Downloading Software and Patches, *Getting Started with Oracle E-Business Suite on Oracle Cloud Infrastructure*, My Oracle Support Document 2517025.1.

Note: Do not run Rapid Install to perform a fresh installation of Oracle E-Business Suite on Oracle Cloud Infrastructure. Follow the instructions in this step only for upgrading an existing Oracle E-Business Suite instance on Oracle Cloud Infrastructure.

11. Verify that you have downloaded all the required files, and only those files, into your stage directory. Each zip file is identified as "<Part Number>_NofM". For the complete set of files for a given Part Number, you need all the zip files from 1 to M.

For example, Oracle Part Number "V100060-01 " has been divided into three parts, so you must download the three zip files V100060-01_1of3.zip, V100060-01_2of3.zip, and V100060-01_3of3.zip.

Warning: Do not download any other software components into the stage area, or the installation process may fail.

12. After you have downloaded the components listed above, unzip only the "Oracle E-Business Suite Release 12.2.0 Rapid Install StartHere" files, and proceed to run the buildStage script as described in the next section.

Important: If your Oracle E-Business Suite installation is on Oracle Solaris on SPARC, HP-UX Itanium, or IBM AIX on POWER Systems, then before you run the buildStage script, you must apply startCD 12.2.0.51 one-off Patch 35304997, following the instructions in the patch readme.

Running the buildStage Script

This script has several functions, which are selected from a series of menus. A key function is to unzip the rest of the installation software for subsequent use by Rapid Install. In the process, various subdirectories are created under the stage area.

Important: Running the buildStage script is a *mandatory* pre-installation step. The buildStage options you should choose depend on whether you have an existing stage area or not.

The buildStage script is run as follows on UNIX and Windows.

UNIX

```
$ cd /u01/StageR122/startCD/Disk1/rapidwiz/bin
$ buildStage.sh
```

Windows

```
C:\>F:
F:\>cd StageR122\startCD\Disk1\rapidwiz\bin
F:\>buildStage.cmd
```

The buildStage menus are shown below.

Main Menu

Build Stage Menu

1. Create new stage area
2. Copy patches to existing stage area
3. List files in TechPatches directory
4. Exit menu

Enter your choice [4]:

These options are used as follows.

Main Menu - Option 1. Create new stage area

Use this option if you want to create a *new* stage area, for example if you are performing an installation from scratch. It will unzip the downloaded software and apply the one-off patches.

Note: When using startCD 12.2.0.51, you must choose option 1 to create a new stage area. This startCD version delivers a later patch set of the Oracle Fusion Middleware Web Tier Utilities than the patch set delivered by earlier startCD versions. Consequently, you must not use any existing stage area created with an earlier startCD version. Instead, create a new stage area to obtain the currently required Oracle Fusion Middleware Web Tier Utilities patch set.

On platforms other than Windows, choosing this option will display a submenu that shows the available platforms:

Rapid Install Platform Menu

1. Oracle Solaris SPARC (64-bit)
2. Linux x86 (64-bit)
3. IBM AIX on Power Systems (64-bit)
4. HP-UX Itanium
5. Exit Menu

Enter your choice [5]:

Specify the platform on which you want to install Oracle E-Business Suite.

Note: For a stage area on Oracle Cloud Infrastructure, the only platform you can choose is option 2, Linux x86-64.

You will then be prompted for the location of the installation software you downloaded:

Please enter the directory containing the zipped installation media:

On Windows, the platform submenu does not appear; instead, the script proceeds directly to this prompt.

Enter the full path to the directory. The stage area will then be built for you.

Main Menu - Option 2. Copy new patches to current stage area

This option updates the technology one-off patches for an *existing* stage area.

On platforms other than Windows, choosing option 2 will display the submenu that shows the available platforms:

```
Rapid Install Platform Menu
-----

1. Oracle Solaris SPARC (64-bit)
2. Linux x86 (64-bit)
3. IBM AIX on Power Systems (64-bit)
4. HP-UX Itanium
5. Exit Menu
```

Enter your choice [5]:

Specify the applicable platform, and the buildStage script will stage the technology one-off patches packaged with the startCD into the stage/TechPatches directory.

Note: For a stage area on Oracle Cloud Infrastructure, the only platform you can choose is option 2, Linux x86-64.

On Windows, the platform submenu does not appear; instead, the script proceeds directly to staging the patches.

Main Menu - Option 3. Display existing files in stage TechPatches

This option displays (in a tree format) the files in your stage/TechPatches directory:

```
Enter your choice [4]: 3
Directory /s0/oracle/XB45/startCD/Disk1/rapidwiz/bin/../../../../
/TechPatches
|--DB
|   |--11071989
|   |   |--p11071989_112030_Linux-x86-64.zip
|   |--11820674
|   |   |--p11820674_R12_LINUX.zip
|   |--12949905
|   |   |--p12949905_112030_Linux-x86-64.zip
|   |--12951696
|   |   |--p12951696_112030_Generic.zip
|   |--12955701
|   |   |--p12955701_112030_Linux-x86-64.zip
|   |--13040331
|   |   |--p13040331_112030_Linux-x86-64.zip
|   |--13388104
```


Patching the Stage Area

After running the buildStage script, you should patch the stage area with the latest consolidated fixes since the release of the current StartCD. For StartCD 12.2.0.51, the consolidated fixes are delivered in Patch 32947483 [RAPID INSTALL CONSOLIDATED BUNDLE PATCH ON TOP OF STARTCD 51 (OCTOBER 2021)].

1. Download Patch 32947483 from My Oracle Support.
2. Unzip this patch using the following command:
`unzip p32947483_R12_GENERIC.zip`
3. Change to the 32947483 directory.
4. Patch the stage area using the following commands:

UNIX:

```
sh patchRISStage.sh
```

Windows:

```
patchRISStage.cmd
```

When prompted for the location of the Rapid Install stage, enter the path to the stage area you created for StartCD 12.2.0.51.

Tip: Run the script as the same user that you used to run the buildStage script when creating the stage area.

5. Re-run the buildStage.sh or buildStage.cmd script with the option Copy patches to existing stage area.

Important: Re-running the buildStage script with the option Copy patches to existing stage area is a mandatory pre-installation step.

UNIX:

```
$ cd /u01/StageR122/startCD/Disk1/rapidwiz/bin
$ buildStage.sh
```

Windows:

```
C:\>F:
F:\>cd StageR122\startCD\Disk1\rapidwiz\bin
F:\>buildStage.cmd
```

From the following buildStage menu, choose option 2, Copy patches to existing stage area.

```

Build Stage Menu
-----
1. Create new stage area
2. Copy patches to existing stage area
3. List files in TechPatches directory
4. Exit menu
Enter your choice [4]: 2
On platforms other than Windows, choosing this option will display a submenu
that shows the available platforms. Specify the platform on which you want to
install Oracle E-Business Suite.
Rapid Install Platform Menu
-----
1. Oracle Solaris SPARC (64-bit)
2. Linux x86 (64-bit)
3. IBM AIX on Power Systems (64-bit)
4. HP-UX Itanium
5. Exit Menu
Enter your choice [5]:
Review the script output and press Enter to continue when prompted.
Directory /u01/StageR122/TechPatches
Stage Builder will now stage the one-off patches for <Platform>...
Press Enter to continue...
Copying latest one-off patches to stage area...
...
Press Enter to continue...
Finished copying additional patches.
...
Press Enter to continue...
Finally, from the main menu, choose option 4 to exit.
Build Stage Menu
-----
1. Create new stage area
2. Copy patches to existing stage area
3. List files in TechPatches directory
4. Exit menu
Enter your choice [4]: 4
Stage Builder exiting...

```

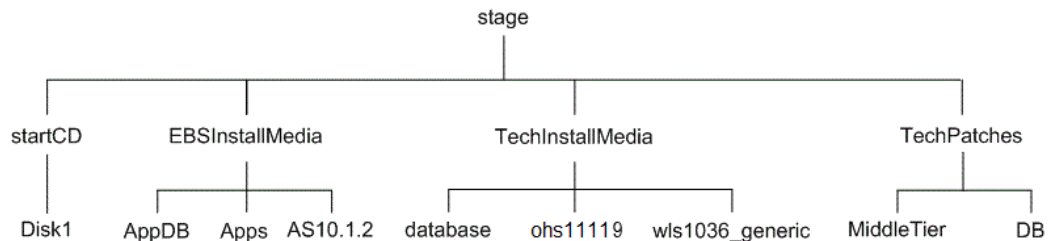
Applying Additional StartCD 12.2.0.51 One-off Patches

Required Action: Refer to Section 1.2.2 "Additional StartCD 12.2.0.51 One-Off Patches" in the *Oracle E-Business Suite Release Notes, Release 12.2*, My Oracle Support Knowledge Document 1320300.1, to check for any additional critical one-off patches on top of startCD 12.2.0.51. For any patches listed in that section, you must follow the instructions in the patch's readme file to patch the Rapid Install stage area before you proceed with the next steps in your installation.

Stage Area Structure

As shown in the following diagram, the stage area you have built consists of a top-level stage directory, with subdirectories *startCD*, *EBSInstallMedia*, *TechInstallMedia*, and *TechPatches*.

Stage Area Directory Structure



The startCD directory contains Rapid Install itself (in a subdirectory called Disk1), plus supporting files and documentation.

The EBSInstallMedia directory contains the following subdirectories:

- AppDB (Oracle E-Business Suite database)
- Apps (Oracle E-Business Suite products)
- AS10.1.2 (Oracle Application Server 10.1.2)

The TechInstallMedia directory contains the following subdirectories:

- database (Oracle12cR1 Oracle home)
- ohs11119 (Oracle HTTP Server)
- wls1036_generic (Oracle WebLogic Server, part of Oracle Fusion Middleware)

The TechPatches directory contains the following subdirectories:

- MiddleTier (application tier patches)
- DB (database tier patches)

Creating the Upgrade File System

The database can be running when you lay down an upgrade file system with an existing ORACLE_HOME.

Before running Rapid Install to create the upgrade file system, you should make a note of the database language and character set value from the existing Release 11i or Release 12.1 database that will be upgraded. These values should be specified in the appropriate Rapid Install screen, as shown in Step 8 (Internationalization Settings) of this section.

Set Up the Configuration:

As described in the previous section, Rapid Install performs two functions during an upgrade. This section describes the first of these functions, specifying the configuration values that Rapid Install needs to lay down a new file system and install the new technology stack.

Additional Information: See the *Oracle E-Business Suite File System* chapter in *Oracle E-Business Suite Concepts*.

Important: With Patch 32947483 [RAPID INSTALL CONSOLIDATED BUNDLE PATCH ON TOP OF STARTCD 51 (OCTOBER 2021)], Rapid Install creates the complete run file system (fs1) but only the context file and a few mandatory directories in the patch file system (fs2). This restricted patch file system setup is only a transitional setup to reduce the file system installation time. The complete patch file system will be created subsequently as part of an `fs_clone` action after the instance has been upgraded to a 12.2 Release Update Pack. Before running any lifecycle management actions, you must upgrade your instance to a 12.2 Release Update Pack and then run `fs_clone` to complete the file system setup.

Follow the instructions in the section Before You Install, *Oracle E-Business Suite Installation Guide: Using Rapid Install*. Then complete the following tasks.

Note: You are now ready to start Rapid Install as shown in the examples below. The exact path depends on the disk location you specified for your staging area.

The user who should run the Rapid Install wizard (`rapidwiz`)

command depends on the configuration of the database tier and application tier.

- For instances with the database tier and application tier on the same system:
 - If the database tier and application tier are on the same system and owned by the same user, then you must run `rapidwiz` as that user.
 - In a multi-user installation, where the database tier and application tier are on the same system but owned by different users, you must run `rapidwiz` as the root user.
- For instances using a split tier configuration, with the database tier and application tier on different systems:
 - If you plan to choose the 'Use Existing Oracle Home (No new Database Home install)' option, then you must run `rapidwiz` only from the application tier as the application tier operating system user.
 - Otherwise, you must first run `rapidwiz` from the database tier as the database tier operating system user, and then run `rapidwiz` again from the application tier as the application tier operating system user.

1. Start the Rapid Install wizard

Start the wizard by entering the command `rapidwiz` at the command prompt.

UNIX

Example:

```
$ cd <Your stage directory path>/startCD/Disk1/rapidwiz
$ ./rapidwiz
```

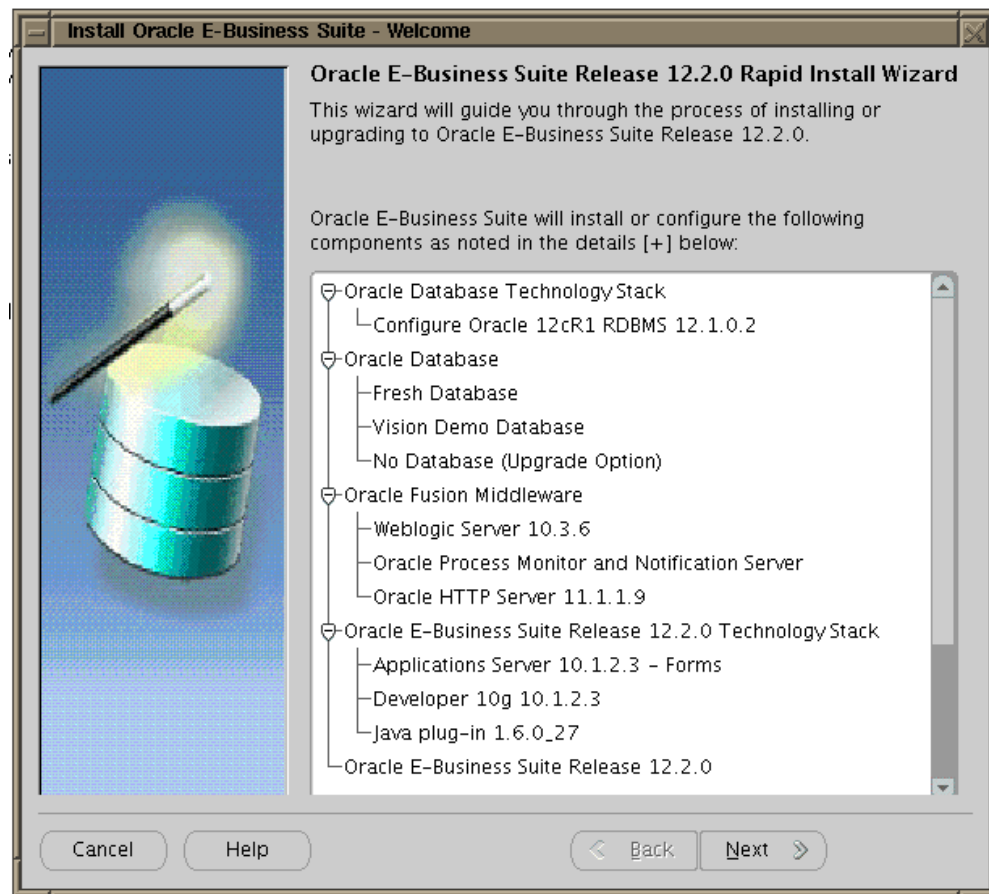
Windows

Example:

```
C:\>F:
F:\>cd <Your stage directory path>\startCD\Disk1\rapidwiz
F:\><Your stage directory path>\startCD\Disk1\rapidwiz>rapidwiz.cmd
```

The Welcome screen appears.

Welcome screen



This screen lists the components that are included in, or supported by, this release of Oracle E-Business Suite. Use the scroll bar to bring all the components into view.

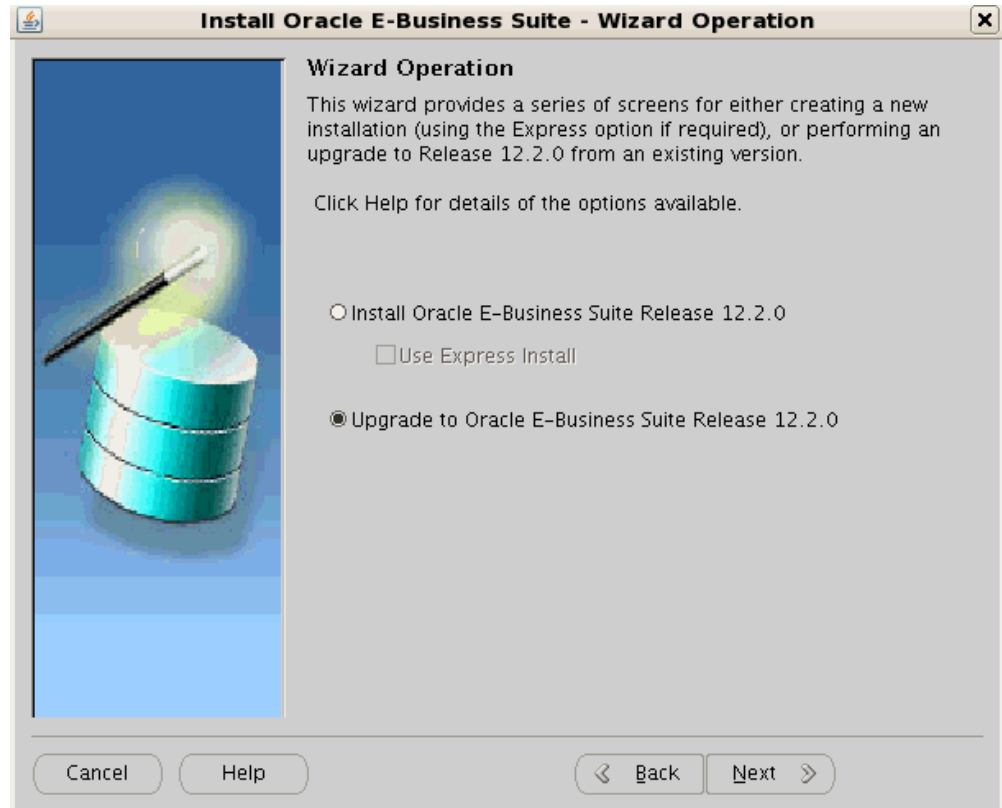
For an upgrade, Rapid Install creates an Oracle 12cR1 Database Oracle Home without a database. You can use this Oracle Home to upgrade or migrate your existing database to Oracle 12cR1. If you already have a suitable 11gR2 or 12cR1 Oracle Home, you can use it instead of using the one created by Rapid Install (which you may remove).

This screen is for information only. No action is required. Click *Next* to continue.

2. Select a wizard operation

Use the Select Wizard Operation screen to indicate the action you want Rapid Install to perform. You begin both new installations and upgrades from this screen. Based on the action you choose, the Rapid Install wizard continues with the appropriate screen flow.

Wizard Operation screen with "Upgrade to Oracle E-Business Suite Release 12.2.0" option selected



Choose the option *Upgrade to E-Business Suite Release 12.2.0* option to upgrade your Oracle E-Business Suite products to the current version of Oracle E-Business Suite. The Rapid Install screen flow presents two paths: one that lays down the file system and installs the new technology stack, and one that configures servers and starts services. In subsequent steps, you will enter information in the Rapid Install Wizard for upgrading a system.

3. Supply Oracle Configuration Manager details

Oracle Configuration Manager (OCM) is a component that is designed to facilitate support for your Oracle products. Use of Oracle Configuration Manager is optional, but recommended.

A lightweight agent that consumes minimal CPU resources, OCM supports automatic discovery of installed components and configuration information, and provides continuous tracking of key Oracle and system statistics of the machine it is running on.

Data collected is sent via HTTPS (secure HTTP) to Oracle Support, who can thereby maintain an up-to-date view of your Oracle installation, facilitating pro-active problem avoidance and helping to reduce the time needed for resolution of support

issues.

Additional Information: For further details of OCM, click the View details link on the OCM screen.

Screen to enter email details for security updates



Provide your email address to be informed of security issues, install the product and initiate configuration manager. [View details.](#)

Email:

Easier for you if you use your My Oracle Support email address/username

☐ I wish to receive security updates via My Oracle Support

My Oracle Support Password:

Cancel Help < Back Next >

If submission of your details fails because no connection can be made, you are presented with a pop-up screen prompting for proxy server information:

Specify Proxy Server Information screen

Specify proxy server information

Proxy Server

Proxy Port

Proxy Username

Proxy Password

☐ I want to remain uninformed of critical security issues in my configuration

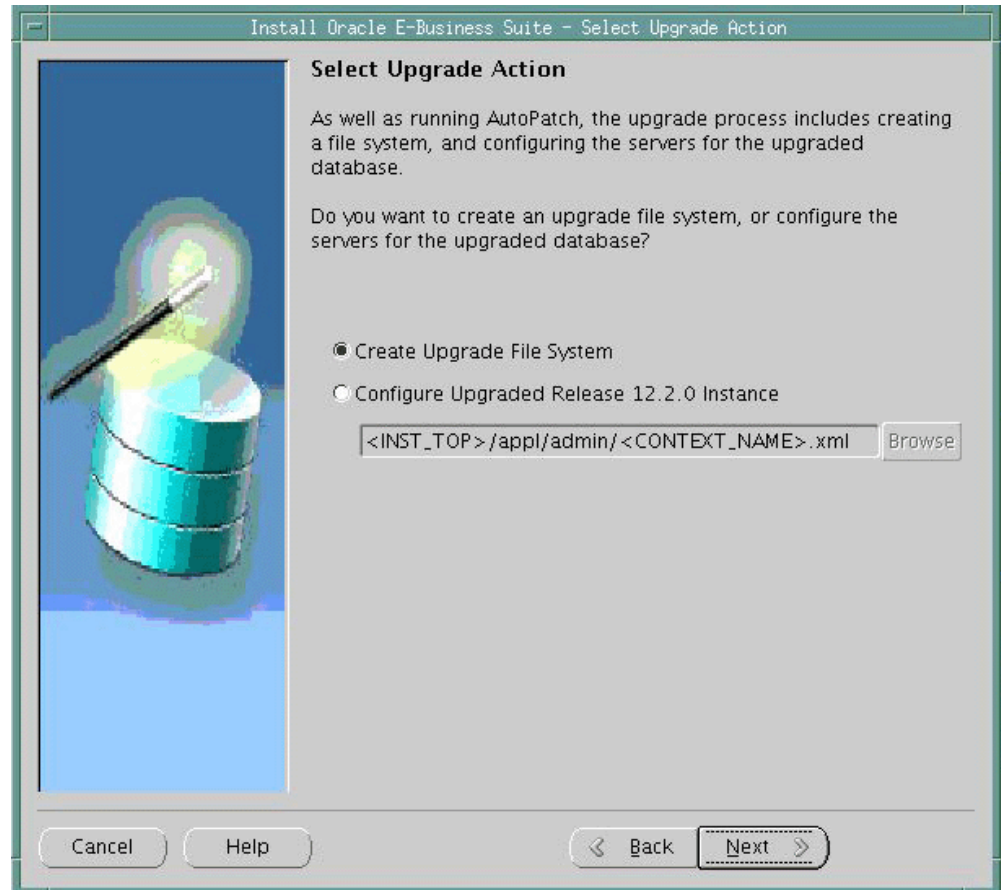
OK Cancel

If this screen appears, respond appropriately and then click **OK**.

4. Choose upgrade option

On the Select Upgrade Action screen, you can choose to create an upgrade file system for your upgraded system, or configure the upgraded instance.

Select Upgrade Action screen



The actions associated with an upgrade are performed in separate Rapid Install sessions, as follows:

- **Create Upgrade File System**

Choose this option to run Rapid Install as a pre-upgrade step. In the screen flow associated with this option, the wizard collects configuration parameters for your system and stores them in the Oracle E-Business Suite database. When you run Rapid Install, AutoConfig uses these values to lay down the file system structure and technology stack components for your configuration. When it runs, it also creates a context file (<CONTEXT_NAME>.xml) that contains all the parameters that describe your system. This context file is created and managed by AutoConfig.

- Configure Upgraded Release 12.2.0 Instance

Choose this option to run Rapid Install as a post-upgrade task. In the associated screen flow, you specify the name of the context file (<CONTEXT_NAME>.xml) that AutoConfig created when you initially ran Rapid Install. This time, AutoConfig uses the values in the context file to configure the servers and start the services.

Choose *Create Upgrade File System* and click *Next*

5. Specify Global System Settings

On the Global System Settings screen, you indicate required port usage for your system, selecting the port pool and (if required) individual port values.

Global System Settings screen

The screenshot shows the 'Global System Settings' window. On the left is a graphic of a globe with a server tower and a document. The main area contains a description of the Port Pool mechanism, two dropdown menus for 'File System 1' and 'File System 2', and a table of 'Derived Port Settings'. At the bottom are navigation buttons: 'Cancel', 'Help', 'Back', 'Next', and 'Edit Ports'.

Global System Settings

The Port Pool mechanism is used to specify a set of port values for an Applications system. Each pool uses a unique set of values, allowing multiple environments to co-exist on the same host. Individual port values can be changed using the Edit Ports button.

File System 1 File System 2

Port Pool: 0 1

Derived Port Settings:

	File System 1	File System 2
Node Manager Port	5556	5557
WLS Admin Server Port	7001	7002
WLS OACORE Application Port	7201	7202
WLS FORMS Application Port	7401	7402
WLS OAFM Application Port	7601	7602
WLS FORMS-C4WS Application Port	7801	7802
WLS Portlet Application Port	8889	8890
OHS Administration Proxy Port	9999	10000
Database Port	1521	1521

Edit Ports

Cancel Help < Back Next >

After making your selections, click *Next* to continue.

6. Specify Database Node Configuration

On the Database Node Configuration screen, describe your existing database.

Database Node Configuration screen

Database Node Configuration

Database Host:

Database Port:

Database SID:

Operating System:

Domain Name:

Database OS User:

Database OS Group:

Base Directory:

RDBMS Oracle Home:

☒ Use Existing Oracle Home (No new Database Home install)

☐ Check if RAC ORACLE_HOME

RAC Nodes:

SCAN Host:

SCAN Port:

Enter the database host and database port.

Conditional Action: This note applies only if you are upgrading from Oracle E-Business Suite Release 12.0 or 12.1. If the database server is using a logical hostname, then specify the logical hostname instead of the physical hostname in the Database Host field in this screen.

In the Database SID field, enter the database name, or service name, that you want Rapid Install to use to identify your existing database. The database name must be alphanumeric, must not exceed eight characters in length, must not start with a number, and must not include any spaces. Rapid Install records this name in the Net Services configuration and in the init<SID>.ora file.

Conditional Action: This note applies only if you are upgrading from Oracle E-Business Suite Release 12.1.3 with a multitenant

architecture. For a multitenant architecture, set the Database SID field to your <EBS_PDB_Name>, that is, the pluggable database name for your Oracle E-Business Suite database.

Important: The database name specified in this field is used to determine the database SID. The database SID may vary depending on your environment.

- In an environment that does not use Oracle RAC, the database SID is the same as the database name.
- In an Oracle RAC environment, the instance number is appended to the database name to form the database SID for each Oracle RAC node.

If you want to use an existing ORACLE_HOME for the upgrade, check the "Use Existing Oracle Home" check box.

Important: The existing database should be open.

Conditional Action: For Oracle Database 11g Release 2 (11.2.0.4) and Oracle Database 12c Release 1 (12.1.0.2) only, the database init.ora parameter `service_names` must have an entry called `ebs_patch`.

You must also enter a valid domain name on this screen. This value, when combined with a host (machine) name, must produce a fully qualified domain name (FQDN). For example, a hostname of `apps1` and domain name of `example.com` make up an FQDN of `apps1.example.com`

Important: The host name for the database tier node must be no longer than 30 characters.

The Rapid Install wizard displays a warning message if the fully qualified domain name (FQDN) exceeds 30 characters. If the host name for the database tier node is no longer than 30 characters, then you can ignore the warning and proceed with the installation. Otherwise you must update the host name before you proceed.

You enter your Oracle RAC nodes as a comma-delimited list, in the form <node1>, <node2>.

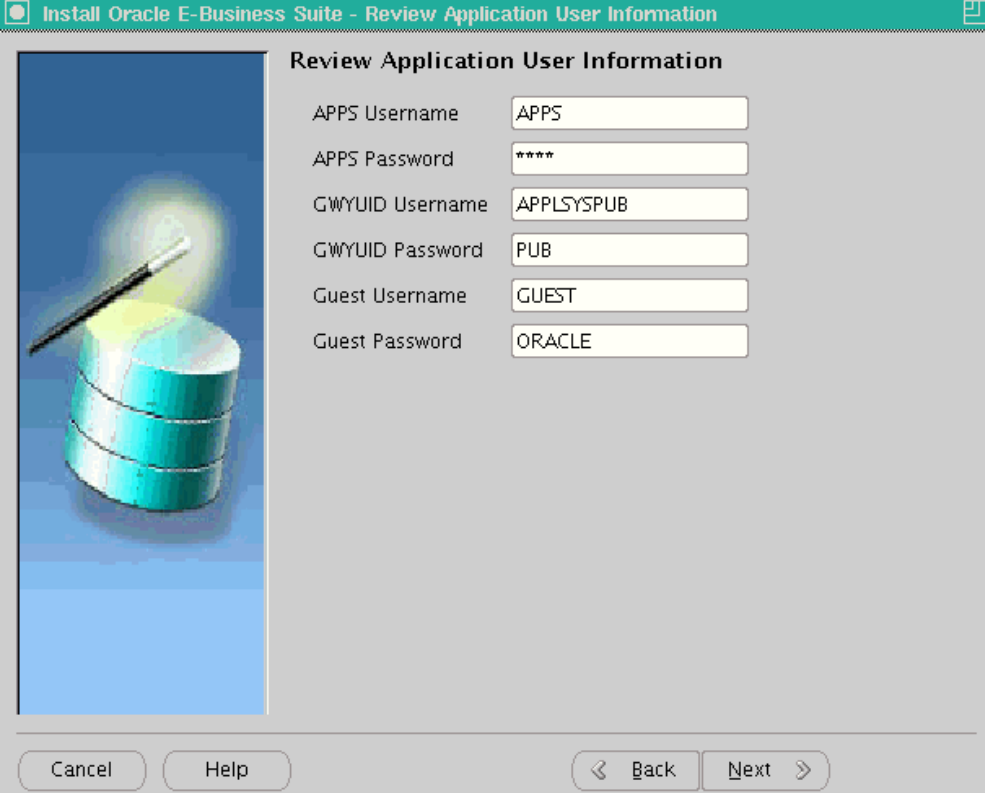
After completing all required details, click *Next* to continue.

7. Review Application User Information

The Review Application User Information screen lists usernames and the *default* passwords assigned by the wizard for the Application user.

Important: Record the actual passwords for your existing system before you continue.

Review Application User Information screen



Review Application User Information

APPS Username	APPS
APPS Password	****
GWYUID Username	APPLSYSPUB
GWYUID Password	PUB
Guest Username	GUEST
Guest Password	ORACLE

Cancel Help < Back Next >

As shown on the screenshot, the usernames and their respective default passwords are: APPS Username (APPS), APPS password (APPS), GWYUID username (APPLSYSPUB), GWYUID Password (PUB), Guest username (GUEST), and Guest password (ORACLE).

Complete the text fields to change all the passwords on this screen to match those in your existing system. The wizard stores this information in the configuration file.

Warning: Failing to record this information accurately could compromise the upgrade.

Click *Next* to continue.

8. Internationalization Settings (conditional)

The Internationalization Settings screen displays options for systems that require NLS functionality.

Important: As noted at the beginning of this section, the database language and character set values you specify in this Rapid Install screen should match those of the database that is to be upgraded.

Internationalization Settings screen

Internationalization Settings

Choose your Character Set by specifying the language you will use.

Available Languages	Selected Languages
Arabic - AR	American_English - US
Brazilian_Portuguese - PTB	
Canadian_French - FRC	
Croatian - HR	
Cyrillic_Serbian - CSR	
Czech - CS	
Danish - DK	

Default Territory: AMERICA

Database Character Set: US7ASCII

APPL_TOP Character Set: US7ASCII

IANA Character Set: US-ASCII

Buttons: Cancel, Help, < Back, Next >

The languages you select determine the available options for the other NLS-related configuration parameters (such as base language, territory, and character set) that your system requires.

Double-click a language in the Available Languages box to move it into the Selected Languages box or highlight it and click the right arrow (>). Highlight a language in the Selected Languages box and click the left arrow (<) to remove it. To select or deselect all languages in a single action, use the double arrows, >> or <<.

Note: You cannot remove American English from the Selected

Languages box.

You may need to perform additional tasks to finish the language installation. See *Oracle E-Business Suite NLS Release Notes* for details. You can register additional languages any time after the initial installation or upgrade. See *Registering Languages* in *Oracle E-Business Suite Setup Guide*.

This screen displays Rapid Install defaults, as described in the following paragraphs.

Selected Languages: If you have other active languages in your existing system, you can change the default, and add languages to reflect the existing database character set.

Default Territory: This field is set to AMERICA, and should remain so during the upgrade. Your system administrator can change this value after the upgrade, if necessary.

Database character set and APPL_TOP character set: Defaults to a common character set that is compatible with the active languages indicated on the Select Additional Languages screen. If they are not the character sets in your existing system, select the correct ones from the drop-down list.

Important: If a database connection can be established, the current database character set is automatically used and the character set selection screen not displayed. If a connection cannot be established, you must specify the current database character set (and no other) in the selection screen that is then displayed.

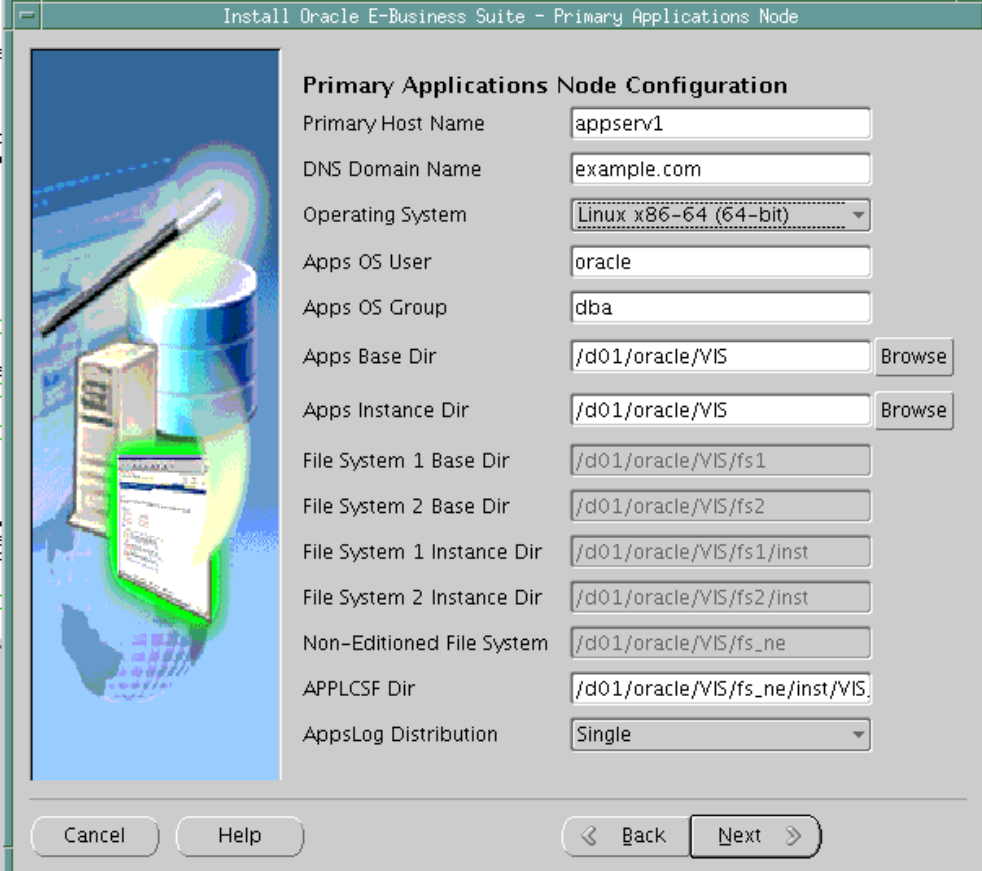
IANA character set: The Internet Assigned Numbers Authority character set is the Internet-assigned standard used by the Web server. For more information, see <http://www.iana.org/assignments/character-sets>.

If necessary, change this value to indicate the one used in your existing system. Click *Next* to continue.

9. Enter Primary Applications Node information

You have already specified the top-level directory and the mount points for the database. Now you must specify the top-level directory and subdirectories associated with the primary Applications node, on which Rapid Install will lay down the Oracle E-Business Suite Release 12.2 file system.

Primary Applications Node Configuration screen



The image shows a screenshot of the 'Primary Applications Node Configuration' window from the 'Install Oracle E-Business Suite - Primary Applications Node' wizard. The window has a title bar with the text 'Install Oracle E-Business Suite - Primary Applications Node'. On the left side, there is a graphic of a database cylinder and a server tower. The main area contains a list of configuration fields with their corresponding values or default settings. At the bottom, there are 'Cancel', 'Help', 'Back', and 'Next' buttons.

Primary Applications Node Configuration	
Primary Host Name	appserv1
DNS Domain Name	example.com
Operating System	Linux x86-64 (64-bit)
Apps OS User	oracle
Apps OS Group	dba
Apps Base Dir	/d01/oracle/VIS Browse
Apps Instance Dir	/d01/oracle/VIS Browse
File System 1 Base Dir	/d01/oracle/VIS/fs1
File System 2 Base Dir	/d01/oracle/VIS/fs2
File System 1 Instance Dir	/d01/oracle/VIS/fs1/inst
File System 2 Instance Dir	/d01/oracle/VIS/fs2/inst
Non-Edited File System	/d01/oracle/VIS/fs_ne
APPLCSF Dir	/d01/oracle/VIS/fs_ne/inst/VIS
AppsLog Distribution	Single

Important: The node name returned by the operating system 'hostname' command for the application tier node must be no longer than 30 characters. If you configure your system to return only the host name for the node, without the domain name, then the host name must be no longer than 30 characters. If you configure your system to return the fully qualified domain name (FQDN), then the FQDN must be no longer than 30 characters, including the host name, domain name, and periods (.) used as separators.

The Rapid Install wizard displays a warning message if the FQDN exceeds 30 characters. If your system returns only the host name as the node name, and the host name is no longer than 30 characters, then you can ignore the warning and proceed with the installation. Otherwise you must update your configuration before you proceed.

The default directories use the syntax of the operating system on which you are running Rapid Install. You can either accept the defaults, or enter new values.

Some of the fields are operating system dependent: for example, the UNIX Toolkit directory and Visual Studio directory are specific to Windows. If using a Windows platform, enter the location of the MKS (or Cygwin) tools in the UNIX Toolkit directory field, and the location of the Visual C/C++ executables and DLLs in the Visual Studio directory field. If using a UNIX system, complete the information for the Apps OS User (the account that owns the Applications node file system and technology stack) and Apps OS Group (the group to which the Apps OS User belongs).

The *Base directory* is the top-level directory that Rapid Install will use to derive the mount points for the Applications node. You can accept the default or enter a new value. Click Browse to navigate to a new path, and double-click the required directory to select it.

The *Instance directory* (new in Release 12) stores instance-specific files, including runtime generated files, log files, and configuration files. It can be a local directory (for better access speed). It does not have to be in a shared location.

Creating Additional Applications Nodes

Rapid Install is no longer used to create additional Applications nodes. Instead, you will use it to create a single Applications node, allow the Rapid Install session to complete, apply the latest AD and TXK patches to bring the node to the current codelevel, and then run the requisite cloning commands to create as many additional Applications nodes as required. This strategy avoids the need to apply the patches to multiple nodes, thus saving time and effort and reducing the risk of error.

Note: Scaling the environment is covered in Performing Post-Upgrade Tasks, page 5-1.

10. Supply Application User Information

Application User Information screen

Application User Information

WLS Admin User	<input type="text" value="weblogic"/>
WLS Admin Password	<input type="password" value="*****"/>
Confirm WLS Admin Password	<input type="password" value="*****"/>
Apps OS User	<input type="text" value="oracle"/>
Apps OS User Password	<input type="password" value="*****"/>
Confirm Apps OS User Password	<input type="password" value="*****"/>

Cancel Help < Back Next >

11. Review Global Settings

Rapid Install uses the values specified on the Global Settings screen to identify a qualified domain name and to derive port settings that your system will use to connect services and listeners.

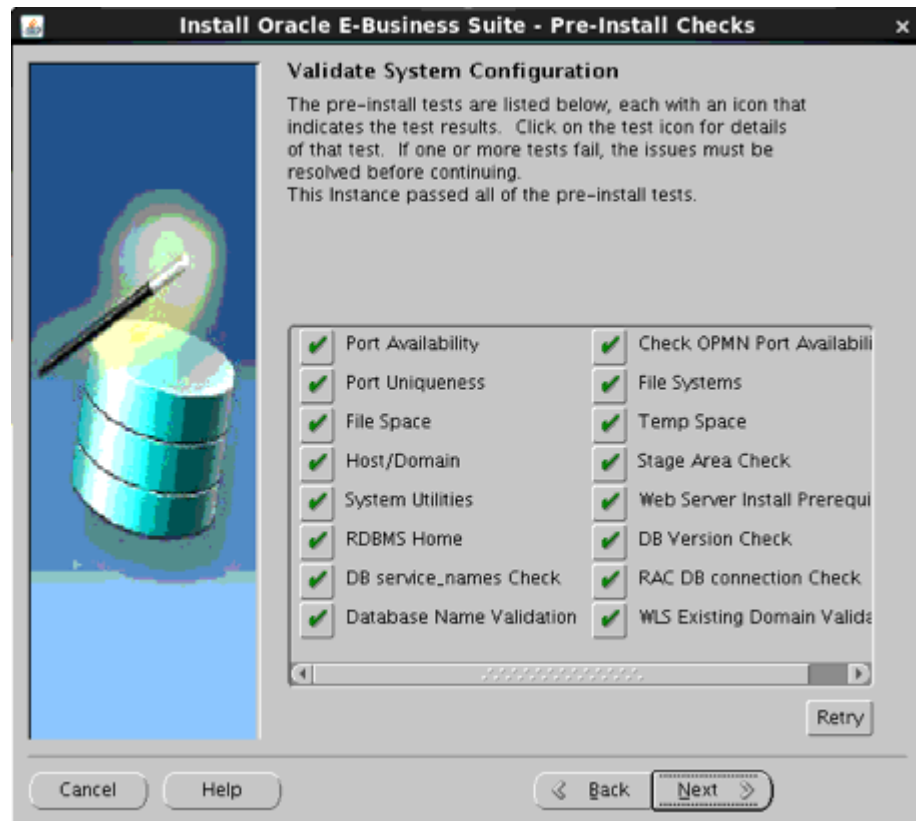
Node Information screen

Service.	Node Name	Operating System
Database Node	dbserv	Linux x86-64 (64)
Primary Apps Node	appserv1	Linux x86-64 (64)

12. Review Pre-Install Checks

Rapid Install begins to validate the configuration described by your configuration file. It lists the tests performed on the Pre-Install Checks screen and marks each one with an indication of whether it succeeded or failed.

Pre-Install Checks screen



The results of each test are labeled using an icon. There are three types:

- Check mark

The test succeeded. Click the mark to obtain details of the test performed.

- Exclamation mark (!)

The configuration requires review. Click the ! to obtain information from the system test review. Rapid Install alerts you if you continue without resolving the issues.

- An x mark

All issues marked x must be resolved before you continue with the installation. Click the x to see the errors. If you can resolve an issue by fixing the values provided on the settings screen(s), click *Back* until you reach the appropriate screen, and re-enter the values. Some tests must be resolved in the operating system. In that case, you may have to restart the Rapid Install wizard after the problem has been fixed.

Important: The following pre-installation checks are expected to fail if the database is down during creation of the upgrade file system:

- Technology Codelevel
- Database Version
- Database Name Validation
- Database Service Name

You should therefore verify the results of all these tests manually.

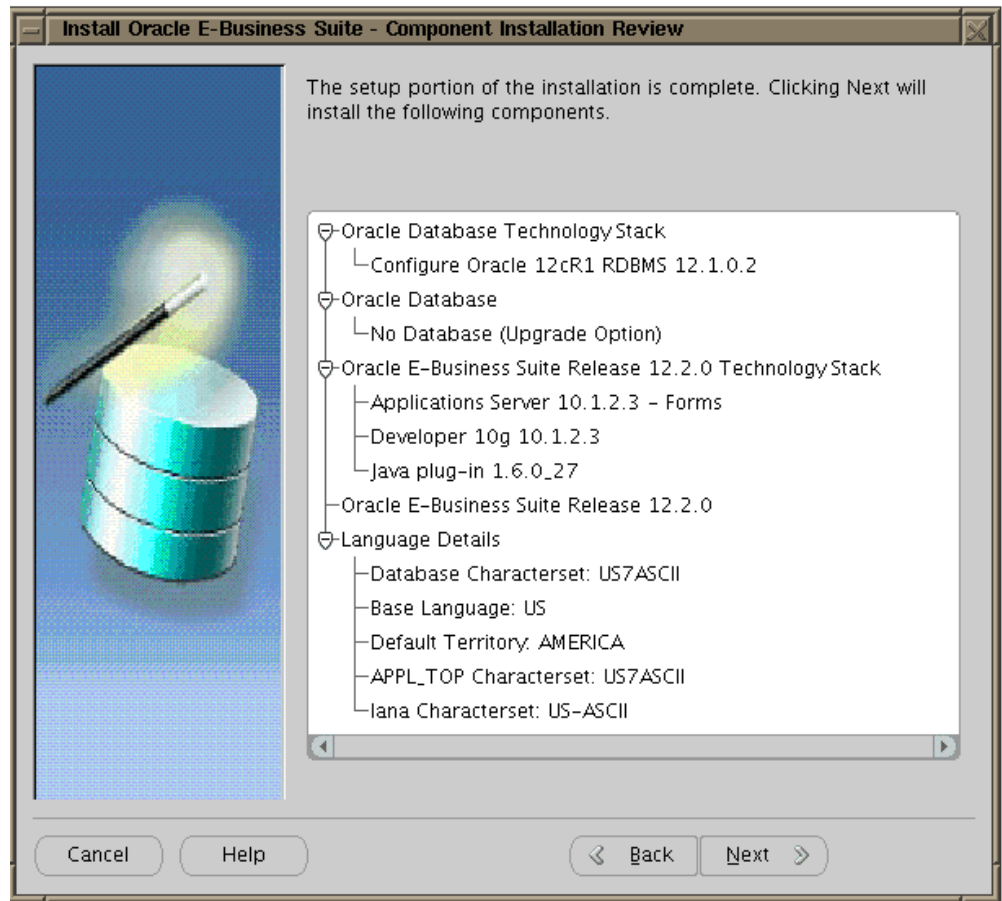
Conditional Action: This note applies only if you are upgrading from Oracle E-Business Suite Release 12.1.3 with a multitenant architecture. For a multitenant architecture, you can ignore the failure related to 'DB service_names check'.

When there are no further issues to resolve, click *Next* to continue.

13. Run Rapid Install

Rapid Install lists the actions it will take during the installation process. The content of the list varies, depending on your installation choices.

Component Installation Review screen



Click *Next* to continue. Rapid Install displays another alert screen asking you to verify that you are ready to begin the installation. Click *Yes* to continue.

Rapid Install creates new file systems for the application tier, and the 12cR1 Oracle Home for the database.

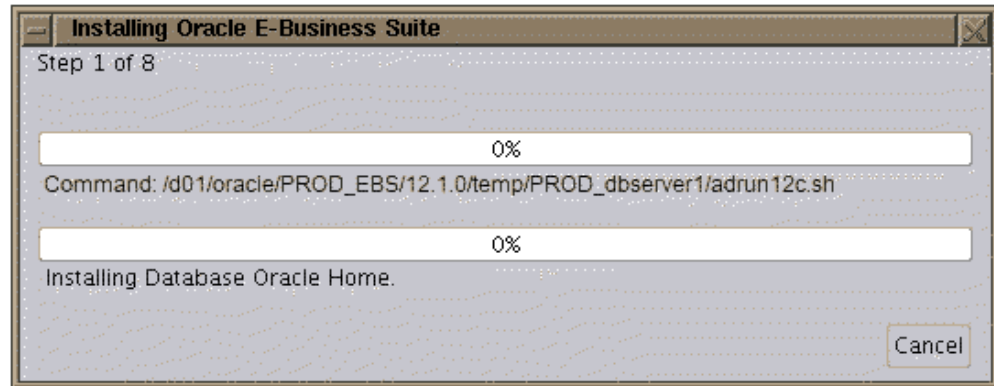
Monitor Installation Progress:

1. Check progress bars

During an installation, Rapid Install displays a main progress bar and an individual progress bar. The main progress bar reports on the completion percentage of the installation as a whole. The individual progress bar reports on the progress of each individual step.

Important: The installation is not complete until all progress bars have disappeared from your screen.

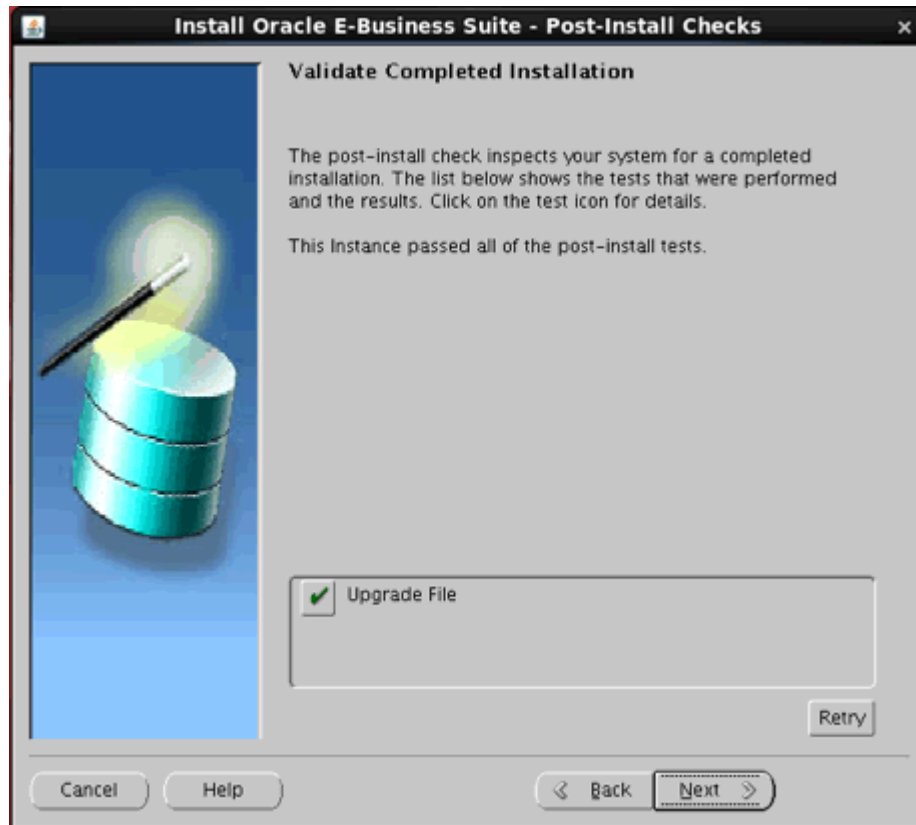
Installing Oracle E-Business Suite progress screen



2. Review Post-Install Checks

When the processing is complete, Rapid Install displays the Post-install Checks screen.

Post-Install Checks screen

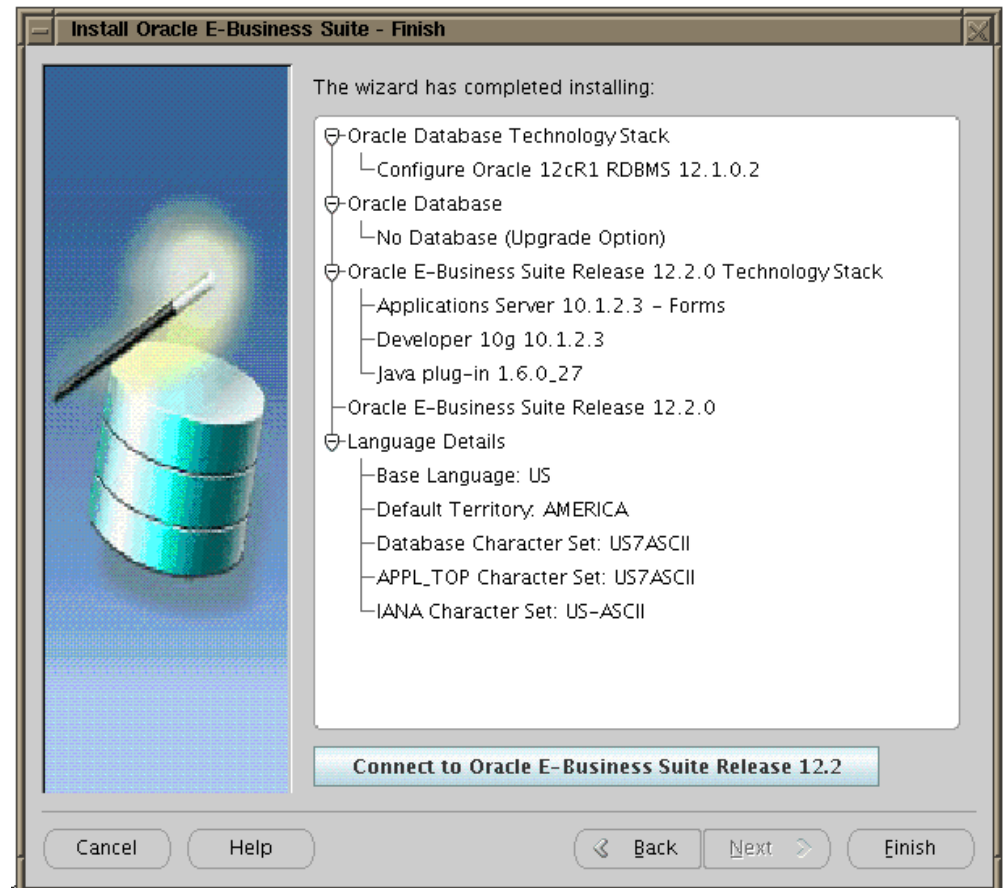


If the test does not succeed, review the errors listed on the screen. Click the *Back*

button to return to the appropriate screens and make corrections as needed. Then click the *Retry* button.

If there are no errors, click *Next*. Rapid Install displays a Finish screen that lists the components that it has installed, and describes any steps you need to perform to complete the upgrade. Review the information on this screen, and click *Finish* to exit Rapid Install.

Finish screen



Preparing the System for Upgrade

Apply Required Application Tier Patches:

Ensure that the required application tier patches for Oracle E-Business Release 12.2 have been applied.

Required Action: Follow the instructions in the *Oracle E-Business Suite*

Release 12.2: Consolidated List of Oracle Fusion Middleware Patches and Bug Fixes (Doc ID 2877607.1) to do the following:

- Check for missing application tier patches by executing the Oracle E-Business Suite Technology Codelevel Checker (ETCC) - `checkMTpatch.sh`.
- Apply the latest application tier patches identified in the report as missing.
- Confirm successful application or required application tier patches by re-executing the Oracle E-Business Suite Technology Codelevel Checker (ETCC) - `checkMTpatch.sh`.

EBS Tech Patch Automation Tool - Application Tier (ETPAT-AT):

EBS Tech Patch Automation Tool - Application Tier (ETPAT-AT) can be used to apply missing technology one-offs to the Oracle E-Business Suite Release (EBS) Release 12.2.0 application tier.

ETPAT-AT automates patching of technology one-offs for the following components of the Oracle E-Business Suite Release (EBS) Release 12.2.0 application tier.

- FMW WebTier 11.1.1.9
- Oracle WebLogic Server 10.3.6 Smart Update Patch
- Oracle WebLogic Server 10.3.6.0
- FMW oracle_common 11.1.1.9
- Forms and Reports 10.1.2.3

Additional Information: For additional information , refer to *Using the EBS Technology Patch Automation Tool for Application Tier (ETPAT-AT)* (Doc ID: 2749774.1) on My Oracle Support.

Drop Event Alert Triggers in Custom Schemas (conditional):

To drop all event alert database triggers in custom schemas, run the `alrdtrig.sql` script, located in `$ALR_TOP/patch/115/sql`. Re-create the triggers after the upgrade is complete.

Validate GUEST Account:

Supported in EURC-DT: Yes

Ensure that the GUEST account is valid and active and that the fnd_user USER_ID for the GUEST account is set to a value of '6'. For example, the following should return 'Y' if the GUEST account is valid and active:

```
SQL> select fnd_web_sec.validate_login('GUEST','ORACLE') Valid from dual;
```

```
VALID
-----
Y
```

If 'N' is returned, then query the error message for more info:

```
SQL> select fnd_message.get from dual;
```

Customer Relationship Management Tasks

Complete these tasks only if you are using Customer Relationship Management products.

Channel Revenue Management:

Perform these tasks if you are using Channel Revenue Management.

1. Process all General Ledger Interface data from ChRM tables.

Applies to: Release 12.0.4, 12.0.6, 12.1.1 and 12.1.2

Run concurrent program 'Transfer to General Ledger' to transfer all accruals and claims interface data from ChRM interface tables to General Ledger. After the Release 12.2 upgrade, these interface tables will be obsolete and replaced by Subledger Architecture migration-related interface tables.

Financials and Procurement Tasks

Complete this task only for the Financials and Procurement products that are active in your system.

Advanced Collections:

Perform this task only if you are using Oracle Advanced Collections with Strategies.

1. Strategy Workflow checks

Applies to Release 12.0 and 12.1.

Apply the diagnostic scripts patch 13027498:R12.IEX.A when upgrading from R12.0.X and apply 13027498:R12.IEX.B when upgrading from 12.1.X. This patch contains scripts for Collection Strategy Workflow.

From the Collections Agent responsibility using the user name 'SYSADMIN', stop any scheduled Workflow Background Process concurrent program request for the following Item Types:

- IEXSTRY - IEX: Collection Strategy Work Flow
- IEXSTFFM - IEX: Strategy Fulfilment Mailer
- IEXSTRCM - IEX: Strategy Custom Work Flow

Run the script `$IEX_TOP/patch/115/sql/iexswowf.sql` to check and clean the strategies running without workflow. This script requires two parameters: FND username and Responsibility for audit table and logs. For Example, you can run the script using the following:

- username: SYSADMIN
- responsibility: Collections Agent

Run the script `$IEX_TOP/patch/115/sql/iexstorg.sql` to update Org_ID column in IEX_STRATEGIES table to operate Strategy by Operating unit. There are no parameters to run this script.

Subledger Accounting:

Perform this task if you are using Oracle Subledger Accounting.

1. Clean up Advance Queues from prior Create Accounting processes before enabling Edition-Based Redefinition (EBR).

Applies to Release 12.0 and 12.1.

Apply patch 13420532:R12.XLA.A when upgrading from Release 12.0.x and apply Patch 13420532:R12.XLA.B when upgrading from Release 12.1.x to clean up temporary advance queues that were created by prior Create Accounting program processes. Pending Advance Queues of completed Create Accounting processes do not create upgrade issues, but must be cleaned up for EBR.

Note: You can perform this pre-upgrade step while the pre-upgrade system is online.

Human Resource Management (HRMS)

All custom database objects that are mapped to seeded APIs/Row Handlers must be changed from LONG/LONG RAW to CLOB.

The LONG and LONG RAW data type was obsoleted by the database group in release 8*i* and was replaced by the CLOB data type. LONG and LONG RAW remain a valid data type only for backward compatibility and have numerous restrictions. Many database features after release 8*i* do not support the LONG and LONG RAW data type, and interferes with upgrading to new technologies. Specifically, for Online Patching, LONG and LONG RAW columns cannot be referenced in a database trigger. This means that

LONG and LONG RAW columns cannot be patched using Online Patching as the solution uses Cross Edition Triggers to upgrade data. Changes to seed data in the RUN edition cannot be propagated to the PATCH edition as Cross Edition Triggers are used to synchronize the changes. Due to this, all database objects/Oracle Forms/JAVA pages/PRO C/API programs have been changed to use CLOB data type that were previously using LONG and LONG RAW data types.

However, Oracle provides implicit conversion between LONG/LONG RAW data types and LOB data types, with one limitation in this conversion. The maximum size of a LOB is 128 terabytes depending on database block size, and the maximum size of a LONG is two gigabytes. If more than two gigabytes of data is assigned to LONG/LONG RAW data types from the CLOB data type, then a VALUE_ERROR exception will be raised. All of the seed Database Objects/Oracle Forms/JAVA Pages/PRO C code/APIs have been modified to use the CLOB data type and provides more storage. If these new large values are passed to old custom programs that continue to use old LONG/LONG RAW data type and have less storage, then the exception error will be raised.

This enhancement will affect the functionality of User Hook pre-processors, Business Event pre-processors, and Data Pump pre-processors. Oracle suggests that you use the following script to identify procedure/UDF containing LONG parameters, and mapped with seeded APIs/Row Handlers:

```
SQL> SELECT
      package_name
      ,object_name
      ,argument_name
      ,data_type
FROM    all_arguments
WHERE   (package_name,object_name) IN
      (
        SELECT
          call_package
          ,call_procedure
        FROM    hr_api_hook_calls
      )
AND data_type = 'LONG';
```

Action: When all database objects have been identified, change the datatype to CLOB. Refer to *LONG to CLOB Conversion Procedures, Oracle E-Business Suite Developer's Guide*.

Supply Chain Management Tasks

The tasks in this section are required only if you are using Oracle Supply Chain Management products.

Install Base:

Perform these tasks if you are using Oracle Install Base.

1. Check for Possible Corruption on User-defined Installed Base Transaction

SubTypes

Applies to: Release 12.1

If you are upgrading from Release 12.1, then check your system for possible corruption on the user-defined Installed Base Transaction SubTypes. If additional Installed Base Transaction SubTypes or changes to the user-defined Installed Base Transaction SubTypes are identified, then you must fix them before upgrading to Release 12.2.

Required Action: For instructions, refer to *Generic Datafix For Installed Base Transaction SubTypes Data Corruption Caused by csitxnst.ldt* (Doc ID: 1681308.1).

Order Management:

Perform these tasks if you are using Oracle Order Management.

1. Check for the Nullable Hold Entity ID

Applies to: Release 12.1

If you are upgrading from release 12.1, then you should check for the Nullable Hold Entity ID and fix it to NOT NULL. Carefully follow the instructions in the readme of Patch 14191792:R12.ONT.B.

Product Hub:

Perform these tasks if you are using Oracle Product Hub.

1. Using the Packing Hierarchy Structure Type

Applies to: Release 12.0

If you are upgrading from 12.0 and have used Packaging Hierarchy structure type, then note that only the preferred packaging structure from this structure type is migrated over in the upgrade process. If you have defined multiple packaging structures and want to migrate all of them, then consider bringing them into the system by transferring them into other structure types, at which time they will be treated as regular structure types and not Packs.

2. Backing Up User Defined Attributes Data for Items

Applies to: Release 12.0

Considerable changes have been made to the data model that stores Item user defined attributes in Release 12.2. Upgrade scripts are available to automatically manage these changes. However, if these scripts fail during upgrade, there can be potential loss of data. Oracle recommends that you back up the following tables before you proceed with the upgrade.

- EGO_MTL_SY_ITEMS_EXT_B
- EGO_MTL_SY_ITEMS_EXT_TL

You can discard the backups when the upgrade is completed and the pre-upgrade UDA data for items have been functionally verified. This is required only if you are upgrading from Release 12.0 to Release 12.2.

3. Checking for Duplicate Records

Applies to: Release 12.0 and 12.1

Run the following query and verify the output:

```
SELECT COUNT(1)
FROM SYS.ALL_IND_COLUMNS
WHERE INDEX_NAME = 'EGO_MTL_SY_ITEMS_EXT_B_U2'
      AND COLUMN_NAME = 'UNIQUE_VALUE'
      AND INDEX_OWNER = 'EGO';
```

If the above query returns '0' as the output, then perform the following steps:

1. Take backup of ego_mtl_sy_items_ext_b table
2. Refer to Doc ID: 953449.1 and run the script provided in the 'Identification Script' column within the 'Solution - Datafix' section to identify duplicate records.

If there are duplicate records, then run the scripts provided in the 'Fix' column within the 'Solution - Datafix' section for the appropriate base version to delete duplicate records.

Note: You must eliminate duplicate records before upgrading to Release 12.2. If you require help eliminating duplicate records, then contact Oracle Support.

4. Managing Open New Item Requests

Applies to: Release 12.0

Because there are significant changes to New Item Requests (NIR) between Releases 12.0 and 12.2, all existing NIRs should be closed before the upgrade. For example, close NIRs by changing to either Implemented or Rejected. This is required only if you are upgrading from Release 12.0 to Release 12.2.

Database and System Administration Tasks

1. Reset init.ora parameters (required)

Required Action: Follow the instructions in *Database Initialization Parameters for Oracle E-Business Suite Release 12.2* (Doc ID: 396009.1) and reset the init.ora parameters as required.

2. Gather SYS, Fixed Object and Dictionary Statistics (required)

Supported in EURC-DT: Yes

Process all steps as the user 'SYSDBA'. For multitenant architecture, perform the following steps on your Oracle E-Business Suite pluggable database.

1. Gather SYS schema statistics:

```
begin
  dbms_stats.gather_schema_stats(
    'SYS',
    options=>'GATHER STALE',
    estimate_percent =>
DBMS_STATS.AUTO_SAMPLE_SIZE,
    method_opt => 'FOR ALL COLUMNS SIZE AUTO',
    cascade => TRUE);
end;
/
```

2. Fixed Object and Dictionary Statistics

These should have been previously gathered, correct and up-to-date on the pre-upgrade environment.

```
exec dbms_stats.gather_fixed_objects_stats;
```

```
exec dbms_stats.gather_dictionary_stats;
```

Additional Information: Refer to *Best Practices for Minimizing Oracle E-Business Suite Release 12.1.3 and 12.2.n Upgrade Downtime* (Doc ID: 1581549.1).

3. Gather schema statistics (required)

Supported in EURC-DT: Yes

Applies to: Release 12.0 and 12.1

Schema statistics are gathered by the FND_STATS process, which you can execute by running the Gather Schema Statistics concurrent program.

Note: During normal operation, you should gather schema statistics on a regular basis to ensure that the cost-based optimizer can generate optimal SQL execution plans. In preparation for an upgrade, gathering statistics should be one of the final tasks you perform before starting the upgrade downtime: this will ensure

that the statistics are current.

From your Release 12 APPL_TOP, perform the following steps:

1. Log in to Oracle E-Business Suite as the System Administrator.
2. Navigate to the Submit Request window (Requests > Run).
3. Submit the Gather Schema Statistics program.

Alternatively, run the following procedure manually:

```
FND_STATS.GATHER_SCHEMA_STATISTICS('ALL', 10, :parallel_degree,  
'NOBACKUP', NULL, 'LASTRUN', 'GATHER AUTO', 10, 'N');
```

Where: parallel_degree is set to the value of the database initialization (init.ora) parameter parallel_max_servers for your instance.

The parameters for FND_STATS.GATHER_SCHEMA_STATISTICS are as follows:

```
$ FND_STATS.GATHER_SCHEMA_STATISTICS (<schema name>, <estimate  
percent>, <degree of parallelism>, <backup flag>, <restart request  
ID, if applicable>, <history mode>, <gather options>, <modifications  
threshold>, <invalidate dependent cursors>);
```

Additional Information: Refer to the *Oracle E-Business Suite Maintenance Guide* for more information on the Gather Schema Statistics concurrent program and the FND_STATS.GATHER_SCHEMA_STATISTICS procedure.

Set the schema name to ALL to gather statistics for all Oracle E-Business Suite schemas (those with an entry in the FND_PRODUCT_INSTALLATIONS table). In addition to gathering index and table-level statistics, the program gathers column-level histogram statistics for all columns listed in the FND_HISTOGRAM_COLS table.

Note: Oracle recommends that you use the 'GATHER AUTO' option, which gathers statistics for objects that have not been previously had statistics collected, or whose rows have changed significantly since the last run. The default is 10%.

Depending on the size and number of changes to your database, gathering schema statistics may take a long time. Using the 'GATHER AUTO' option can reduce the overall time, as it uses an incremental approach.

Customers who gather schema statistics at 10% for all schemas and then again at a higher percentage for specific schemas or tables should initially continue this approach to avoid performance degradation. Review this process during the performance test phase.

Once the pre-upgrade steps have been completed, consider using the 'GATHER_AUTO' option and the DBMS_STATS.AUTO_SAMPLE_SIZE feature (available in Oracle Database 11gR1 and later). The AUTO sample size feature takes data skew into account, and may avoid the need to gather schema statistics at a higher percentage: in addition, it is likely to take the same time as using a manual approach with a percentage between 10-20 percent. When invoking the Gather Statistics concurrent program, Oracle recommends leaving the estimate_percent parameter blank. The program automatically selects the default value for the estimate_percent parameter. If you provide a value, then statistics will be gathered at the specified percentage. If the database version is 11g or higher, then the default value for this parameter is dbms_stats.auto_sample_size. (For previous releases it was set to 10%.)

Note: See *Query Optimization in Oracle E-Business Suite Concepts* for more information.

4. Install JRE on the database tier (conditional)

Supported in EURC-DT: Yes

If you are planning to run Rapid Install in Upgrade Mode by using the Use Existing ORACLE_HOME option, then you must install JRE in the Database ORACLE_HOME/appsutil as follows:

- For Oracle Database 11g Release 2 (11.2.0.4) or Oracle Database Release 12c Release 1 (12.1.0.2):

Download the latest JRE 7 Update. For optimum stability, performance, scalability, and OS vendor support, use the latest available update of JRE for the Oracle E-Business Suite database tier. The JRE download location is: <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.

Conditional Action: Do not download the Java SE Development Kit (JDK). To download platform specific JRE and additional information on installation, refer to *Using JDK 7.0 Latest Update with Oracle E-Business Suite Release 12.2* (Doc ID: 1530033.1).

- For Oracle Database 19c:

Install JRE 8 on the database tier using the following instructions:

```
cp ?r <DB ORACLE_HOME>/jdk/jre <DB ORACLE_HOME>/appsutil
cp <DB ORACLE_HOME>/jlib/orai18n.jar <DB
ORACLE_HOME>/appsutil/jre/lib/ext
```

5. Synchronize values of APPLPTMP with Database Directories for PL/SQL File I/O based Concurrent Requests (required)

Supported in EURC-DT: Yes

Concurrent processing (CP) may run PL/SQL (inside of the database) that creates output and log files using the utl_file package. On all CP nodes, ensure that the \$APPLPTMP environment variable is set to the first database directory defined for PL/SQL file I/O. If you use a RAC database, then \$APPLPTMP should point to a directory on a shared file system visible to all the RAC nodes. This ensures that CP can locate the output and log files created from PL/SQL.

For Oracle Database 19c, you can retrieve the value of UTL_FILE_DIR by using the following command as 'APPS' user:

```
SQL> select value from v$parameter where name='utl_file_dir';
```

Additional Information: See My Oracle Support Knowledge Document 2525754.1, Using UTL_FILE_DIR or Database Directories for PL/SQL File I/O in Oracle E-Business Suite Releases 12.1 and 12.2 for more information.

6. Perform a system backup

Applies to: All 12.0 and 12.1 releases

Make a cold backup of the Oracle E-Business Suite database. Back up the Oracle E-Business Suite database. If you encounter problems during the upgrade process, you can use this backup to restore your system to the state before you began the upgrade.

Performing the Upgrade to Release 12.2.0

This section describes the tasks required to initiate the upgrade process. All the tasks must be performed during the upgrade downtime. The following table provides a checklist of the tasks required in this chapter.

Important: After laying down the File System using Rapid Install, do not change the password for any products. Doing so may result in the following error: 'ORA-01017: invalid username/password; logon denied occurred while executing the SQL statement: CONNECT JTF/*****'

If the password for a product is changed, then FNDCPASS should be run to revert the password to the default value. Adpatch can be resumed after the password is restored to the original value.

These tasks...	are located here...
Disable AOL Audit Trail (conditional)	, page 4-49

These tasks...	are located here...
Shut down application tier listeners and concurrent managers (required)	, page 4-49
Update init.ora with upgrade parameters (required)	, page 4-49
Set FAILED_LOGIN_ATTEMPTS to UNLIMITED for Oracle E-Business Suite schema	, page 4-50
Disable custom triggers, constraints, indexes, business events, and VPD (conditional)	, page 4-50
Check for data dictionary corruption and time stamp mismatch	, page 4-50
Compile invalid objects	, page 4-51
Rebuild unusable indices	, page 4-52
Refresh materialized view (conditional)	, page 4-52
Back up the database (recommended)	, page 4-52
Disable database auditing (recommended)	, page 4-52
Ensure that Maintenance Mode is enabled (required)	, page 4-53
Apply AD 12.2 upgrade driver (required)	, page 4-53
Apply the consolidated upgrade patch and run the 12.2.0 Upgrade (required)	, page 4-53
Disable maintenance mode (required)	, page 4-55
Back up Oracle E-Business Suite (recommended)	, page 4-55

Important: You must turn off the Database Vault before upgrading to

12.2.0. After enabling EBR+upgrade to 12.2.x, re-enable the Database Vault.

1. Disable AOL Audit Trail (conditional)

Supported in EURC-DT: Yes

If you use the Oracle Applications Object Library Audit Trail feature, then you must disable it before the upgrade.

From the System Administrator responsibility under the R12.0 or 12.1 APPL_TOP, navigate to Security > Audit Trail > Groups. In the Audit Groups window, set the Group State field to Disable - Prepare for Archive for each audit group defined. Run the Audit Trail Update Tables report from the Submit Requests window (Requests > Run).

Conditional Action: If you plan to re-enable auditing after the upgrade, then archive and purge the shadow tables now. Data changes made after implementing this step are not audited. Refer to *Audit Trail* in the *Oracle E-Business Suite Security Guide* for instructions.

Note: See *Audit Trail* in *Oracle E-Business Suite Security Guide*.

2. Shut down application tier listeners and concurrent managers (required)

Navigate to Concurrent > Requests. In the Find Requests window, select All my requests. Click Find, and click Hold Pending requests as necessary. Then, as System Administrator, choose Administer Concurrent Managers. Navigate to the Control field and select Deactivate.

Shut down all application tier services including Concurrent Managers using the adstpall script. Do this from your existing Oracle E-Business Suite Release 12 instance.

Note: If you want to isolate post-upgrade concurrent programs to a separate manager queue, then refer to Managing Concurrent Processes, page A-1 of this guide.

3. Update init.ora with upgrade parameters (required)

Supported in EURC-DT: Yes

Initialization parameters required at each stage of an upgrade may vary depending on when you upgrade your database. Set the appropriate parameters now. If your processes and sessions values in the init.ora file is the default values provided by

the Oracle E-Business Suite installation of 300 and 600, then you should consider doubling these during the upgrade process to avoid connection issues.

Note: See *Database Initialization Parameters for Oracle Applications Release 12.2* (Doc ID: 396009.1).

4. Set FAILED_LOGIN_ATTEMPTS to UNLIMITED for Oracle E-Business Suite schema

Supported in EURC-DT: Yes

The database provides parameters to enforce password management policies. However, some of the database password policy parameters may lock out the Oracle E-Business Suite schema. Therefore, ensure that FAILED_LOGIN_ATTEMPTS is set to 'UNLIMITED' for database profiles associated with Oracle E-Business Suite schema.

Additional Information: For details, refer to the *Secure Configuration* chapter in the *Oracle E-Business Suite Release 12.2 Security Guide*.

5. Disable custom triggers, constraints, indexes, business events, and VPD (conditional)

Supported in EURC-DT: Yes

Disable custom triggers or constraints on Oracle E-Business Suite tables. Re-enable these triggers after the upgrade. If you have custom indexes on Applications tables, then determine whether they can affect performance during the upgrade, and drop them if necessary. If you are not sure, then it is best to drop the indexes and add them after the upgrade, if the new release has not created a similar index.

6. Check for data dictionary corruption and time stamp mismatch

Supported in EURC-DT: Yes

If not already applied, then apply the latest Online Patching Readiness and GSCC Report Patch for the code level from which you are upgrading. Refer to *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2* (Doc ID: 1531121.1) on My Oracle Support.

1. Check for Data Dictionary Corruption+

Run the \$AD_TOP/patch/115/sql/adzddtsfix.sql script, following the usage instructions provided.

Run the \$AD_TOP/sql/ADZDDBCC.sql script to identify whether logical data dictionary corruption is present. If no corruption is found, then proceed with the upgrade. If corruption is present, then follow Step 2 as follows:

2. Fix Data Dictionary Corruption (conditional)

Note: Follow these steps only as a fix when logical data dictionary corruption (missing parent) is present.

Copy the script `$AD_TOP/patch/115/sql/adzddmpfix.sql` to the database tier.

On the database tier, connect to the database as SYSDBA.

Note: If you are on Oracle E-Business Suite Release 12.1.3 or Release 12.2 with a multitenant architecture, to connect to a multitenant architecture database as SYSDBA, run the following commands to set the database SID field to `<EBS_PDB_Name>`, the pluggable database name for your Oracle E-Business Suite database:

- `$ source <CDB_NAME>_<NODE_NAME>.env`
- `$ export ORACLE_PDB_SID=<EBS_PDB_Name>`
- `$ sqlplus "/" as sysdba`

Run the `$AD_TOP/patch/115/sql/adzddmpfix.sql` script.

On the application tier, run the `$AD_TOP/sql/ADZDDBCC.sql` script again to identify whether data dictionary corruption is still present.

If no corruption is found, then proceed with the upgrade. If corruption is still present, then proceed to Step 3 as follows:

3. Additional Actions for Data Dictionary Corruption (conditional)

Note: Follow these steps only when data dictionary corruption is present after following the steps in step 2 above.

On the database tier, go to the `$ORACLE_HOME/rdbms/admin` directory.

Run the `utlirp.sql` script, following the usage instructions provided.

Run the `utlrp.sql` script, following the usage instructions provided.

On the application tier, run the `$AD_TOP/sql/ADZDDBCC.sql` script again to identify whether data dictionary corruption is still present. If no corruption is found, then proceed with the upgrade or patching cycle.

If corruption is still present, then contact Oracle Support and request a bug to be logged.

7. Compile invalid objects

Supported in EURC-DT: Yes

If any invalid objects exist, then you must connect to sqlplus using 'apps' to login and run the following:

```
$ exec sys.utl_recomp.recomp_parallel
```

8. Rebuild unusable indices

Supported in EURC-DT: Yes

1. An index must be usable. If an index, or indices are unusable, then you must rebuild the unusable indices:

Unusable indices block DML access to the table. Rebuild any unusable indices with the following command:

```
alter index index_owner.index_name rebuild
```

Note: You can ignore indices on unused tables.

2. Search for failed domain indices and fix them:

You can identify failed domain indices and fix them with the following command:

```
select index_name,index_type,owner,table_name,table_owner,
domidx_opstatus from dba_indexes where domidx_opstatus in
('UNUSABLE','FAILED','LOADING');
```

9. Refresh materialized view (conditional)

Supported in EURC-DT: Yes

To reduce the overall upgrade time, you can optionally run the ADZDMVREFRESHNEEDED.SQL script before starting with the Release 12.2.0 upgrade. To implement the most recent online patching readiness and GSCC report patch, refer to *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2* (Doc ID: 1531121.1) in My Oracle Support.

10. Back up the database (recommended)

Back up the Oracle E-Business Suite database. If you encounter problems during the upgrade process, then you can use this backup to restore your system to the same state before you began the upgrade.

11. Disable database auditing (recommended)

Supported in EURC-DT: Yes

If you have enabled Oracle database auditing, then it is recommended to disable database auditing for the duration of the Oracle E-Business Suite Release 12.2 upgrade. You can enable Oracle database auditing after the Oracle E-Business Suite Release 12.2 upgrade.

Note: Use the database initialization parameter `AUDIT_TRAIL` to enable and disable Oracle database auditing.

12. Ensure that Maintenance Mode is enabled (required)

Maintenance Mode restricts logins and the type of operations that the system can perform. Ensure that Maintenance Mode is enabled before you continue.

1. Source the applications run file system environment file as found in the `fs1` file system `appl_top`.
2. From the AD Administration Main Menu, choose the Change Maintenance Mode option.
3. The Change Maintenance Mode menu displays the current Maintenance Mode status at the top of the page. The status should be Disabled at this point.
4. Select Option 1, Enable Maintenance Mode.

13. Apply AD 12.2 upgrade driver (required)

Download and unzip the AD Upgrade Patch for 12.2 (patch 10117518). Follow the instructions in the patch readme to use AutoPatch to run it from the 12.2 Run File System.

Important: AD Upgrade Patch for 12.2 (patch 10117518) patch readme contains information about the latest Consolidated Upgrade Patch (CUP) for AD. You must follow the Patch readme and apply it by merging it with the latest Consolidated Upgrade Patch for AD, along with any other patches listed in the Readme, as instructed in the readme and by referring to the upgrade guides.

Caution: Ensure that the environment file from the 12.2 RUN File System is sourced prior to applying this patch.

14. Apply the consolidated upgrade patch and run the 12.2.0 Upgrade (required)

The Consolidated Upgrade Patch (CUP) for Release 12.2.0 combines critical upgrade error corrections and upgrade performance improvements from Release 11i/12.0/12.1 into a consolidated suite-wide patch.

Action: Refer to *Oracle E-Business Suite Release Notes, Release 12.2* (Doc ID: 1320300.1) for the latest Consolidated Upgrade Patch and Pre-install patches.

Note: This patch is only intended for upgrade customers who are upgrading to Release 12.2.0. If you are already at Release 12.2.0 or beyond, do NOT apply this patch.

1. Apply the Consolidated Upgrade Patch (CUP) for Release 12.2.0 in pre-installation mode on the Run Edition File System.

Note: Before applying the patch for the latest CUP in pre-installation mode:

If you have applied any other patch previously in pre-installation mode and do not intend to merge it with 12.2.0 upgrade driver u10124646.drv, clean up the directory <APPL_TOP>/admin/<TWO_TASK>/preinstall on run file system after taking the backup of the current directory.

```
$ adpatch preinstall=y
```

- Apply the pre-upgrade patches that were released after the Consolidated Upgrade Patch.

Refer to My Oracle Support Knowledge Document 1448102.2 for the Oracle E-Business Suite Release 12.2 Pre-install Patches Report. It provides a list of essential patches that you must apply in pre-install mode before upgrading from Release 11i/12.0/12.1 to Release 12.2. Follow the recommendations within My Oracle Support Knowledge Document 1448102.2 and apply the additional pre-install patches.

Individual pre-install patches that are listed in the Oracle E-Business Suite Release 12.2 Pre-install Patches Report can be merged with the Consolidated Upgrade Patch and applied together.

2. Merge the patch drivers in \$APPL_TOP/admin/\$TWO_TASK/preinstall directory with the 12.2.0 upgrade driver \$AU_TOP/patch/115/driver/u10124646.drv

Note: All of the patch driver files located under \$APPL_TOP/admin/<TWO_TASK>/preinstall are merged with the 12.2.0 upgrade driver <AU_TOP>/patch/115/driver/u10124646.drv. Therefore, carefully evaluate the content of the directory <APPL_TOP>/admin/<TWO_TASK>/preinstall and retain only those patch drivers including the latest Oracle E-Business Suite CUP patch driver. It is intended to be merged with the 12.2.0 upgrade driver (u10124646.drv).

Merging patch drivers in run file system's
<APPL_TOP>/admin/<TWO_TASK>/preinstall with
<AU_TOP>/patch/115/driver/u10124646.drv:

- Change directory to <AU_TOP>/patch/115/driver

```
$ cd $AU_TOP/patch/115/driver
$ admrgpch -d . -preinstall -master u10124646.drv
```

Note: The default merged driver by name u_merged.drv is then created in the destination directory that is specified.

3. Apply the newly merged 12.2.0 upgrade driver (For example, -<AU_TOP>/patch/115/driver/u_merged.drv) to the Run File System with the following command:

```
$ adpatch options=nocopyportion,nogenerateportion
```

Important: None of the application tier services should be started until you upgrade to the certified release update pack for Oracle E-Business Suite Release 12.2.

15. Disable maintenance mode (required)

Maintenance mode controls the system downtime period by managing user logins. To disable maintenance mode, use the Change Maintenance Mode menu in AD Administration.

Note: Once the system is enabled for online patching, the Maintenance Mode option is not available.

1. From the AD Administration Main Menu, choose the Change Maintenance Mode option.
2. The Change Maintenance Mode menu displays the current Maintenance Mode status at the top of the screen. It should be Enabled.
3. Select Option 2, Disable Maintenance Mode.

16. Back up Oracle E-Business Suite (recommended)

Perform a full Oracle E-Business Suite backup of the application and database.

Finishing the 12.2.0 Upgrade

You must complete all the tasks in this section to finish the upgrade. All the tasks must

be completed during system downtime on the Release 12.2 Oracle E-Business Suite instance.

1. Configure Release 12.2 Oracle E-Business Suite instance (required)

When you ran Rapid Install in the Prepare for the Upgrade section of Chapter 2, it created and stored an instance-specific context by replacing system variables you entered on the wizard screens with the specific values you saved in the configuration file (config.txt). At this point in the upgrade, point Rapid Install to the Application Tier context file. Rapid Install (using AutoConfig) updates your system configuration using the values it finds in the context file.

1. Update the DB ORACLE_HOME file system with AutoConfig and Clone files (conditional)

Note: If you have installed 12.1.0.2 Database ORACLE_HOME using the latest StartCD, then skip this step.

On the application tier (as the APPLMGR user), log on to the APPL_TOP environment (source the environment file) and run this perl script to create appsutil.zip in <INST_TOP>/admin/out. Source the applications run file system environment file as found in the fs1 file system appl_top.

```
$ perl <AD_TOP>/bin/admkappsutil.pl
```

On the database tier (as the ORACLE user), copy or FTP the appsutil.zip file to the <DB ORACLE_HOME> and unzip the file. Change directory to DB Oracle Home as follows:

```
$ cd <DB ORACLE_HOME>
```

Unzip the file with the following command:

```
$ unzip -o appsutil.zip
```

2. Install JRE on the database tier (conditional)

If you have not installed JRE on Database Tier (see below) before running Rapid Install in Upgrade mode by using 'Use Existing ORACLE_HOME' as described in *Preparing for the Upgrade*, then install JRE on the database tier. If you have used ORACLE HOME installed by Rapid Install, then skip this step.

- For Oracle Database 11g Release 2 (11.2.0.4) or Oracle Database Release 12c Release 1 (12.1.0.2):

Install JRE on the database tier to ensure that the application tier and the database tier matches. Download the latest JRE 7 Update. For optimum stability, performance, scalability, and OS vendor support, use the latest available update of JRE for the Oracle E-Business Suite database tier.

Conditional Action: Do not download the Java SE

Development Kit (JDK). To download platform specific JRE and additional information on installation, refer to *Using JDK 7.0 Latest Update with Oracle E-Business Suite Release 12.2* (Doc ID: 1530033.1).

- For Oracle Database 19c:

Install JRE 8 (on the database tier) using the following instructions:

```
cp -r <DB_ORACLE_HOME>/jdk/jre <DB_ORACLE_HOME>/appsutil
cp <DB_ORACLE_HOME>/jlib/orai18n.jar <DB_ORACLE_HOME>/appsutil/jre/lib/ext
```

3. Create the Context Name directory in the DB oracle home

Note: This step is not applicable for multitenant architecture.

Copy listener.ora and tnsnames.ora from the \$ORACLE_HOME/network/admin directory to the \$ORACLE_HOME/network/admin/<CONTEXT_NAME> directory.

Note: Verify that these files were correctly generated through autoconfig by checking the timestamp from the last autoconfig run, ensuring that they were properly instantiated. For example, for the listener.ora, check that there are correct SID references that came from the %s_db_listener% value in the \$CONTEXT_FILE.

4. Set and export the following environment variables

- export ORACLE_HOME=<DB_ORACLE_HOME>
- export ORACLE_SID=<instance name for current database node>

Note: For multitenant architecture, export ORACLE_SID=<EBS PDB Name>

- export
TNS_ADMIN=\$ORACLE_HOME/network/admin/<CONTEXT_NAME>

Note: For multitenant architecture, set and export the following environment variable: export DB_LISTENER=<EBS CBD_Name>

UNIX:

- `PATH=$ORACLE_HOME/bin:$ORACLE_HOME/perl/bin:/usr/bin:/usr/sbin:$ORACLE_HOME/appsutil/jre/bin:/bin:/usr/bin/X11:/usr/local/bin:$PATH`
- `PERL5LIB=$ORACLE_HOME/perl/lib/[perl version]:$ORACLE_HOME/perl/lib/site_perl/[perl version]:$ORACLE_HOME/appsutil/perl`

Windows:

- `PATH=%ORACLE_HOME%/perl/bin;%ORACLE_HOME%/bin;%PATH%`
(for Windows)
- `PERL5LIB=%ORACLE_HOME%\perl\lib;%ORACLE_HOME%\perl\site\lib;%ORACLE_HOME%\appsutil\perl`
- `SET LOCAL=<instance name for current database node>`

5. Generate a new database context file as follows:

Note: This step applies only to customers using their existing DB home during the upgrade.

UNIX:

```
$ cd <DB ORACLE_HOME>/appsutil/bin
$ perl adbldxml.pl
```

Note: If your Oracle E-Business Suite database is on a logical hostname, then you must instead run following command:

```
perl adbldxml.pl servername=<logical hostname>
```

where <logical hostname> is the Fully Qualified Domain Name (FQDN) for the logical host.

Example: If the logical hostname for the database tier is logicaldb.example.com, then you must run the following command:

```
perl adbldxml.pl servername=logicaldb.example.com
```

Windows:

```
C:\> cd <DB ORACLE_HOME>\appsutil\bin
C:\> perl adbldxml.pl
```

6. Clean up old node information prior to configuring the Oracle E-Business

Suite Release 12.2 application tier

Connect as the APPS user to the Oracle E-Business Suite Database, or the Oracle E-Business Suite Pluggable Database (in case of 19c) and run the following statement:

```
$ exec fnd_conc_clone.setup_clean ;
```

Note: fnd_conc_clone.setup_clean cleans all node information including primary and secondary nodes for all concurrent managers. If you are running a multi-node system with Concurrent Managers defined on multiple nodes, then you must process that setup as part of the post-upgrade steps after services are started.

7. Synchronize values of APPLPTMP with Database Directories for PL/SQL File I/O based Concurrent Requests (required)

Concurrent processing (CP) may run PL/SQL (inside of the database) that creates output and log files using the utl_file package. On all CP nodes, ensure that the \$APPLPTMP environment variable is set to the first database directory defined for PL/SQL file I/O. If you use a RAC database, then \$APPLPTMP should point to a directory on a shared file system visible to all the RAC nodes. This ensures that CP can locate the output and log files created from PL/SQL.

For Oracle Database 19c, you can retrieve the value of UTL_FILE_DIR by using the following command as 'APPS' user:

```
SQL> select value from v$parameter where name='utl_file_dir';
```

Additional Information: See My Oracle Support Knowledge Document 2525754.1, Using UTL_FILE_DIR or Database Directories for PL/SQL File I/O in Oracle E-Business Suite Releases 12.1 and 12.2 for more information.

8. Run AutoConfig on the database tier nodes

For Database version Oracle 12c Release 1 (12.1.0.2) and Database version Oracle 19c:

UNIX:

```
$ <DB_ORACLE_HOME>/appsutil/bin/adconfig.sh contextfile=<context file created in step 5>
```

Windows:

```
C:\> <DB_ORACLE_HOME>\appsutil\bin\adconfig.cmd  
contextfile=<context file created in step 5>
```

For Database version Oracle 11g Release 2 (11.2.0.4):

If your database version is 11.2.0.4, then execute adconfig.pl after setting PERL5LIB as described in step 4 above.

```
$ perl <DB ORACLE_HOME>/appsutil/bin/adconfig.pl  
contextfile=<context file created in step 5>
```

9. Source the Run file system environment file

On the application tier, source the environment file for the run file system.

Run the following command to confirm that the environment is properly set:

```
$ echo $FILE_EDITION
```

Verify that the command returns 'run'.

10. Drop table ADX_PRE_AUTOCONFIG from APPS schema

- Prior to running Rapid Install to configure the Oracle E-Business Suite Release 12 instance, check if table - ADX_PRE_AUTOCONFIG exists in APPS schema:

```
select object_name, object_type, owner, status from dba_objects where  
upper(object_name)='ADX_PRE_AUTOCONFIG' and object_type='TABLE'  
and upper(owner)='<APPS schema name>';
```

**Execute the following commands to drop table
ADX_PRE_AUTOCONFIG from APPS schema:**

Note: It will be recreated during autoconfig with APPLSYS schema.

```
$ cd <AD_TOP>/patch/115/sql  
$ sqlplus APPS/<APPS Schema password>  
@txkDropAdxPreAutoConfig.sql
```

11. Configuring the Oracle E-Business Suite Release 12.2 Application Tier

You will now run Rapid Install to configure the application tier services.

Configure an Existing Instance

When you ran Rapid Install previously, it created and stored an instance-specific context by replacing system variables you entered on the wizard screens with the specific values you saved in the configuration file (config.txt). In this section, you point Rapid Install to the Applications context file, so that it can use the values there to complete the process of configuring your system.

Start by running the preamble actions:

1. Ensure that the database and listeners have been started.
2. Start the Rapid Install Wizard by entering the command rapidwiz.

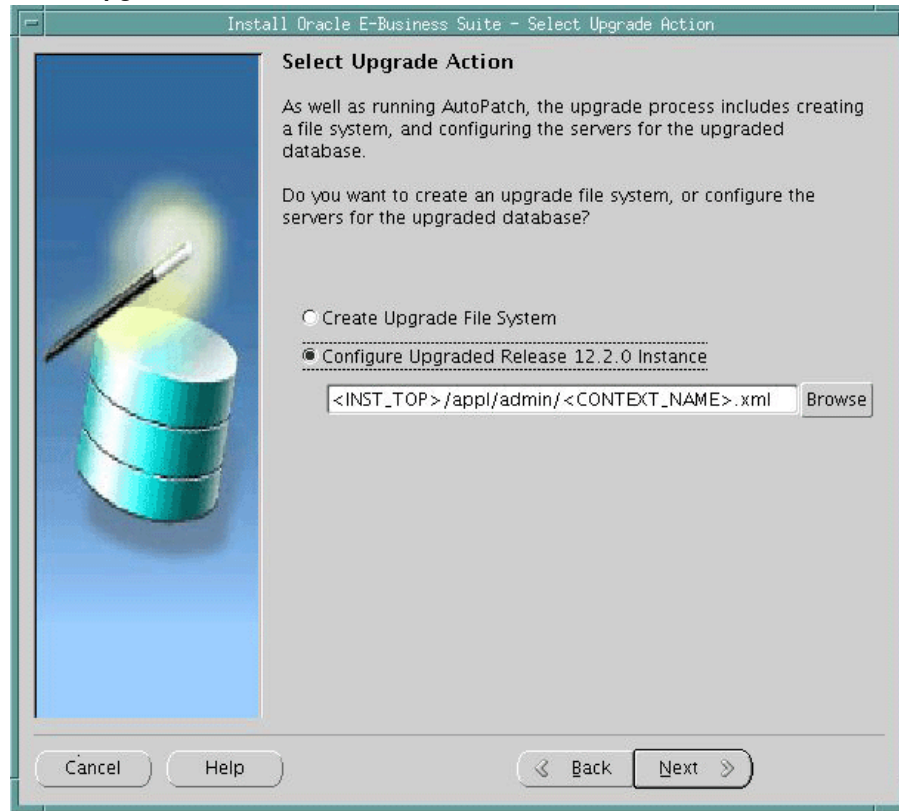
3. On the Welcome Screen, click *Next*.
4. Select the option *Upgrade to Oracle E-Business Suite Release 12.2.0*.
5. Specify Oracle Configuration Manager Details

You will now perform the relevant upgrade actions.

1. Configure upgraded instance

On the Select Wizard Operation screen, choose the *Upgrade to Oracle Applications 12.2.0* option to indicate you are performing an upgrade. This displays the Select Upgrade Action screen.

Select Upgrade Action



On this screen, select *Configure Upgraded Release 12.2.0 Instance* to indicate that you want to configure the services for the upgraded database.

2. Indicate name and location of context file

When you ran Rapid Install previously, it configured your system by replacing system variables you entered on the wizard screens with the specific values you saved in the configuration file (config.txt). It stored this information as an Applications context file called `<CONTEXT_NAME>.xml`.

Additional Information: See the Technical Configuration chapter in *Oracle E-Business Suite Concepts*.

Complete the directory path to point Rapid Install to the File System 1 Applications context file, `$INST_TOP>/appl/admin/<CONTEXT_NAME>.xml`. For example, `/u01/R122_EBS/fs1/inst/apps/<CONTEXT_NAME>/appl/admin/<CONTEXT_NAME>.xml`. You may either enter the path directly in the box, or click

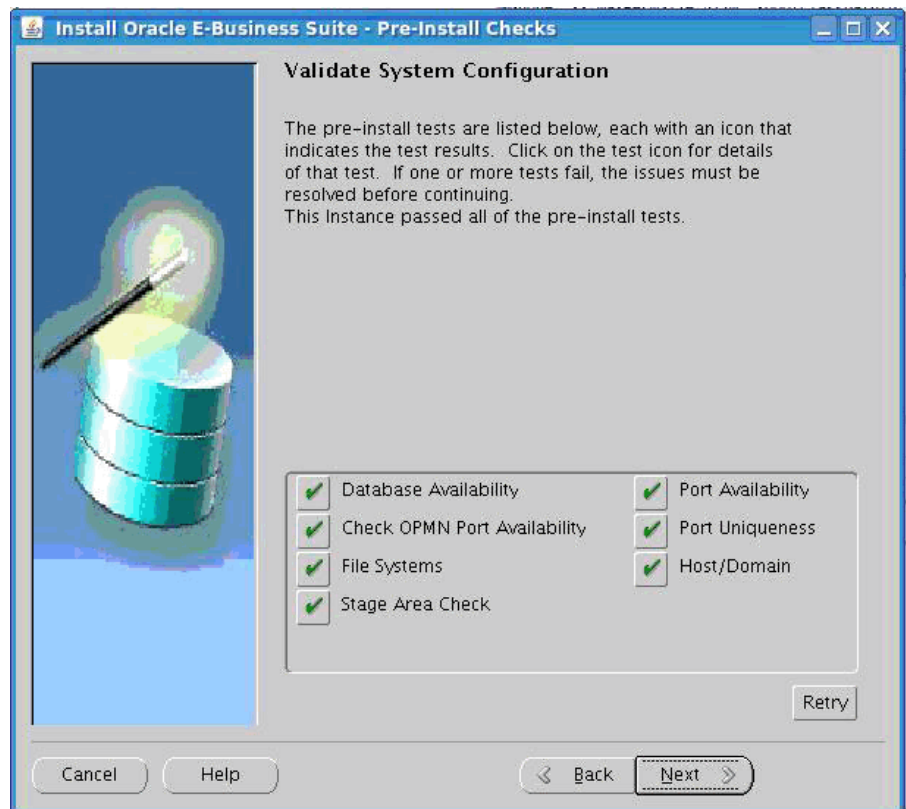
Browse and select the path.

Click *Next* to continue.

3. Run pre-install checks

Rapid Install performs a series of system tests to validate the configuration specified. The System Check Status screen checks port availability.

The Validate System Configuration screen appears, to indicate whether various pre-install requirements for the installation have been met. The pre-install check screen then appears:



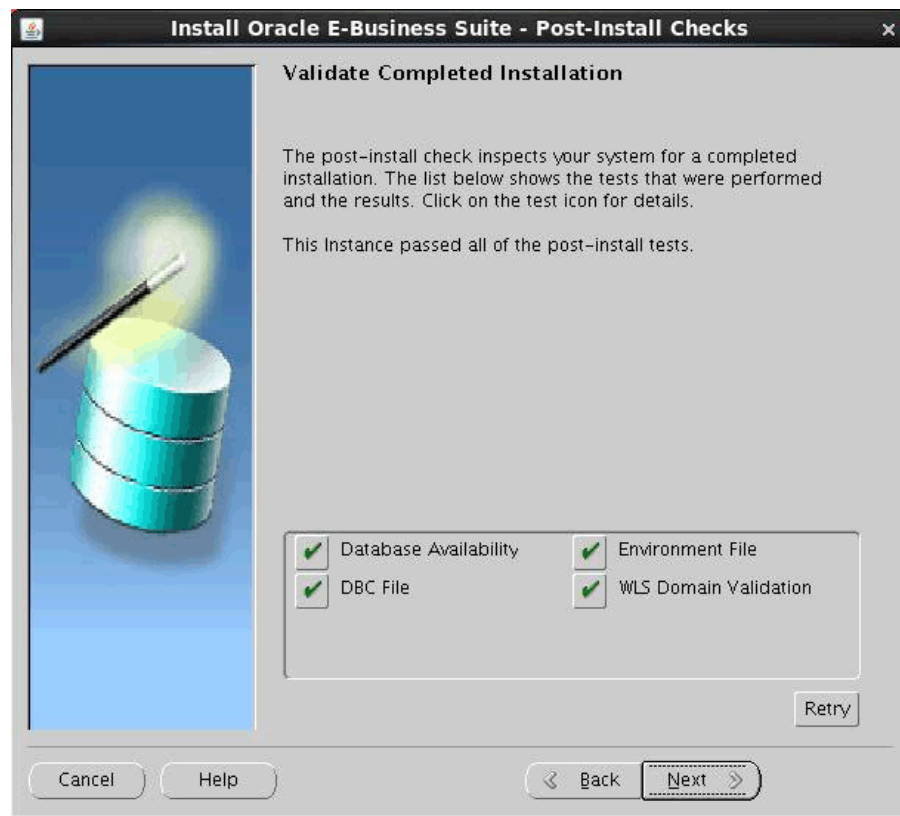
4. Begin the configuration process

For security, the APPS password is not saved in the context file, so you will be prompted to re-enter it on the Review Application User Information screen. Enter the information as requested and click *Next*.

Rapid Install notifies you of the components and processes it will configure. Click *Next* to continue. At the prompt about beginning the installation now, click *Yes*.

When the process is complete, Rapid Install displays a screen that shows

you the steps that were performed:



Click *Finish* to exit Rapid Install. This phase of the upgrade is now complete.

Warning: Do not start the application tier services at this point.

When directed to do so in this chapter, you will start the the Weblogic Admin Server (which in turn starts the Node Manager) as a requirement for applying the latest AD and TXK Release Update Packs (as documented in the AD and TXK patch ReadMe).

After the latest Oracle E-Business Suite Release Update Pack for Release 12.2 is applied, you will be directed to start the application tier services.

2. Upgrade considerations for Add-on Localization products (conditional)

Action: If you have been using Add-on Localizations products

(CLE, CLL, CLA, or CLJ), then you must review the Add-on Localizations - Upgrade Consideration documents on My Oracle Support for upgrade steps and tasks to be completed before EBR enablement. Refer to *Add-on Localizations - Upgrade Consideration* (Doc ID: 1491965.1)

3. Integrate custom database objects and schemas (conditional)

Action: If you previously created custom objects or have custom schemas that must be tightly integrated with Oracle E-Business Suite, then follow the steps in the *Oracle E-Business Suite Developer's Guide* to reintegrate these customizations with the APPS schema.

This release uses Invoker Rights for most PL/SQL packages. Executing these packages from custom schemas may require additional grants from, and synonyms to, APPS schema objects. Oracle recommends that you explicitly declare Invoker Rights or Definer Rights for custom PL/SQL packages. See the *PL/SQL User's Guide and Reference* for more information.

Additional Information: For more information refer to the *PL/SQL User's Guide and Reference*.

Custom database objects must follow the naming standards for custom object names to avoid conflict with Oracle E-Business Suite.

Caution: When naming database objects, use XX as a part of the short name. For example, you might define the custom application to use the short name XXGL, and database objects to begin with an XXGL_ prefix.

Suggested Reading: See *Defining your Custom Application* in the *Oracle E-Business Suite Developer's Guide*.

Enabling Online Patching

Complete the following steps to enable online patching after the upgrade has finished:

1. Verify the database version

Oracle E-Business Suite Release 12.2 Online Patching requires the database to be upgraded to version 11.2.0.4 or higher. Ensure that the database upgrade was completed properly and without errors.

2. Verify that the latest patches have been applied to the database and application tier

The Oracle E-Business Suite Technology Codelevel Checker (ETCC) utility provides two scripts you can run to help ensure you have the necessary database and application tier bugfixes installed on your Oracle E-Business Suite Release 12.2 system. Oracle strongly recommends the use of this utility to ensure that all required database and application tier bugfixes have been installed.

You can download ETCC from My Oracle Support (patch 17537119). ETCC maps missing bugfixes to the default corresponding patches and displays them in a patch recommendation summary. If your Oracle E-Business Suite Release 12.2 installation has additional patches installed as well as the recommended patches, then you may need to install a merge patch from Oracle Support. As well as installation instructions and basic commands, the README for this patch includes a number of usage scenarios and examples so should be carefully reviewed before running ETCC.

3. Gather SYS schema statistics:

Run the following step as 'SYSDBA' user. For multitenant architecture, perform the following steps on your Oracle E-Business Suite pluggable database.

```
begin
  dbms_stats.gather_schema_stats(
    'SYS',
    options=>'GATHER STALE',
    estimate_percent =>
      DBMS_STATS.AUTO_SAMPLE_SIZE,
    method_opt => 'FOR ALL COLUMNS SIZE AUTO',
    cascade => TRUE);
end;
```

4. Apply the latest Oracle E-Business Suite Online Patching Readiness and GSCC Report Patch

You must apply the Oracle E-Business Suite Online Patching Readiness and GSCC Report Patch (Consolidate Standalone Readiness Report Patch) applicable for Release 12.2 and higher by referring to *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2* (Doc ID: 1531121.1), before you proceed with the following steps.

Important: The Consolidate Standalone Readiness Report Patch must be applied using adpatch on the Run Edition File System before proceeding with the following steps, including EBR enablement.

5. Run the Online Patching Enablement - Readiness Reports

Action: For instructions on downloading these utilities, refer to

You must run the following utility from the application tier APPL_TOP. It reports EBR violations that include objects not complying with the EBR rule about Non-Editioned Objects (data storage objects such as Tables and Materialized Views), and referencing editioned objects (code objects such as: Packages, Triggers, Object Types, and so on). This report also lists several naming standard violations that must be fixed prior to applying the online patching enablement patch.

1. Initialize the Run File System environment:

```
$ source <RUN APPL_TOP>/<Instance SID>_<hostname>.env
```

Note: The subsequent steps assume that you are running in the same session which was initialized with this environment file. If you need additional operating system level sessions, remember to initialize the environment with this same environment file.

2. Create the online patching log file location and set it as the current directory:

```
$ mkdir $LOG_HOME/appl/op  
$ cd $LOG_HOME/appl/op
```

Note: The \$LOG_HOME directory will be under the instance top of the run file system.

3. Run the following Readiness reports:

- ADZDPSUM.sql - Provides a summary of the schemas that will be editioned and also schemas with objects that depend on Oracle E-Business Suite code that is recommended to be editioned. You can register these schemas with the application by running the commands that will be listed in the last section of this report. Oracle recommends that you run this report again after the custom schemas are registered with the application. You should run ADZDPSUM.sql repeatedly to handle dependent schemas until no further EBR violations are reported.

Note: Enter the system password when prompted. You can ignore APPS_NE and ODM schemas which may appear in section 2 of the report.

```
$ sqlplus system @$AD_TOP/sql/ADZDPSUM.sql  
$ mv adzdpsum.txt adzdpsum_pre_dbprep.txt
```

- ADZDPMAN.sql - Lists objects with different categories of violations to EBR rules that must be fixed prior to running the enablement process to avoid errors during this process. Oracle recommends that you run this report after all custom schemas are registered with the application according to instructions in the above report ADZDPSUM.sql.

Note: Enter the system password when prompted.

```
$ sqlplus system @$AD_TOP/sql/ADZDPMAN.sql
$ mv adzdpman.txt adzdpman_pre_dbprep.txt
```

- ADZDPAUT.sql - This report lists all the objects with violations to the EBR rules that will be fixed automatically from the enablement process. This report is provided for information purposes and no action should be taken from this report.

Note: Enter the system password when prompted.

```
$ sqlplus system @$AD_TOP/sql/ADZDPAUT.sql
$ mv adzdpaut.txt adzdpaut_pre_dbprep.txt
```

6. Fix Violations Listed in the Online Patching Readiness Report that Require Manual Intervention

The Online Patching Readiness Report contains sections with different violation types.

1. Review all sections listed from the ADZDPMAN.sql report. Follow instructions in each section to fix violations.

Note: Many violations in the Readiness report can be automatically fixed by registering your custom schemas. Review the last section of the Summary Readiness Report (ADZDPSUM.sql) for sample commands on how to register your custom schemas as well as any schema installed as part of an Oracle technology such as APEX, XDB, and OWBSYS. You must register any custom or third-party schema that does not support Oracle E-Business Suite Online Patching.

The following schemas should NOT be registered:

- SYS
- SYSTEM

- CTXSYS

Any dependency between these schemas and Editioned Objects is a coding standards violation and must be fixed manually.

2. Oracle recommends that you perform the chosen fix by customizing template file \$AD_TOP/sql/ADZDPCUST.sql. The reports provide more details on this step.
3. Repeat the *Run the Online Patching Enablement - Readiness Report* step above until all violations have been addressed.

7. Verify database tablespace free space

The Edition-Based Redefinition (EBR) feature of Oracle Database 11gR2 or higher requires additional space for the dictionary tables that are used to manage editioned objects.

1. Initialize the Run File System environment:

```
$ source <RUN APPL_TOP>/<Instance ID>_<hostname>.env
```

2. Set the HOSTNAME environment variable before executing the online patching tool adop.

- Check to ensure the environment variable HOSTNAME is set by running the following:

```
$ echo $HOSTNAME
```

- If the HOSTNAME environment variable is not set, then run the following:

```
$ export HOSTNAME=<your-hostname-without-domain>
```

Note: Repeat the first step to ensure the environment variable is set to the correct hostname.

- If the hostname is set but has the domain, then reset it without the domain.

For example:

```
$ echo $HOSTNAME
$ apcappsx2.au.oracle.com
$ export HOSTNAME=apcappsx2
```

3. Run the following report to retrieve the current tablespace free space:

```
$ perl $AD_TOP/bin/adzdreport.pl apps
```

1. Select option 3 - 'Other Generic Reports'

2. Select the next option - 'Free Space in Important Tablespaces'

Enter the password when prompted.

4. Ensure the following:

- SYSTEM Tablespace: has a minimum of 25 GB of free space

- APPS_TS_SEED Tablespace: has a minimum of 5 GB of free space

APPS_TS_SEED is used to host all tables that have been registered as seed tables and that require seed data storage infrastructure.

- Add necessary space to the tablespaces if they do not contain the required free space. Refer to *Altering and Maintaining Tablespaces in Oracle Database Administrator's Guide* for details.

Additional Information: For details refer to *Altering and Maintaining Tablespaces in the Oracle Database Administrator's Guide*.

8. **Run the Online Patching Enablement - Status Report**

This report provides an overall status of the enabling online patching process. You can run it before, during, and after the enablement patch is applied. At this stage, you will receive report results before you enable online patching.

1. Set the current directory to \$LOG_HOME/appl/op:

```
$ cd $LOG_HOME/appl/op
```

2. Run the report using the following command. Ensure that you verify any invalid objects at this stage. Take special note to ensure that all online patching objects (objects that match the pattern 'AD_ZD%') are valid:

```
$ sqlplus <apps username> @$AD_TOP/sql/ADZDEXRPT.sql
```

Note: Enter the apps password when prompted.

3. Save the output as pre_dbprep for future reference, such as:

```
$ mv adzdexrpt.txt adzdexrpt_pre_dbprep.txt
```

9. **Ensure that all Application Tier Oracle E-Business Suite services are shut down**

Verify that all application tier Oracle E-Business Suite services are shut down prior to applying the Online Patching Enablement patch.

Caution: None of the application tier services should be up until you upgrade to the latest Oracle E-Business Suite Release Update Pack for Release 12.2. Refer to *Post-Upgrade Tasks*, page 5-1 in this guide.

10. Download and apply the Online Patching Enablement patch

Download and apply the Online Patching Enablement patch: 13543062:R12.AD.C. Use Autopatch in hotpatch mode to apply the patch (adpatch options=hotpatch, forceapply).

Important: While applying the Online Enablement patch, you may receive the following error: 'Attention: Adpatch should no longer be used to apply patches. Please use ADOP tool for applying patches.' If you receive this error, then you must use adop in hotpatch mode to apply the enablement patch.

Monitor the Online Patching Enablement patch application.

The enablement patch application may take several hours to finish. You can monitor its progress at any time by running the DDL Status Report (ADZDSHOWDDL.S.sql) as follows:

```
$ sqlplus <apps Username> @$AD_TOP/sql/ADZDSHOWDDL.S.sql
```

This report lists a count of the DDL statements that are required to EBR enable your environment. The report is organized by outcome of execution: 'Successfully Executed', 'Not Executed', and 'Failed Execution'. At the end of the patch application the report should have a zero count in the sections: 'Not Executed' and 'Failed Execution'. If the report contains 'Not Executed' and 'Failed Execution' items, then report these failures to Oracle Support. You will be asked to provide the output from the report, the patch log and all worker logs, and the online patching enablement status report output. If there is any worker failure during the Online Enablement patch, you should not ignore or skip the failed error. The issue should be addressed before restarting the worker. Ignoring or skipping the error can cause database corruption.

Note: In addition to the above outcomes, some DDL statements may complete with a 'Warning' status.

11. Compile Invalid Objects (if any)

Connect to sqlplus as 'apps' and run the following:

```
$ exec sys.utl_recomp.recomp_parallel
```

12. Re-run the Online Patching Enablement Status Report after the Online Patching

Enablement patch has been applied

1. Set the current directory to \$LOG_HOME/appl/op:

```
$ cd $LOG_HOME/appl/op
```
2. Run the Status Report immediately after the enablement patch completes:

```
$ sqlplus <Apps Username> @$AD_TOP/sql/ADZDEXRPT.sql
```

Note: You must provide the APPS schema password when prompted.

The purpose of running this report at this stage is to identify and fix any errors that occurred during the enablement process.

Important: You must fix errors listed by this report. Failure to comply may result in unexpected failures during future patching cycles.

13. Re-run the Online Patching Enablement Readiness Report after the Online Patching Enablement patch has been applied

1. Set the current directory to \$LOG_HOME/appl/op:

```
$ cd $LOG_HOME/appl/op
```
2. Run the Readiness Report after the enablement patch completes:

```
$ sqlplus system @$AD_TOP/sql/ADZDPSUM.sql
```

Note: You must provide the SYSTEM schema password when prompted.

```
$ mv adzdpsum.txt adzdpsum_post_dbprep.txt
$ sqlplus system @$AD_TOP/sql/ADZDPMAN.sql
$ mv adzdpman.txt adzdpman_post_dbprep.txt
$ sqlplus system @$AD_TOP/sql/ADZDPAUT.sql
$ mv adzdpaut.txt adzdpaut_post_dbprep.txt
```

The purpose of running this report at this stage is to ensure that all EBR violations that could have appeared before enabling the online patching feature are fixed.

14. Run the Online Patching Database Compliance Checker report to check for coding standards violations

There are two levels of compliance that can be targeted:

- Minimal Compliance (Minimal) - These checks represent the minimum requirement for correct operation of Oracle E-Business Suite Release 12.2.

Warning: Do not attempt to operate the system if there are P1 minimal compliance violations. Custom code should pass the minimal compliance checks before being used in a Release 12.2 system.

- Full Compliance (Full) - These checks indicate whether an object can be patched using Online Patching. Objects which do not meet full compliance may have limitations in how they can be patched, or may need to be patched using downtime patching. Full compliance also requires that all minimal compliance checks are passed. Custom code that will only be patched using downtime patching does not need to meet the full compliance level.

1. Set the current directory to \$LOG_HOME/appl/op:

```
$ cd $LOG_HOME/appl/op
```

2. Run the Online Patching Database Compliance Checker report to check for online patching database objects standards violations:

```
sqlplus <Apps Username> @$AD_TOP/sql/ADZDDBCC.sql
```

This utility reports all violations to the Online Patching Development Standards. All Oracle E-Business Suite violations are fixed by the 12.2 upgrade. You must fix any object listed in this report that is part of your custom code. If you do not fix the violation, then you cannot leverage the online patching infrastructure to patch the objects listed in this report.

Suggested Reading: Refer to *Database Object Development Standards for Online Patching in Developing and Deploying Customizations in Oracle E-Business Suite Release 12.2* (Doc ID: 1577661.1).

Database Initialization Parameters

Oracle E-Business Suite Release 12.2 introduces a new database service called ebs_patch that supports online patching. The 'service_names' parameter specifies one or more names by which users can connect to an environment. The environment registers its service names with the listener. When a user requests a service, the listener determines which environments offer the requested service, and then routes the user to the most appropriate environment.

For example:

```
$ service_names=%s_dbSid%,ebs_patch
```

Important: In Oracle Database Release 19c, the 'ebs_patch' service will

not be present at this stage of the upgrade. The (<DB_UNIQUE_NAME>_ebs_patch) will be created after the application of the latest AD and TXK patchset.

The 'recyclebin' parameter must be turned off to allow the cleanup phase of the online patching cycle to be performed without having to connect as SYS. This feature may still be used at other times.

For example:

```
$ recyclebin=off
```

If the _SYSTEM_TRIG_ENABLED parameter is set to false, then system triggers are not processed. The post Online Patching Enablement parameter must be set to true.

```
_SYSTEM_TRIG_ENABLED=true
```

```
$ _SYSTEM_TRIG_ENABLED=true
```

Note: The parameters described in this section apply to Oracle E-Business Suite Release 12.2. For details, refer to *Database Initialization Parameters for Oracle E-Business Suite Release 12* (Doc ID: 396009.1).

Upgrading to the Latest Code Level

Tip: The Release 12.2.0 upgrade is now completed and Online Patching is enabled. All Oracle E-Business Suite patches from this point forward will be performed using AD Online Patching (adop).

Additional Information: For information on applying patches using ADOP, see the *Oracle E-Business Suite Maintenance Guide*. Also see *Requesting Translation Synchronization Patches* (Doc ID: 252422.1).

Apply the Latest AD and TXK for Release 12.2:

1. Apply the latest AD and TXK patchsets (required)

Important: None of the application tier services should be up until you upgrade to the latest Oracle E-Business Suite Release Update Pack for Release 12.2 as described in the following section. Only the Weblogic AdminServer (which in turn brings up NodeManager) services can be brought up as part of applying the latest AD and TXK Release Update Packs (as mentioned in its Readme document).

Required Action: Follow the instructions in *Oracle E-Business Suite Release 12.2: Suite-Wide Release Update Pack and AD/TXK Delta Information* (Doc ID: 1583092.1) to apply the latest AD/TXK patchsets.

2. Execute txkSavePDBState.pl (conditional)

Important: This step is applicable only if you have upgraded from Oracle E-Business Suite Release 12.1.3 with multitenant architecture to Oracle E-Business Suite Release 12.2.

On the database tier (as the ORACLE user):

```
cd <DB ORACLE_HOME>
```

source the <EBS PDB> environment (<EBS PDB Name>_<NODE_NAME>.env)

```
cd <DB ORACLE_HOME>/appsutil/bin
```

```
perl txkSavePDBState.pl -contextfile=<Database tier $CONTEXT_FILE>
```

3. Mandatory Steps for Custom Schema Upgrade for 12.0 / 12.1

Note: Do not run adsplice when you are at the Oracle E-Business Suite Release 12.2.0 level. Before running adsplice, you must upgrade to R12.AD.C.Delta.5 and R12.TXK.C.Delta.5 Release update packs or higher for AD and TXK.

This step is applicable only if you have custom products. If you have add-on localization products installed (CLE, CLA, CLL, CLJ), then you must re-splice those add-on localization products.

Important: You must re-splice after enabling EBR with CLE. Applying the latest AD delta patches will overwrite the context file.

1. Running adsplice

For the custom products that already exist, you must run adsplice on the Run File system to lay down the file system.

Action: For running adsplice, refer to *Creating a Custom Application in Oracle E-Business Suite Release 12.2* (Doc ID: 1577707.1).

Apply the Latest Oracle E-Business Suite Release Update Pack for Release 12.2:

The 12.2 Release Update Pack (RUP) is a thoroughly tested release pack that combines patches created across the Oracle E-Business Suite after the initial release of Oracle E-Business Suite Release 12.2.

Action: You must apply the latest Oracle E-Business Suite Release Update Pack. Follow the instructions in *Oracle E-Business Suite RUP, AD and TXK RUP Information, Release 12.2* (Doc ID: 1583092.1).

Tip: When applying the RUP, follow the steps in the associated readme of the Oracle E-Business Suite Release Update Pack for preparation, applying prerequisite patches, and applying the RUP. When you have completed those steps in the Readme document, return to this guide and continue with the following steps. Do not perform the Post-Upgrade steps for the RUP until instructed to do so in the *Post-Upgrade Steps of Oracle E-Business Suite Release Update Pack for Release 12.2*, page 5-26.

Performing Post-Upgrade Tasks

This chapter covers the following topics:

- Database and System Administration TasksDatabase and System Administration Tasks
- Financials and Procurement Tasks
- Customer Relationship Management Tasks
- Human Resources Tasks
- Projects Tasks
- Oracle Fusion Project Management and Oracle E-Business Suite Projects Coexistence
- Supply Chain Management Tasks
- Backing Up Oracle E-Business Suite
- Secure Configuration
- System Maintenance Tasks
- Oracle XML Publisher Tasks
- Post-Upgrade Steps of Oracle E-Business Suite Release Update Pack for Release 12.2
- Mandatory Post-Upgrade Steps for All Upgrade Customers
- Additional Tasks

Database and System Administration Tasks

You must complete all of the tasks in this section to finish the upgrade. All tasks must be completed during system downtime on the Release 12.2 Oracle E-Business Suite instance.

1. **Verify completion of concurrent programs (required)**

The upgrade process creates numerous concurrent program requests. Once you bring up the application tier, these programs run automatically to complete tasks such as data cleanup and upgrades to historical data, among others.

Note: Before you continue, ensure that all concurrent programs generated by the upgrade have run successfully. Refer to Managing Concurrent Processes, page A-1 of this guide for a sample list of concurrent programs.

2. Drop obsoleted product schema (optional)

Note: This step should be executed only after completing the *Verify completion of concurrent programs* post-upgrade task.

1. Ensure no objects exist in the product schema to be obsoleted. If objects exist in the schema, then they should be removed before dropping the schema.
2. After determining the schema is empty and no customizations or dependencies exist, the schema can be dropped using `addropschema.sql`.

Usage: `sqlplus apps @<AD_TOP>/patch/115/sql/addropschema.sql`
<EBS_SYSTEM password if on AD-TXK Delta 13 or later or SYSTEM password if on an earlier AD-TXK RUP> <APPLSYS_Schema>
<Obsoleted_Product_Schema_Name>

Example: `sqlplus apps/apps @<AD_TOP>/patch/115/sql/addropschema.sql`
`manager applsys bsc`

Note: Enter the apps password when prompted.

3. Obsolete Product Schemas that can be considered for dropping include:
 - ABM, AHM, AMF, AMW, BIL, BIV, BIX, BSC, CSS, CUE, CUF, CUI, CUN, CUP, CUS, DDD, EAA, EVM, FEM, FII, FPT, FTP, GCS, HCC, IBA, IBP, IGF, IGS, IGW, IMT, IPD, ISC, ITA, JTS, ME, MST, OKB, OKI, OKO, OKR, OZP, OZS, PFT, POA, PSB, RCM, RHX, RLA, VEH, XNC, XNI, XNM, XNS, ZFA, ZPB, ZSA.
 - The following schemas must be retained to support technical dependencies from other products:
HRI, BIM, OPI, PMI, ENI, PJI, FTE, EGO, BIC

Note: Some schemas may be active for other licensed

products although these products are listed as obsolete in *Planning for an Upgrade*. In these cases, the functionality is removed.

3. Drop dangling synonyms (optional)

After dropping obsoleted product schema, you must run the following script to drop dangling synonyms:

```
$ sqlplus APPS/****@DB @<AD_TOP>/sql/adzd_drop_synonyms.sql
```

4. Reset ORACLE schema passwords (recommended)

During the upgrade, Rapid Install preserves the passwords that you previously set for existing products. However, as it creates a schema for each new product installed, if you did not enter a password in the Rapid Install wizard, then it sets up a default password derived from the product abbreviation (short name). To maintain product security, reset these default passwords now.

Conditional Action: Perform the steps to change the passwords as described in the *Oracle E-Business Suite Password Management* section in the *Oracle E-Business Suite Maintenance Guide*.

5. Change the WLS Admin default password (recommended)

For security purposes, you should now change the default password for the WLS Admin account as follows:

1. Run the following command to stop all application tier services except the Node Manager and the Admin Server:

```
$ EBSAPPS.env run
$ $ADMIN_SCRIPTS_HOME/adstpall.sh ?skipNM -skipAdmin
```

2. Run the following command to change the WLS Admin password:

```
$ perl $FND_TOP/patch/115/bin/txkUpdateEBSDomain.pl
-action=updateAdminPassword
```

Note: You will be prompted for the password information.

For Windows Users:

Run the following commands on Windows platforms:

```
C:\> <ADMIN_SCRIPTS_HOME>\adadminsrvctl.cmd stop
C:\> <ADMIN_SCRIPTS_HOME>\adnodemgrctl.cmd stop
```

Start the Node Manager by running the following commands on Windows:

```
C:\> cd %INST_TOP%\admin\install
C:\> adsvNodeManager.cmd
```

Exit the command prompt after executing 'adsvNodeManager.cmd' and start services from a new command prompt.

3. Restart all services with the following command:

```
$ adstrtal.sh
```

Additional Information: For additional information refer to *Oracle E-Business Suite Setup Guide Release 12.2* (Part No. E22953).

6. Apply recommended patches (recommended)

Use Patch Wizard to generate a list of recommended patches for your environment and apply the list of recommended patches to your environment.

Suggested Reading: Additional information regarding the use of Patch Wizard is available in *Oracle E-Business Suite Releases 11i and 12.x: Required Updates for Patch Wizard* (Doc ID: 1267768.1)

7. Apply recommended security patches (recommended)

1. Oracle highly recommends that you apply the latest critical patch update to your Oracle E-Business Suite environment.

Required Action: Go to the *Critical Patch Updates, Security Alerts and Third Party Bulletin* web page located at: www.oracle.com/technetwork/topics/security/alerts-086861.html.

From this page, go to the latest Critical Patch Update page and select the link to Oracle E-Business Suite. From this page, select the link to the Oracle E-Business Suite MOS Note for the current CPU. Review and apply the CPU patches according to the referenced MOS note.

2. Oracle highly recommends that you enable TLS. You will enable TLS after you upgrade to Oracle E-Business Suite 12.2. You must apply the prerequisite patch requirements to enable TLS.

Required Action: Review the prerequisite patch requirements in *Enabling TLS in Oracle E-Business Suite Release 12.2* (Doc ID: 1367293.1), Section 5.1 for TLS 1.2 with Backward Compatibility, and Section 6.1 for TLS 1.2 Only. Apply all

required patches and prerequisites to enable TLS.

8. Install online help (recommended)

To install the American English online help, run the database portion of the online help patch (u10201000.drv). It is located in \$AU_TOP/patch/115/driver directory. You must apply the American English online help patch driver (\$AU_TOP/patch/115/driver/u10201000.drv) using AD Online Patching (adop) with phase=apply hotpatch=yes and options=nocopyportion,nogenerateportion,forceapply.

```
$ adop phase=apply patchtop=$AU_TOP/patch/115 patches=driver:
u10201000.drv options=nocopyportion,nogenerateportion,forceapply
hotpatch=yes
```

9. Apply online help for Oracle E-Business Suite Release Update Pack (recommended)

Action: Refer to the Oracle E-Business Suite Release Update Pack Readme (applied in the *Performing the Upgrade* chapter) and apply the corresponding Oracle E-Business Suite Release Online Help patch.

10. Apply mandatory interoperability patches (required for Oracle Database 19c)

Note: This step is applicable if you have upgraded to Oracle E-Business Suite Release 12.2 with Oracle Database 19c.

The mandatory interoperability patches are listed in *Database Preparation Guidelines for an Oracle E-Business Suite Release 12.2* (Doc ID: 1349240.1). In the Upgrade Paths section, click Path D. In the Path D : Customers on 12.1.3 on 19c section, apply the mandatory interoperability patches listed in the step '7. Apply latest 12.2 Release Update Pack (RUP) and complete remaining Database related steps'.

11. Apply latest product patches (required)

Determine the latest product-specific patches. Then, download the American English patches. You must apply the patches using AD Online Patching (adop).

Additional Information: See Patch Wizard Main Page in *Oracle E-Business Suite Maintenance Procedures Guide*.

If you have languages other than American English registered in your system, then follow instructions in the following step.

12.

Grant flexfield value set access to specific users (required)

If you have not already granted flexfield value set access in a previous version of Release 12.2, then you must perform this step.

Release 12.2 includes a new security feature, flexfield value set security; it controls who can create or modify flexfield values in the Flexfield Values Setup window (FNDFMSV). Flexfield value set security requires some mandatory setup steps before any user can create or update values in the Values window.

Note: Follow the required steps in the *Flexfield Value Set Security* chapter in the *Oracle E-Business Suite Flexfields Guide, Release 12.2*.

13. Installing NLS upgrade patch driver and NLS Online Help (conditional)

For additional NLS languages active in the system, once the American English upgrade and recommended Release Update Pack level have been applied, you can then upgrade your NLS software for existing languages by performing either one of the following steps:

1. Using the Translation Synchronization Patch followed by applying the NLS Online Help patch if available.
2. Installing the R12.2.0 NLS software available in Oracle Software Delivery Cloud, followed by installing NLS versions of all US patches applied to your system including recommended Release Update Pack. You must then apply the NLS Online Help patch if available.

Conditional Action: All NLS patches, including the NLS Translation Synchronization patches and the NLS Online Help patches, must be called through AD Online Patching (adop). Follow instructions in the *Post-Installation Tasks* section of the *Oracle E-Business Suite NLS Release Notes, Release 12.2* (Doc ID: 1314621.1) for your release level. For additional information, refer to *Oracle E-Business Suite Translation Synchronization Patches* (Doc ID: 252422.1).

14. Re-enable custom triggers, constraints, and indexes (conditional).

During the upgrade, custom triggers or constraints may have been modified. If you disabled these triggers and constraints, then identify any data updates that must be made before you re-enable them.

If you dropped any custom indexes, then review the new data model to determine if the index is necessary before you redefine it.

15. Manually add custom redirects and resources to configuration files (conditional)

The Allowed Redirects and Allowed Resources features are enabled by default after

your upgrade. Consequently, if you use custom redirects and resources, such as JSPs and servlets, in your environment, then you must manually add these to your configuration files for allowed redirects and allowed resources, respectively.

Additional Information: For more information, see 'Allowed Redirects' and 'Allowed Resources' in the *Oracle E-Business Suite Security Guide*.

16. Update and verify custom responsibilities (conditional)

Verify that all custom responsibilities use the correct menu. From the System Administrator responsibility, navigate to Security > Responsibilities. Query each custom responsibility and update as necessary.

17. Migrate the CUSTOM library (conditional)

Before you copy custom code in the CUSTOM library to the new directory structure, refer to the backup you previously created and verify that the customizations are valid for the new version of Oracle E-Business Suite.

For valid customizations, place a copy of the new CUSTOM library (CUSTOM.pll) in a safe place. It is located in the \$AU_TOP/resource directory (UNIX), or the %AU_TOP%\resource directory (Windows). Then, make a copy of the old Oracle Forms CUSTOM library and place it in the new directory. Upgrade to Oracle Forms Developer 10g by regenerating the library. Or, you can cut and paste the existing custom code into the new library, and then regenerate it.

Note: See *Using the CUSTOM Library* in the *Oracle E-Business Suite Developer's Guide*.

18. Copy and re-customize modified scripts or reports (conditional)

Copy custom shell scripts or reports to the custom application directories and re-customize the copy as necessary.

Note: See *Customization Standards* in *Oracle E-Business Suite Developer's Guide*.

19. Copy existing custom start scripts (conditional)

If you have customized the concurrent manager startup script (\$FND_TOP/bin/startmgr.sh on UNIX), then you must copy the customized script from the old environment to the new environment. You should then verify that your customizations are valid for the new environment.

Warning: Oracle does not recommend customizing this script. If you perceive a need to change this script, then contact Oracle Support before making changes. For more information, see the *Oracle E-Business Suite Setup Guide*.

Note: The default location in UNIX for the startmgr script is \$FND_TOP/bin. For more information, see the *Oracle E-Business Suite Setup Guide*.

20. Review user responsibility assignments (recommended)

Although user/responsibility assignments are preserved during the upgrade, the effective permissions granted by the seeded responsibilities, menus, functions, and report security groups may have changed. Use the information on the Forms or Security reports in the System Administrator responsibility to confirm that permissions granted by responsibilities continue to meet the requirements of the job roles (without granting more privileges than are necessary).

Note: See *Organizing Programs into Request Groups* in the *Oracle E-Business Suite Setup Guide* for more information.

21. Configure applications client software for forms applet (required).

Action: The connection between the client and the applications forms is provided through an applet in the client web browser. Instead of using the browser's own JVM, Oracle E-Business Suite uses the Sun Java (J2SE) native plug-in. Refer to download instructions in *Deploying JRE (Native Plug-in) for Windows Clients in Oracle E-Business Suite Release 12* (Doc ID: 393931.1).

22. Re-configure physical and logical host names on the application tier post upgrade (conditional)

If the Oracle E-Business Suite system has been upgraded to Oracle E-Business Suite Release 12.2 using the logical hostname for the application tier, then you must refer to *Configuring Oracle E-Business Suite Release 12.x Using Logical Host Names*, (Doc ID: 1968231.1). Refer to section 5.4: *Upgrading to Oracle E-Business Suite Release 12.2 Using Physical and Logical Host Names on the Application Tier*, and section 5.4.2: *Reconfiguring Physical and Logical Host Names on the Application Tier Post Upgrade*, and complete the required steps.

Oracle E-Business Suite Integrated SOA Gateway:

Conditional Action: Oracle E-Business Suite Integrated SOA Gateway requires manual post-installation steps. If you want to use the Oracle E-Business Suite Integrated SOA Gateway feature for Web service generation, deployment, and invocation, then perform the steps documented in *Installing Oracle E-Business Suite Integrated SOA Gateway, Release 12.2* (Doc ID: 1311068.1).

Note: After the upgrade, the deployed WSDL URL information has already been changed. Therefore, you may have to replace it with the new WSDL URL and service location or address accordingly in Web service clients while invoking the deployed Oracle E-Business Suite service. To ensure the backward compatibility, the previous 12.1.X service endpoint (services deployed in Oracle E-Business Suite) will continue to work at run time after the upgrade. New service endpoint from Oracle SOA Suite server will be shown in the interface detail page and should be used for client programs.

Oracle XML Gateway:

Conditional Action: Complete the installation and setup tasks described in *Installing Oracle E-Business Suite Integrated SOA Gateway, Release 12.2* (Doc ID: 1311068.1) for enabling Oracle E-Business Suite Integrated SOA Gateway and generic XML Gateway services.

Note: After the upgrade, the deployed WSDL URL for a generic XML Gateway service will be changed. You may have to replace it with the new WSDL URL and service location or address accordingly in Web service clients while invoking the generic XML Gateway service. For more information about XML Gateway Web services, see the *Oracle XML Gateway User's Guide*.

Financials and Procurement Tasks

Complete the tasks in this section before you allow users to log on to Oracle Financials and Procurement products.

Oracle Purchasing:

Conditional Action: Oracle Purchasing (available as part of Oracle Procurement) is integrated with Oracle Transportation Management. If you have licensed both Oracle Transportation Management and Oracle Purchasing and will use Oracle Transportation Management with Oracle Purchasing, then perform the post-update steps outlined in *About Oracle Transportation Management Integration with Oracle E-Business Suite R12.2+* (Doc ID: 1362803.1).

Note: The prebuilt BPEL business processes in Oracle E-Business Suite Release 12.2 are certified with Oracle SOA Suite 12c, Oracle SOA Suite 11g. The BPEL 10g based prebuilt integrations are not supported in Oracle E-Business Suite Release 12.2. Customers upgrading to Oracle E-Business Suite Release 12.2 from 11i must migrate to Oracle SOA Suite 11g or Oracle SOA Suite 12c. Refer to *Integrating Oracle E-Business Suite Release 12.2 with Oracle BPEL in Oracle SOA Suite 11g R1* (Doc ID: 1584883.1) and *Integrating Oracle E-Business Suite 12.2 with BPEL in SOA Suite 12c* (Doc ID: 1951625.1). Follow the respective documentation to deploy these BPEL processes.

Oracle Environmental Accounting and Reporting:

Conditional Action: If you have licensed Oracle Environmental Accounting and Reporting, then perform the steps outlined in *Oracle Environmental Accounting and Reporting Installation Notes for Business Intelligence and Data Warehouse* (Doc ID: 1669671.1) for enabling this application.

Advanced Collections:

This task applies for customers using Advanced Collections with Strategies.

Post Migration Verification Steps

1. From the Collections Administrator responsibility, confirm the Collections Business Level in the Setup Checklist.
2. From the System Administrator responsibility, start the concurrent program Workflow Background Process for the following item types:
 - IEXSTRY - IEX: Collection Strategy Work Flow
 - IEXSTFFM - IEX: Strategy Fulfilment Mailer

- IEXSTRCM - IEX: Strategy Custom Work Flow
3. Run the script \$IEX_TOP/patch/115/sql/iexumchk.sql to set the profile option Unit of Measure (UOM) to 'time'.

Customer Relationship Management Tasks

Oracle Price Protection:

This task applies only to Oracle Price Protection customers. For complete installation, configuration and deployment steps, refer to the My Oracle Support knowledge document that is relevant to your Oracle SOA Suite version. See *Integrating Oracle E-Business Suite 12.2 with BPEL in SOA Suite 12c* (Document ID:1951625.1) and *Integrating Oracle E-Business Suite 12.2 with BPEL in SOA Suite 11g R1* (Document ID: 1584883.1).

Note: The prebuilt BPEL business processes in Oracle E-Business Suite Release 12.2 are certified with Oracle SOA Suite 12c, Oracle SOA Suite 11g. The BPEL 10g based prebuilt integrations are not supported in Oracle E-Business Suite Release 12.2. Customers upgrading to Oracle E-Business Suite Release 12.2 from 11i must migrate to Oracle SOA Suite 11g or Oracle SOA Suite 12c. Refer to *Integrating Oracle E-Business Suite Release 12.2 with Oracle BPEL in Oracle SOA Suite 11g R1* (Doc ID: 1584883.1) and *Integrating Oracle E-Business Suite 12.2 with BPEL in SOA Suite 12c* (Doc ID: 1951625.1). Follow the respective documentation to deploy these BPEL processes.

Human Resources Tasks

Complete the task in this section before you allow users to log on to Human Resources Management products.

Human Resources:

1. Apply latest HRMS Legislative Updates (required)

Action: To maintain required legislative compliance, you must apply all legislative data updates. The updates are maintained regularly to be in line with government and country-specific legal requirements. See the latest HRMS (HR Global) Legislative Data Patch (Doc ID: 1469456.1) for information and instructions on how to ensure that your system is up to date.

Note: If you are using only Oracle HR Shared for use with another Oracle E-Business Suite product, then DO NOT apply this legislative data.

Payroll:

These tasks apply only to Oracle Payroll.

1. Install or Update Vertex for Payroll (required)

Action: Oracle Payroll uses the Vertex Quantum Payroll Tax Series in the United States and Canada. The HRMS data in this release contains version 4.0 of this third-party product. If you run Oracle Payroll in the United States or Canada, then refer to advanced configuration steps allowed by Payroll, and installing or updating the Vertex software in *Installing Quantum for Oracle Payroll* (Doc ID: 224273.1).

2. Compile Japanese flexfields after generating messages (required)

Several of the Japanese Flexfields have value sets with translated prompts for some of the Quickpick columns. These values must be seeded in the NLS language for the flexfield to compile cleanly. The seeding occurs when the messages are compiled. You may see some Japanese flexfields that appear as invalid. Resolve this issue by using AD Administration first to generate messages, and then to re-generate flexfields that failed to cleanly compile.

Projects Tasks

Conditional Action: Compile all Fast Formulas via FFXBCP (Refer Doc ID: 167689.1). This step applies to all customers who are upgrading to Release 12.2 and want to use the HR Rate by Criteria for labor rates, to be used in forecast or labor cost distribution in the Projects application.

Oracle Fusion Project Management and Oracle E-Business Suite Projects Coexistence

You can use Oracle Fusion Project Management to manage your projects and resources. After you are ready to start performing financial management activities such as collecting costs and billing, you can import the project into Oracle E-Business Suite (EBS) Projects, and generate the project budget.

Use Oracle Fusion Project Management for collaboration, scheduling, resource management, and progress tracking. As resources report actual hours in Oracle EBS Projects, export the resource to Oracle Fusion Project Resource Management and track the resource utilization.

You must complete the following post-install steps to enable the coexistence:

1. Get the SSL certificate.
2. Import the SSL certificate to the EBS instance.
3. Set the Username token authentication credentials for the service.
4. Add the service invocation subscription to invoke the service.
5. Add a subscription to the events.

Applying Patches:

Download and apply patch 24610809:R12.PJT.C from My Oracle Support.

Obtain the SSL certificate:

Complete the following steps to export the SSL certificate from your browser. The following steps describe the process using Mozilla Firefox:

1. Click the site identity button located in the address bar of your browser.
2. Click the More Information... button.
3. Select Security.
4. Click View Certificate.
5. Review the certificate details on the General tab. Verify that the imported SSL certificate is valid.
6. Select the Details tab.
7. Click Export...
8. Export the certificate to your directory.
9. Save the certificate using the host name of the web service provider. For example, if the host name is *.example.com, then save the certificate as: *.example.com.cer.

Importing the SSL Certificate to the EBS Instance:

Perform the following steps to transfer the exported certificate to the EBS instance:

1. Use Secure File Transfer Protocol (SFTP) to export the server name to the EBS instance. For example, `sftp <servername>.example.com`.
2. Enter your username and password when prompted.
3. Use the `put` command to enter the certificate into the instance. For example, `put *.example.com.cer`.
4. Log in to the EBS instance using `telnet` command.
5. Select a directory in which to save the certificate file.
6. Import the certificate to the EBS keystore. Ensure that you are in the same directory where you saved the certificate.
 - Use the `keytool` command to complete the task. For example, if your certificate name is `*.example.com.cer`, then the command will be:

```
keytool -import -alias FusionCert -file *.example.com.cer -keystore $AF_JRE_TOP/lib/security/cacerts.
```
7. Enter the keystore password when the system requests it.
8. Restart the EBS server after importing the certificate.
9. To update the certificate to an updated release, delete the previously imported certificate. Use the following command:

```
keytool -delete -alias <mydomain> -keystore $AF_JRE_TOP/lib/security/cacerts.
```

Setting the Username Token Authentication Credentials for the Service:

Use the following information to set the user name token credentials:

1. `sqlplus apps/apps@db @$FND_TOP/sql/afvltput.sql <Module> <Key> <Value>` to store your key, module, and password.

Note: The password is stored in the fnd vault and remains secured from the end user when creating subscriptions. Users provide the module and the key and must remember it for later use.

2. Enter unique Key and Module pairs to identify passwords.
 - Module: PA
 - Key: PA_MGMT_SERVICES_USA
 - Value: Welcome1

Adding the Service Invocation Subscription to Invoke the Service:

Use the following Service Invocation Subscription details to invoke the service:

- Subscription type: Invoke web service
- WSDL URL: SSL enabled service URL
- Select the Service Port and Service Operation
- Subscription parameters:
 - WFBES_SOAP_USERNAME: username for the web service
 - WFBES_SOAP_PASSWOD_MOD: Module name according to the above step (PA)
 - WFBES_SOAP_PASSWORD_KEY: Module key according to the above step (PA_MGMT_SERVICE_USA)
- The service constructs the SOAP header and username token based on the information provided.
- Payload information passed by the program at run time is appended to the header prepared above as the soap body.

Adding a Subscription to the Events:

Perform the following steps after you have added the Fusion SSL certificate to the EBS instance:

1. Sign in to the Oracle E-Business Suite application using login credentials that provide access to the Workflow Administrator Web Applications responsibility.
2. Navigate to Workflow Administrator Web Applications > Administrator Workflow > Business Events.
3. You must add four business events. They include:
 - oracle.apps.pa.coexist.project.invoke
 - oracle.apps.pa.coexist.projectplan.invoke
 - oracle.apps.pa.coexist.update.task.invoke
 - oracle.apps.pa.coexist.fileupload.invoke
4. Search for the predefined business event oracle.apps.pa.coexist.project.invoke.

5. Click GO.
6. Find your search result under the Results: Events section. Click Subscriptions.
7. Click Create Subscription.
8. In the Create Event Subscription page, enter the following subscription details:
 1. System: <EBS Instance>
 2. Source Type: Local
 3. Event Filter: This field is auto populated
 4. Execution Phase: Select a value between 1-99
 5. Status: Enabled
 6. Rule Data: Message
 7. Action Type: Invoke Web Service
 8. On Error: Stop and Rollback
9. Click Next.
10. In the Select a WSDL Source section, enter the WSDL URL.
 - The WSDL URL is the URL of the Oracle Fusion Cloud instance you are using to register this event.
 - Enter the URL in the following format: https://<host name>.<domain name>:port. For example, enter:
`https://example.com:98335/pjtCommonProject/ProjectServiceV2?wsdl.`
11. Click Next to select the service. The Service Name field is populated with ProjectServiceV2 in the Select Service section.
12. Click Next and select the service port.
13. Click Next and select the operation. In this example it is findProjectPlan.

Note: All services used for integration with Oracle E-Business Suite are synchronous services.
14. Click Next to complete the subscription registry and link it with the predefined

business event.

15. In the Create Event Subscription – Invoke Web Service section. The application provides the Subscription Parameters and User ID with access to the service and the parameters to retrieve the password from the vault. For customizations in Service Invocation, users can extend the default java class oracle.apps.fnd.wf.bes.WebServiceInvokerSubscription and provide the extended class in place of Java Rule Function.
16. Add the other three business events using the above steps 4 through 15. The corresponding operations and service names for each business event include:
 - Business Event: oracle.apps.pa.coexist.projectplan.invoke
Operation: findProjectByProjectId
Service Name: ProjectServiceV2
 - Business Event: oracle.apps.pa.coexist.update.task.invoke
Operation: updateProjectPlan
Service Name: ProjectServiceV2
 - Business Event: oracle.apps.pa.coexist.fileupload.invoke
Operation: uploadFileToUcm
Service Name: ERPIntegrationService

Supply Chain Management Tasks

Oracle Product Hub:

These tasks apply only to Oracle Product Hub.

1. Creating Versions of Item Catalog Categories

Applies to: Release 12.0 and 12.1

In Oracle E-Business Suite Release 12.1.2 and higher, you can choose to create a different version of an item catalog category (ICC) when you change a transaction attribute for structure component in the ICC if you set the profile option "Enable PIM for Telco Features" to Yes. When you enable the use of ICC versions, the system automatically creates a draft version for every new ICC created. You cannot choose to create versions for some ICCs, but not others. After upgrading from a release prior to 12.1.2 and after setting the profile option "Enable PIM for Telco Features" to Yes, you must create a released version for each existing ICC. Oracle provides an upgrade API that automatically performs this task. A database administrator can invoke the upgrade API from the back end after you set the

profile option "Enable PIM for Telco Features" to Yes.

Upgrade API Sample Call

```
DECLARE
  uid NUMBER;
  rid NUMBER;
  rad NUMBER;
  sgid NUMBER;
BEGIN
  SELECT
    USER_ID,RESPONSIBILITY_ID,RESPONSIBILITY_APPLICATION_ID,
    SECURITY_GROUP_ID
  D
  INTO
    uid, rid, rad, sgid
  FROM
    FND_USER_RESP_GROUPS
  WHERE
    USER_ID = (SELECT USER_ID FROM FND_USER WHERE USER_NAME
    = 'SYSADMIN')
    AND RESPONSIBILITY_ID =
    (SELECT RESPONSIBILITY_ID FROM FND_RESPONSIBILITY_VL WHERE
    RESPONSIBILITY_KEY = 'SYSTEM_ADMINISTRATOR');
  FND_GLOBAL.apps_initialize (uid, rid, rad, sgid);
  ego_p4t_upgrade_pvt.upgrade_to_pim4telco(null);
END
```

2. Licensing Product Hub for Communications

Applies to: Release 12.0 and 12.1

Conditional Action: If you license Product Hub for Communications, release 12.1.2 or later, Oracle Product Hub provides seeded libraries containing attribute groups, attributes, and value sets that are used primarily within the Telecommunications industry. These libraries are not automatically installed. The system administrator must run FND load commands to upload each library after installing the Oracle Product Hub for Communications patch. You can find these commands in the Seeded Item Metadata Libraries appendix, *Oracle Product Hub Implementation Guide*, or in the patch readme file.

3. Using the Packing Hierarchy Structure Type

Applies to: Release 12.0

If you have used the structure type Packaging Hierarchy in releases prior to 12.1, note that only the preferred packaging structure from this structure type is migrated over in the upgrade process. If you have defined multiple packaging structures and want to migrate all of them, consider bringing them into the system by transferring them into other structure types, at which time they will be treated as regular structure types and not Packs.

4. Defining Item Pages for Item Organization Attribute Groups

Applies to: Release 12.0 and 12.1

Prior to Release 12.1.1, users were unable to define item pages by business entity, so all item and item organization attribute groups appeared on item pages together. Any item organization attribute groups in existence prior to Release 12.1.1 must be added to item pages for the item organization business entity.

5. PIM publication web services require manual post installation steps

Applies to: Release 12.0 and 12.1

Conditional Action: If you are using the Publication feature in Oracle Product Hub for Communications, then perform the steps outlined in the *Oracle Data Integrator Artifacts and Web Services for Oracle Product Hub Release 12.2* (Doc ID: 1336146.1).

6. Update Existing Item Attributes (conditional)

Conditional Action: For the item attributes SHIPPABLE_ITEM_FLAG, INTERNAL_ORDER_ENABLED_FLAG, INTERNAL_ORDER_FLAG in MTL_SYSTEM_ITEMS_B table, the valid combination of values is either Y,Y,Y or N,N,N. Any other combination is considered as data discrepancy. Customers can chose a valid combination for these item attributes depending on their business requirements and execute an appropriate concurrent program to correct such discrepancy. Refer to *Data Fix: Items having invalid combination of SHIPPABLE_ITEM_FLAG, INTERNAL_ORDER_ENABLED_FLAG, INTERNAL_ORDER_FLAG attributes* (Doc ID: 1676349.1) for instructions to identify and correct any items that have such data discrepancy.

7. Gather Table Statistics (recommended)

Applies to: Release 12.0 and 12.1

Considerable changes have been made to the data model that stores Item user-defined attributes in Release 12.1.1. Oracle recommends gathering table statistics for the following EGO tables:

- EGO_MTL_SY_ITEMS_EXT_B
- EGO_MTL_SY_ITEMS_EXT_TL

8. Use the Product Workbench (required)

Applies to: Release 12.2

If you plan to use the Product Workbench, you must enable it by adding it to the allowlist of JavaServer Pages (JSPs).

Additional Information: Refer to *Allowed JSPs, Oracle E-Business Suite Security Guide*.

Oracle Shipping Execution:

Conditional Action: Oracle Shipping Execution (available as part of Oracle Order Management) is integrated with Oracle Transportation Management. If you have licensed both Oracle Transportation Management and Oracle Order Management and will use Oracle Transportation Management with Oracle Shipping Execution, then perform the post-update steps outlined in *Oracle Transportation Management Integration with Oracle E-Business Suite Post-Update Steps, Release 12.2.0* (Doc ID: 1362803.1).

Note: The prebuilt BPEL business processes in Oracle E-Business Suite Release 12.2 are certified with Oracle SOA Suite 12c, Oracle SOA Suite 11g. The BPEL 10g based prebuilt integrations are not supported in Oracle E-Business Suite Release 12.2. Customers upgrading to Oracle E-Business Suite Release 12.2 from 11i must migrate to Oracle SOA Suite 11g or Oracle SOA Suite 12c. Refer to *Integrating Oracle E-Business Suite Release 12.2 with Oracle BPEL in Oracle SOA Suite 11g R1* (Doc ID: 1584883.1) and *Integrating Oracle E-Business Suite 12.2 with BPEL in SOA Suite 12c* (Doc ID: 1951625.1). Follow the respective documentation to deploy these BPEL processes.

Oracle Value Chain Planning:

Conditional Action: Oracle Value Chain Planning includes Advanced Supply Chain Planning, Demand Planning, Inventory Optimization, Global Order Promising, Collaborative Planning, Production Scheduling, Strategic Network Optimization, Service Parts Planning, Advanced Planning Command Center, and Demand Signal Repository. If you have licensed any of these products, then perform the steps outlined in *Oracle Value Chain Planning Installation Notes Release 12.2.0* (Doc ID: 1361221.1) to enable these applications. If you are deploying Value Chain Planning Applications on a RAC DB, then you must also refer to *RAC Configuration Setups For Running MRP Planning, APS Planning, and Data Collection Processes* (Doc ID: 279156.1) and *RAC for GOP - Setups for Global Order Promising (GOP) When Using a Real*

Application Clusters (RAC) Environment (Doc ID: 266125.1) to understand restrictions and requirements for running application processes in a RAC environment.

Oracle Warehouse Management:

Conditional Action: Oracle Warehouse Management is integrated with Oracle Transportation Management. If you have licensed both Oracle Transportation Management and Oracle Warehouse Management, and you plan to use Oracle Transportation Management with Oracle Warehouse Management, then perform the post-update steps outlined in *Oracle Transportation Management Integration with Oracle E-Business Suite Post-Update Steps, Release 12.2.0* (Doc ID: 1362803.1).

Note: The prebuilt BPEL business processes in Oracle E-Business Suite Release 12.2 are certified with Oracle SOA Suite 12c, Oracle SOA Suite 11g. The BPEL 10g based prebuilt integrations are not supported in Oracle E-Business Suite Release 12.2. Customers upgrading to Oracle E-Business Suite Release 12.2 from 11i must migrate to Oracle SOA Suite 11g or Oracle SOA Suite 12c. Refer to *Integrating Oracle E-Business Suite Release 12.2 with Oracle BPEL in Oracle SOA Suite 11g R1* (Doc ID: 1584883.1) and *Integrating Oracle E-Business Suite 12.2 with BPEL in SOA Suite 12c* (Doc ID: 1951625.1). Follow the respective documentation to deploy these BPEL processes.

Backing Up Oracle E-Business Suite

Oracle strongly recommends that you perform a full system backup of your Oracle E-Business Suite Release 12.2 including the Run and Patch file systems (fs1 and fs2), the Non-Edition file system (fs_ne), all technology stack component Oracle homes, and the database.

Secure Configuration

This section applies to all users, regardless of which products are registered as active.

1. **Review and Deploy Security Guidelines (Recommended for all Oracle E-Business Suite releases)**
 - **Follow the Secure Configuration Guidelines**

Tip: You must follow all recommended secure configuration guidelines as documented in the Security Guide. At a minimum, Oracle recommends that you configure the following:

1. Allowed JSPs feature
2. TLS for inbound, outbound, and loopback connections

Action: Review and deploy the recommended security guidelines documented in *Oracle E-Business Suite Release 12.2 Security Guide, Part 2: Secure Configurations*.

Action: Follow the instructions in *Enabling TLS in Oracle E-Business Suite Release 12.2* (Doc ID: 1367293.1) to encrypt inbound, outbound, and loopback connections.

Tip: If you have any computers requiring direct access to the database that are not registered nodes in AutoConfig (such as OAM clients), then you must explicitly grant access.

- **Execute the Security Check Scripts**

Action: Regularly run the Security Check Scripts on your production instance to ensure that it is, and continues to be in compliance with the recommendations in this document. For information on how to run the Security Check Scripts, run the scripts according to *Security Configuration and Auditing Scripts for Oracle E-Business Suite* (Doc ID: 2069190.1).

Tip: If you upgraded to Oracle E-Business Suite Release 12.2.6 or higher, then you can use the Secure Configuration Console on an ongoing basis to perform necessary checks on your environment.

2. **Perform the following if you have upgraded to Release Update 12.2.6 or higher:**

Tip: After you apply Patch 24744399:R12.FND.C (a mandatory post requisite for R12.ATG_PF.C.Delta.6) or upgrade to Oracle E-

Business Suite Release 12.2.7 Release Update Pack (which includes patch 24744399:R12.FND.C), your system will be 'locked down' until a local system administrator resolves or acknowledges the recommended security configurations in the Secure Configuration Console.

- **Login to the Oracle E-Business Suite**

Upon initial login as a local system administrator that has the Functional Administrator responsibility, you are automatically directed to the Secure Configuration Console.

- **Resolve or acknowledge security configurations**

You must now either resolve or acknowledge the recommended security configurations in the Secure Configuration Console.

Suggested Reading: *Oracle E-Business Suite 12.2 Security Guide, Part 2: Secure Configurations* in the *Secure Configuration Console* chapter.

System Maintenance Tasks

After you have verified that the system and the product upgrades are complete, perform the "clean-up" tasks described in this section.

System Maintenance:

1. Delete obsolete product files (recommended)

Delete the product files for the previous release (if you have not done so already). You may want to retain report output files or customized programs. Output files are stored in the old log and output subdirectories under each product's top directory, under the log and output directories you created, or under a common directory.

To remove obsolete files for an old release, change to the top directory of that release and enter the following command:

UNIX:

```
$ rm -rf <old APPL_TOP>
```

Here is an example:

```
$ rm -rf /d01/appl/r10
```

Windows:

```
C:\> rd /s /q <old APPL_TOP>
```

Here is an example:

```
C:\> rd /s /q \APPL110
```

2. Register new products (conditional)

New products added since Release 12 are not automatically registered in the database. If you intend to use new products, then register them using License Manager. See *Oracle E-Business Suite Maintenance Guide* for instructions.

Additional Information: See the *Oracle E-Business Suite Maintenance Guide* for instructions to license new products.

By default, the Java Color Scheme profile option should be set to 'Standard' for all sessions and optimal system response time. The upgrade process sets this default value for all instances.

Additional Information: See the *Oracle E-Business Suite Setup Guide* and the *Oracle E-Business Suite User's Guide* for more information.

3. Update Java Color Scheme profile option for selected users (conditional)

By default, the Java Color Scheme profile option should be set to "standard" for all sessions for optimal system response time. The upgrade process sets this default value for all instances. However, setting this profile option to a different value may work better for some systems. See *Oracle E-Business Suite Setup Guide* and *Oracle E-Business Suite User's Guide* for more information.

4. Complete Transport Agent setup (conditional)

If you are using a proxy server to handle your outbound Oracle Transport Agent requests, then set following OXTA parameters in the container configuration:

- OXTAOutUseProxy=True
- OXTAOutProxyHost=<Your proxy server name>
- OXTAOutProxyPort=<Your proxy server port>

To set the parameters, go to the Oracle Applications Manager Site Map and choose AutoConfig > Applications Node > Edit Parameters. Then, use the Search field to find OXTA. After you set the parameters, run AutoConfig to regenerate the wls.properties file (INST_TOP/appl/admin/oafm_wls.properties).

Note: See *Oracle XML Gateway User's Guide* for more information.

5. Complete Setup for Oracle XML Gateway (required)

The Oracle XML Gateway engine uses style sheets from an operating system directory you define as a database directory for PL/SQL file I/O in your Oracle E-Business Suite instance. You must also specify the same directory in the ECX: XSLT File Path profile option. The profile option value must be an absolute path and cannot contain a symbolic link or other operating system-specific parameters.

Additional Information: See My Oracle Support Knowledge Document 2525754.1, Using UTL_FILE_DIR or Database Directories for PL/SQL File I/O in Oracle E-Business Suite Releases 12.1 and 12.2 for more information.

Also, ensure that the following profile options are set at site level for Oracle XML Gateway. If you have previously set these profile options, then no action is necessary, as the upgrade preserves these values.

Profile Option	Description
ECX: XSLT File Path	Path to the directory specified as the location for style sheets to be used for XSLT transformations. This value must be a database directory defined for PL/SQL file I/O. Ensure that there is no slash at the end of the directory name.
ECX: System Administrator Email Address	Address to which Oracle XML Gateway error notifications should be sent.
ECX: Server Time Zone	Time zone the database server is running in.

Note: See *Oracle XML Gateway User's Guide* for more information.

Oracle XML Publisher Tasks

These tasks apply to all users, regardless of which products are registered as active.

1. Enable PDF printing (required)

The PDF Publisher print style and PASTA_PDF printer driver provide the capability to print PDF files using a third-party utility. You can use this style and driver to print a generated PDF. The Pasta Universal Printer type has been associated with the style and driver for ease of use.

Action: Refer to the *Oracle XML Publisher Administration and Developer's Guide*, Release 12, for configuration steps. For access to the *Oracle XML Publisher Administration and Developer's Guide* and the latest updates, refer to *Notes for Using Oracle Business Intelligence Publisher 10g in Oracle E-Business Suite Release 12.2* (Doc ID: 1640073.1).

2. Specify a temporary directory for XML Publisher (required)

Use the Oracle XML Publisher's Administration interface to assign a temporary directory for the site level. The temporary directory improves performance and allows unlimited XML file size.

Additional Information: See *Oracle XML Publisher Administration and Developer's Guide* for more information about this directory.

Post-Upgrade Steps of Oracle E-Business Suite Release Update Pack for Release 12.2

You must complete the post-upgrade steps described in the Oracle E-Business Suite Release Update Pack Readme specific to the Oracle E-Business Suite Release Update Pack (RUP) that you have upgraded to that is described in the *Apply the Latest Oracle E-Business Suite Update Pack for Release 12.2*, page 4-76 section of this chapter.

Required Action: For example, if you upgrade to Oracle E-Business Suite Release 12.2.6, then you must complete all post-upgrade steps described in the *Oracle E-Business Suite Release 12.2.6 Readme* (Doc ID: 2114016.1).

Additional Mandatory Post-Upgrade Steps for Oracle Cloud Infrastructure (conditional)

Note: This step is applicable if your Oracle E-Business Suite instance is on Oracle Cloud Infrastructure.

For additional mandatory post-upgrade steps for Oracle Cloud Infrastructure (OCI), refer to *Getting Started with Oracle E-Business Suite on Oracle Cloud Infrastructure* (Doc ID: 2517025.1). Refer to section 4.5 *Upgrading to Oracle E-Business Suite Release 12.2* and section 4.5.5.1 *Performing Post-Upgrade Tasks*.

Mandatory Post-Upgrade Steps for All Upgrade Customers

Required Action: Refer to *Oracle E-Business Suite Release Notes, Release 12.2* (Doc ID: 1320300.1) and perform all applicable post-upgrade steps in Section 1: *Instructions for All Customers*, and Section 3: *Instructions for Upgrade Customers* such as 'Create Snapshot'.

Additional Tasks

This section points to additional tasks that may be necessary, and suggests documentation that describes those tasks.

Reapplying Application Tier Customizations

If your system includes customized forms, reports, programs, libraries, or other application files, then reapply all changes that you need for this release.

Required Action: Re-deploy your customizations following the instructions in *Developing and Deploying Customizations in Oracle E-Business Suite Release 12.2* (Doc ID: 1577661.1), Section 1.5, *Deploying Custom Application Tier Objects*.

Migrating Portlets Preferences Store

If you are using Oracle E-Business Suite portlets, then copy the Portlets Preference Store directory from your Oracle E-Business Suite Release 12 10_1_3_Oracle_Home/portal/portletdata directory to following non editioned directory on your new new Oracle E-Business Suite Release 12.2 file system:

```
$<s_ne_base>/inst/<s_contextname>/oracle_common/portal/portletdata
```

Note: Autoconfig context variable s_portlet_preference_store_directory by default points to the same directory.

Additional Information: Refer to section 15.4.2.4.2 *Migrating Customizations from the Default Production Location* in the *Oracle Fusion Middleware Upgrade Guide for Oracle SOA Suite, WebCenter Portal, and ADF 11g Release 1 (11.1.1.7.0)*.

Note: This applies to all customers using Oracle E-Business Suite

portlets with Oracle E-Business Suite Release 12.1.3, regardless of whether they integrate with Oracle Portal or Oracle WebCenter consumer.

For Portal 10g

Oracle E-Business Suite customers upgrading from 12.0 or 12.1 to 12.2 and already having Oracle Portal 10g configured:

1. **Conditional Action:** Upgrade Oracle Portal 10g to Oracle Portal 11g as described in section 10 of the *Integrating Oracle Portal 11.1.1 with Oracle E-Business Suite Release 12* document on My Oracle Support (Document ID: 1074334.1).
2. Migrate Portlets Preferences Store.

For Portal 11g

Oracle E-Business Suite customers upgrading from 12.0 or 12.1 to 12.2 and already having Oracle Portal 11g configured:

1. Migrate Portlets Preferences Store.

Regenerating Business Views (conditional)

If you are using Business Views, then regenerate your business views by running the *Generate Business Views by Application* concurrent program using the *Business View Setup* responsibility:

- Logon to Oracle E-Business Suite as SYSADMIN.
- Select the *Business Views Setup* responsibility.
- Navigate to Reports > Run > Pick Single Request > Generate All Business Views.

If you don't have the *Business Views Setup* responsibility assigned to the SYSADMIN user, then complete the following:

- Logon to Oracle E-Business Suite as SYSADMIN.
- Select the *System Administrator* responsibility.
- Navigate to Security > User > Define and add responsibility *Business Views Setup* to the SYSADMIN user.

Oracle E-Business Suite Person Data Removal Tool

Review the *Oracle E-Business Suite Person Data Removal Tool (PDRT) Release Notes* for

Oracle E-Business Suite Person Data Removal Tool consideration (Document ID: 2388237.1.)

If you have already applied PDRT patches at the Oracle E-Business Suite Release 12.1 level, then you must apply the patches corresponding to Oracle E-Business Suite Release 12.2 at this stage.

Understanding Oracle E-Business Suite System Administration Tasks

Suggested Reading: Ensure you are completely familiar with information in the *Oracle E-Business Suite Setup Guide* and the *Oracle E-Business Suite Security Guide*. In addition, you should understand the information in the *Oracle E-Business Suite Maintenance Guide, Release 12.2*. This document contains important details about AD utilities as well as instructions on how to patch your system and perform manual maintenance tasks.

Implementing New Product and Country-specific Functionality

Suggested Reading: Refer to the implementation or setup guides (or implementation or setup section of the user's guides) associated with the Oracle E-Business Suite products in your system for instructions on implementing or setting up new products and features.

Resizing the Database

The size of the production database depends on the products that you have licensed and the additional features (such as multiple languages or multiple organizations) that you have configured in your system. Refer to the product-specific documentation.

Optional Advanced Configurations

You may have identified the need to scale your environment due to sizing requirements or for high availability. You may now scale the environment.

Scale the Environment

Upgrading to Oracle E-Business Suite Release 12.2 is performed with a single application tier node and a single database node even if you are using RAC. Scaling the environment is a post-upgrade task. Now that the upgrade is complete, you may scale your environment according to production level requirements by adding application tier nodes and database RAC nodes.

Adding Application Tier Nodes

Conditional Action: If you need to add additional application tier nodes, then configure load balancing as described in *Using Load-Balancers with Oracle E-Business Suite Release 12.2* (Doc ID: 1375686.1).

When deploying multiple application tier nodes for an Oracle E-Business Suite environment, you can use a Shared Application Tier Filesystem or replicate the filesystem on every node in the environment.

Tip: Oracle highly recommends that you use a Shared Application Tier Filesystem.

When directed in *Using Load-Balancers with Oracle E-Business Suite Release 12.2* (Doc ID: 1375686.1), follow the steps in one of the following notes to create a new application tier node:

- To create the Shared Application Tier file system and add new application tier nodes, follow the steps in *Sharing The Application Tier File System in Oracle E-Business Suite Release 12.2* (Doc ID: 1375769.1).
- If you are using a distributed filesystem, then follow the steps in *Cloning Oracle E-Business Suite Release 12.2 with Rapid Clone* (Doc ID: 1375769.1) to add new application tier nodes.

Adding Database Tier Nodes to RAC

Conditional Action: If you are adding additional database tier nodes to Oracle Real Application Clusters (RAC) to meet scalability or high availability requirements, then follow the steps in *Oracle E-Business Suite Release 12.2: Adding or Deleting 11gR2 or 12c1 Oracle RAC Nodes* (Doc ID: 1570554.1).

Performing DMZ Configuration

Conditional Action: If you need to configure Oracle E-Business Suite 12.2 for access from the Internet, then review and follow the steps documented in *Oracle E-Business Suite Release 12.2 Configuration in a DMZ* (Doc ID: 1375670.1).

Validating Custom and Third-Party Products

Oracle E-Business Suite Release 12.2 includes significant database and file system architecture changes designed to support Online Patching. Therefore, integrations with Oracle E-Business Suite may need to be modified to comply with new deployment and development standards in order to work correctly with Oracle E-Business Suite Release 12.2. Examples include custom and third-party integrations, as well as integrations with other Oracle products such as Oracle Application Express.

Additional Information: Refer to *Guidance for Integrating Custom and Third-Party Products With Oracle E-Business Suite Release 12.2* (Doc ID: 1916149.1).

If you identified external integrations that require updates to meet certification requirements with Oracle E-Business Suite Release 12.2 or require additional steps to deploy, then perform those actions now. Validate all external integrations once the necessary steps have been performed.

Additional Information: For more information, refer to *Preparing External Integrations*.

Backing Up Oracle E-Business Suite

Oracle strongly recommends that you perform a full system backup of your Oracle E-Business Suite 12.2 including the Run and Patch file systems (fs1 and fs2), the Non-Edition file system (fs_ne), all technology stack component Oracle homes, and the database.

Logging On to Oracle E-Business Suite

To start Oracle E-Business Suite and access all Oracle E-Business Suite products, go to the Oracle E-Business Suite Login page, located at the following URL:

http://<host name>.<domain name>:<HTTP port>/OA_HTML/AppsLogin

For example:

http://oraapps1.example.com:8000/OA_HTML/AppsLogin

The system administrator should log on the first time using the SYSADMIN logon account that is pre-configured in the Applications installation. Use the System Administrator responsibility to launch an Oracle E-Business Suite session where you can complete the required implementation steps.

Note: See the *Oracle E-Business Suite Setup Guide*. See also the *Oracle E-*

Business Suite User's Guide.

Managing Concurrent Processes

This appendix covers the following topics:

- Isolate Post Upgrade Concurrent Programs to a Separate Manager Queue
- Sample Concurrent Programs

Isolate Post Upgrade Concurrent Programs to a Separate Manager Queue

Overview

The downtime portion of the upgrade includes the automatic submission of several concurrent programs. For a list of sample concurrent programs, refer to the Sample Concurrent Programs, page A-4 section in this appendix.

In many cases, concurrent programs run in multiple threads, therefore, the total number of concurrent requests that make up portions of the post-upgrade step can be high. These upgrade programs are run by the concurrent manager once the system is up, and processing will be mixed with ongoing concurrent jobs in the system.

You can define a separate concurrent manager queue to process only the post-upgrade concurrent programs, therefore improving manageability of this situation. You can use inclusion and exclusion rules to prevent other manager queues (such as the standard manager) from picking up requests, and force this new manager queue to process specific upgrade requests. This method lets you control the number of target processes allocated to these post-upgrade concurrent programs, including dynamic processes with the use of work shifts. For additional details on configuring new manager queues, target processes, inclusion and exclusion rules, and work shifts, refer to the Oracle E-Business Suite Setup Guide.

If you plan to isolate post-upgrade concurrent programs to a separate manager queue, then you must create a new concurrent manager for these upgrade concurrent programs before you shut down all services as part of the Perform the Upgrade, page 4-47 tasks described in this guide. This procedure is needed to prevent existing Request Processing Managers from picking up and executing requests when services are started

at the end of the upgrade.

Create a New Concurrent Manager for Upgrading Concurrent Programs

To create a new program type and include a program in that program type:

1. Log in to Oracle E-Business Suite as SYSADMIN, and navigate to:
System Administrator > Concurrent: Program > Type
2. Select or enter the following attributes:
Name: R12PUPT
Application: System Administration
Description: Program Type for Post Upgrade Request
3. Include programs from the above list into this new program type.
4. Navigate to:
System Administrator > Concurrent: Program > Define
5. Search for the program 'Refresh Materialized Views' and enter or select: R12PUPT
6. Repeat for other programs in the list.

To exclude a program type from the Standard Manager:

1. Log in to Oracle E-Business Suite as SYSADMIN and navigate to:
System Administrator > Concurrent: Manager > Define
2. Search for Standard Manager.
3. Click on Specialization Rules.
4. Navigate to the bottom of the list to add a new record.
5. Select or enter the following attributes:
Include/Exclude: Exclude
Type: Request Type
Application: System Administration
Name: R12PUPT
6. Repeat for all other Request Processing Managers.

To create a new concurrent manager and include a program type:

1. Log in to Oracle E-Business Suite as SYSADMIN and navigate to:
System Administrator > Concurrent: Manager > Define
2. Select the Enabled checkbox.
3. Select or enter the following attributes to create the new concurrent manager:
Manager: R12_Post_Upgrade
Short Name: R12PU
Application: Application Object Library
Description: New manager queue for R12 post upgrade requests
Type: Concurrent Manager
Cache Size: 1
Program Library Name: FNDLIBR
Specialization Rules:
Include/Exclude: Include
Type: Request Type
Application: System Administration
Name: R12PUPT
Work Shifts:
Work Shift: Standard
Processes: Enter a Value, for example '4'
Sleep Second: 30

Activate the New Concurrent Manager

After completing the above steps, activate the new concurrent manager R12_Post_Upgrade immediately after it is created.

1. Log in to Oracle E-Business Suite as SYSADMIN and navigate to:
System Administrator > Concurrent: Manager > Administer
2. Select the new Concurrent Manager 'R12_Post_Upgrade'.
3. Click the Activate button.

Disable the New Concurrent Manager

After all post-upgrade requests run during the Verify completion of concurrent programs, page 5-1 step described in the *Post Upgrade Tasks* chapter, you must revert the

exclusion and inclusion of managers and programs to the original state by removing the new program type and new manager. This is necessary because some programs in the list may need to run in the future as part of the regular system batch processing requirements rather than part of the upgrade process.

Sample Concurrent Programs

The following table contains a sample list of concurrent programs submitted during the upgrade from Release 12.1.3 Vision to Release 12.2.0. This data is for reference only. The actual list in your instance may vary based on, but not limited to various factors including:

- Release level of Oracle E-Business Suite.
- Additional product patches or patchsets applied to the instance.
- Unaddressed upgrade failures.

Application Name	Concurrent Program Name	User Concurrent Program Name	Total Number of Requests
Advanced Supply Chain Planning(MSC)	MSCREFMV	Refresh Materialized Views	1
Advanced Supply Chain Planning(MSC)	MSCHUBM	Maintain APCC Data Model	1
Application Implementation(AZ)	AZR12UPGRADE	iSetup R12 Upgrade Selection Sets Column	1
Application Object Library(FND)	FDFCMPN	Compile Non-Compiled Flexfields	1
Application Object Library(FND)	AFLOBBLD	Rebuild Help Search Index	2
Application Object Library(FND)	ABORT	Abort	2
Application Object Library(FND)	FNDIRLPP	iRep Loading Post Processor	3

Application Name	Concurrent Program Name	User Concurrent Program Name	Total Number of Requests
Application Object Library(FND)	FNDSCMPI	Compile Security	2
Application Object Library(FND)	FNDLOAD	Generic Loader	5
Application Object Library(FND)	DIAGPATCHINGCP	Diagnostics patching CP	1
Application Object Library(FND)	FNDIRLOAD	FNDIRLOAD	5
Application Object Library(FND)	FDFVGN	Flexfield View Generator	443
Application Object Library(FND)	FNDWFDSRHP	Workflow Role Hierarchy Propagation	1
Applications DBA (AD)	ADDRPOBS	Drop obsolete products schema	71
Applications DBA (AD)	ADZDPATCH	Online Patching In Progress	1
Asia/Pacific Localizations(JA)	JAINDFOBS	India - Remove India Localization contexts from DFFs1	1
Incentive Compensation(CN)	CN_R1212_CNCMH UPD	CN_R1212_CNCMHUPD	8
Incentive Compensation(CN)	CN_FORMULA_GE N	Generate Formula Packages	1
Incentive Compensation(CN)	CN_R1212_CNCMH UPD	CN_R1212_CNCMHUPD	8
Incentive Compensation(CN)	CN_R1212_CNCMA UPD	CN_R1212_CNCMAUPD	8

Application Name	Concurrent Program Name	User Concurrent Program Name	Total Number of Requests
Inventory(INV)	INVIDSEP	Items Data Scripts Execution	1
Master Scheduling/MRP (MRP)	MRCSCW1	Planning Manager Worker (once-a-day tasks)	2
Master Scheduling/MRP (MRP)	MRPSPMRP	Maintain Repetitive Planning Periods	55
Master Scheduling/MRP (MRP)	MRCRLF	Planning Manager	3
Payments(IBY)	IBYUPGCP	iPayment FP.G Upgrade Program	1
Receivables(AR)	ARHDQCMAL	DQM Compile All Rules	1
Receivables(AR)	HZ_THIRD_PARTY_UPDATE	Third Party Data Integration Update	1
Receivables(AR)	ARHDQM	DQM Staging Program	1
Service(CS)	CS_KB_SYNC_SOLUTIONS_INDEX	Knowledge Management Solution Index Synchronization	1
Trade Management (OZF)	OZFEARNMV	Refresh Materialized View	1
Trade Management (OZF)	OZFMIGUTLREC	Migrate Accruals for Multi Currency Changes	1
Warehouse Management(WMS)	WMSGRULE	Generate All Rules	1
XML Publisher(XDO)	XDOTMGEN	XML Publisher Template Re-Generator	1

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