

# **R12.x Install/Patch/Maintain Oracle E-Business Suite**

**Volume 1 - Student Guide**

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# Table of Contents

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<b>Oracle E-Business Suite Overview .....</b>	<b>1-1</b>
Oracle E-Business Suite Overview .....	1-3
Module Overview .....	1-4
Introduction to Oracle E-Business Suite .....	1-5
Oracle E-Business Suite Home Page .....	1-6
HTML Interface.....	1-7
Forms Interface.....	1-9
Oracle E-Business Suite Architecture.....	1-11
Technology Stack and Database .....	1-13
Concurrent Processing.....	1-14
Installing Oracle E-Business Suite .....	1-15
Product Families .....	1-17
Product Identifiers .....	1-18
Product Registration .....	1-19
Product Dependencies .....	1-20
Vision Demo Database .....	1-21
Module Summary .....	1-22
 <b>Preparing for Your Installation .....</b>	<b>2-1</b>
Preparing For Your Installation .....	2-3
Objectives .....	2-4
Module Overview .....	2-5
Overview of Rapid Install.....	2-6
Technology Stack Components .....	2-8
Summary of Technology Stack Differences From Release 11i.....	2-11
Release 12.1 Platform Support .....	2-12
Software Requirements.....	2-13
CPU Requirements .....	2-15
Memory Requirements .....	2-16
Disk Space Requirements .....	2-17
Overview of Preparatory Tasks .....	2-20
Create Operating System Accounts (UNIX).....	2-21
Create Operating System Accounts (Windows) .....	2-22
Set Up Stage Area.....	2-23
Running Rapid Install from the Stage Area.....	2-28
Running Rapid Install from DVD.....	2-29
Using an Alias for the Host Machine.....	2-30
How an Installation Works .....	2-31
Rapid Install Choices.....	2-32
Specifying an Installation Environment .....	2-33
Registering Products and Country-Specific Functionalities .....	2-35
Selecting NLS Settings.....	2-36
Selecting Configuration Parameters .....	2-38
Validating Configuration Parameters .....	2-39
Starting Rapid Install .....	2-40
Restarting an Installation Run .....	2-41
Configuration File Usage.....	2-42
Rapid Install Log Files .....	2-43
Obtaining Help in Rapid Install .....	2-44
Module Summary .....	2-45
Module Discussion .....	2-46
 <b>Performing an Installation.....</b>	<b>3-1</b>

Performing an Installation .....	3-3
Objectives .....	3-4
Module Overview .....	3-5
Overview of Basic Installation Procedure .....	3-7
Simplest Installation .....	3-8
More Typical Installation .....	3-9
Standard Installation Steps .....	3-10
Step 1: Start the Rapid Install Wizard .....	3-13
Step 2: Select a Wizard Operation .....	3-14
Step 3: Oracle Configuration Manager (Main).....	3-15
Step 3: Oracle Configuration Manager (Proxy).....	3-16
Step 4: Configuration Choice .....	3-17
Step 5: Global System Settings.....	3-18
Step 6: Database Node Configuration .....	3-20
Step 7: Specify Database Directory .....	3-23
Step 8: Select Licensing Type .....	3-24
Step 9: License Additional Products.....	3-25
Step 10: License Products.....	3-26
Step 11: Select Country-Specific Functionality.....	3-27
Step 12: Select Internationalization Settings .....	3-29
Step 13: Primary Applications Node Configuration (UNIX) .....	3-31
Step 13: Primary Applications Node Configuration (Windows) .....	3-32
Step 14: Specify Primary Applications Node Services.....	3-33
Step 15: Specify Primary Applications Node Directories .....	3-36
Step 16: Review Information for All Nodes .....	3-37
Step 17: Configure Additional Applications Node .....	3-38
Step 18: Configure Shared Applications Node .....	3-39
Step 19: Review Additional Applications Nodes .....	3-40
Step 20: Review Pre-Install Tests.....	3-41
Step 20 Review Pre-Install Tests.....	3-44
Step 21: Review Setup Portion .....	3-45
Step 22: Start the Installation.....	3-46
Step 23: Monitor Status Indicators and Prompts .....	3-47
Restart the Installation (If Required) .....	3-48
Step 24: Review Post-Installation Tests .....	3-49
Step 25: Connect to Oracle Applications.....	3-50
Overview of Express Installation.....	3-51
Express Installation Steps .....	3-52
Step 1: Start Rapid Install Wizard .....	3-53
Step 2: Select Express installation .....	3-54
Step 3: Oracle Configuration Manager (Main).....	3-55
Step 3: Oracle Configuration Manager (Proxy).....	3-56
Step 4: Configuration Choices .....	3-57
Step 5: Review Pre-Install Tests .....	3-58
Correct Any Problems .....	3-59
Step 6: Perform the Installation .....	3-60
Module Summary .....	3-61
Module Discussion .....	3-62
<b>Finishing Your Installation.....</b>	<b>4-1</b>
Finishing Your Installation .....	4-3
Objectives .....	4-4
Module Overview .....	4-5
Required Post-Installation Steps .....	4-6
Log In to Oracle E-Business Suite.....	4-7
Using the E-Business Suite Home Page .....	4-8
Change Default Passwords .....	4-9

Configure Database Initialization Parameters .....	4-10
Review Security Practices .....	4-11
Implement Product and Country-Specific Functionality .....	4-13
Configure Client Software .....	4-14
Conditional Tasks Specific to Your Installation .....	4-15
Set Up Printers: Generic Steps .....	4-17
Set Up Printers: Windows-Specific Steps .....	4-18
Resize Your Database .....	4-19
Set Up National Language Support (NLS) .....	4-20
Set Up Unicode Character Sets .....	4-21
Complete Oracle Workflow Notification Mailer Configuration .....	4-22
Set Up and Implement Oracle Embedded Data Warehouse (EDW) .....	4-24
Set Up and Implement Discoverer End User Layer (EUL) .....	4-25
Set Up Demand Planning .....	4-26
Convert to a Public Sector, Education, or Not-for-Profit System .....	4-27
Implement Multiple Organizations .....	4-28
Back Up Oracle E-Business Suite .....	4-29
Understand System Administration and Maintenance Tasks .....	4-30
Module Summary .....	4-31
Module Discussion .....	4-32
<b>Oracle E-Business Suite Components .....</b>	<b>5-1</b>
Oracle E-Business Suite Components .....	5-3
Objectives .....	5-4
Module Overview .....	5-5
Oracle E-Business Suite Multi-Tier Architecture .....	5-6
Desktop Tier: Traditional Forms Interface .....	5-7
Desktop Tier: Forms Client Applet .....	5-8
Desktop Tier: Java Client .....	5-9
Application Tier: Overview .....	5-10
Application Tier: Load Balancing .....	5-11
Application Tier: HTML-Based Applications .....	5-12
Application Tier: Oracle Application Framework .....	5-13
Application Tier: Oracle Application Framework Components .....	5-14
Application Tier: Oracle Application Framework Processing .....	5-15
Application Tier: Java Servlet Access with HTML Applications .....	5-16
Application Tier: Forms Services .....	5-17
Application Tier: Forms Services Architecture .....	5-18
Application Tier: Network Traffic Management .....	5-19
Application Tier: Concurrent Processing Server .....	5-21
Application Tier: Report Review Agent .....	5-22
Application Tier: Accessing Concurrent Processing Output .....	5-23
Application Tier: Administration Server (Obsolete) .....	5-24
Database Tier .....	5-25
Oracle Homes in Release 12.1 .....	5-26
Oracle Homes Architecture .....	5-27
Oracle E-Business Suite Technology Layer .....	5-28
Applications DBA (AD) .....	5-29
Oracle Application Object Library (FND) .....	5-30
Oracle Application Object Library: End User Features .....	5-31
Oracle Application Object Library: Developer Features .....	5-32
Oracle Application Object Library: System Administration Features .....	5-33
Oracle Application Object Library: Security Features .....	5-35
Oracle Applications Utilities (AU) .....	5-36
Oracle Application Framework (OAF) .....	5-37
Oracle Workflow (WF) .....	5-38
Oracle Alert (ALR) .....	5-39

Oracle XML Publisher (XDO) .....	5-40
Oracle Applications Manager (OAM) .....	5-41
Summary of Technology Stack Changes Between Releases 11i and 12.1 .....	5-42
Module Summary .....	5-43
Module Discussion .....	5-44
<b>Environment Files, Control Scripts, and Languages.....</b>	<b>6-1</b>
Environment Files, Control Scripts, and Languages.....	6-3
Objectives .....	6-4
Topic Overview .....	6-5
Introduction to Environment Files .....	6-6
<CONTEXT_NAME>.env Environment File .....	6-7
Key Parameters in <CONTEXT_NAME>.env .....	6-8
Temporary Files.....	6-13
The adovars.env File.....	6-14
The adconfig.txt File.....	6-15
The fndenv.env File .....	6-16
The devenv.env File .....	6-17
Application Tier Server Control Scripts .....	6-18
Modifying Environment Files.....	6-23
Oracle E-Business Suite Languages .....	6-24
Character Sets: Introduction .....	6-28
Character Sets: Database Tier.....	6-29
Character Sets: Application Tier .....	6-31
Character Sets: Desktop Tier .....	6-32
Globalization and Country-Specific Functionalities.....	6-33
Dates and Numbers.....	6-34
National Language Support (NLS) .....	6-35
NLS and the Application Tier.....	6-36
Translation Patches.....	6-37
Translated Language Items .....	6-38
Module Summary .....	6-39
Module Discussion .....	6-40
<b>Oracle E-Business Suite File System.....</b>	<b>7-1</b>
Oracle E-Business Suite File System.....	7-3
Objectives .....	7-4
Module Overview .....	7-5
INST_TOP Directory .....	7-7
Database Tier File System .....	7-8
Application Tier File System.....	7-9
APPL_TOP Structure .....	7-10
Product Directories .....	7-11
Globalization Products .....	7-12
Applications Context File .....	7-13
Product Directories: Overview .....	7-14
Product Directories: admin .....	7-15
Product Directories: bin .....	7-16
Product Directories: forms .....	7-17
Product Directories: help .....	7-18
Product Directories: html .....	7-19
Product Directories: lib .....	7-20
Product Directories: log and out .....	7-22
Product Directories: mds .....	7-23
Product Directories: mesg .....	7-24
Product Directories: patch .....	7-25
Product Directories: reports .....	7-26
Product Directories: sql .....	7-27

Additional Language Subdirectories .....	7-28
APPL_TOP Directories: admin .....	7-29
APPL_TOP Directories: ad .....	7-31
APPL_TOP Directories: au .....	7-32
Common Components Directory .....	7-33
Java Files and Directories .....	7-34
Oracle E-Business Suite Technology Stack Directory .....	7-35
Database Directories .....	7-36
Module Summary .....	7-37
Module Discussion .....	7-38
<b>Oracle E-Business Suite Database.....</b>	<b>8-1</b>
Oracle E-Business Suite Database.....	8-3
Objectives .....	8-4
Module Overview .....	8-5
Oracle E-Business Suite Database Objects.....	8-6
Multiple Languages in the Database.....	8-7
Database Schemas .....	8-8
Oracle E-Business Suite Product Schemas.....	8-9
APPS Schema .....	8-10
Additional Schemas .....	8-11
Schemas Used During Signon .....	8-12
Implementing Multiple Organizations.....	8-13
Reporting Currencies .....	8-15
Overview of Database Features .....	8-16
Monitoring Features: Automatic Workload Repository .....	8-18
Monitoring Features: Automatic Database Diagnostic Monitor.....	8-19
Monitoring Features: Active Session History .....	8-20
Performance Features: Query Optimization .....	8-21
Performance Features: Database Resource Manager.....	8-22
Performance Features: Partitioning .....	8-23
Performance Features: Temporary Tables .....	8-24
Performance Features: Locally Managed Tablespaces .....	8-25
Performance Features: Oracle Applications Tablespace Model .....	8-26
Scalability Features: Oracle Real Application Clusters .....	8-27
Business Intelligence Features: Materialized Views .....	8-29
Database Tier Server Process Scripts .....	8-30
Module Summary .....	8-33
Module Discussion .....	8-34
<b>Advanced Configuration Options.....</b>	<b>9-1</b>
Advanced Configuration Options .....	9-3
Objectives .....	9-4
Module Overview .....	9-5
Shared Application Tier File System: Introduction .....	9-6
Shared Application Tier File System: Not In Use .....	9-7
Shared Application Tier File System: In Use .....	9-8
Shared Application Tier File System: Features .....	9-9
Shared Application Tier File System: Benefits .....	9-10
Shared Application Tier File System: Availability .....	9-11
Load Balancing: Introduction .....	9-12
Load Balancing: Strategic Effect .....	9-13
Load Balancing: Principal Areas .....	9-14
Load Balancing: Session Persistence .....	9-15
Load Balancing: SSL Accelerators .....	9-16
Load Balancing: Specific Options .....	9-17
Load Balancing: DNS Layer .....	9-18
Load Balancing: HTTP Layer .....	9-19

Load Balancing: Concurrent Processing Layer .....	9-20
Load Balancing: Database Layer.....	9-21
Network Features: Overview .....	9-22
Network Features: Strategies.....	9-23
Network Features: Latency .....	9-24
Network Features: Satellite Links .....	9-25
Network Features: Wireless LANs.....	9-26
Module Summary .....	9-28
Module Discussion .....	9-29
<b>Using the AD Utilities.....</b>	<b>10-1</b>
Using the AD Utilities .....	10-3
Objectives .....	10-4
Module Overview .....	10-5
AD Utilities: Overview .....	10-6
AD Utilities: Configuration and Environment Files.....	10-7
AD Utilities: Setting the Environment.....	10-9
Command Line AD Utilities.....	10-11
GUI-Based AD Utilities .....	10-14
Running the Command Line AD Utilities .....	10-16
Command Line Arguments: Overview .....	10-17
Command Line Arguments: abandon .....	10-19
Command Line Arguments: defaultsfile.....	10-20
Command Line Arguments: help.....	10-21
Command Line Arguments: interactive.....	10-22
Command Line Arguments: localworkers .....	10-23
Command Line Arguments: logfile .....	10-24
Command Line Arguments: menu_option .....	10-25
Command Line Arguments: parallel_index_threshold .....	10-26
Command Line Arguments: printdebug .....	10-27
Command Line Arguments: restart.....	10-28
Command Line Arguments: wait_on_failed_job.....	10-29
Command Line Arguments: workers.....	10-30
Command Line Arguments: flags.....	10-31
AD Utilities Flags: hidepw .....	10-32
AD Utilities Flags: logging.....	10-33
AD Utilities Flags: trace .....	10-34
AD Utilities: Common Features .....	10-35
Version Matching .....	10-36
AD Utilities: Prompts .....	10-38
Parallel Processing: Introduction .....	10-39
Parallel Processing: Managers .....	10-40
Parallel Processing: Workers.....	10-41
Parallel Processing: Deferred Jobs .....	10-42
Database Processing Phases .....	10-43
Distributed AD: Introduction.....	10-45
Distributed AD: Requirements .....	10-46
Distributed AD: Usage .....	10-47
Log Files.....	10-48
Worker Log Files.....	10-49
Restart Files .....	10-50
Manager and Worker Log Messages .....	10-51
Maintenance Mode: Introduction.....	10-54
Maintenance Mode: Enabling and Disabling.....	10-55
Restricted Mode.....	10-56
Module Summary .....	10-57
Module Discussion .....	10-58

<b>AD Administration: Generate Applications Files Tasks .....</b>	<b>11-1</b>
AD Administration: Generate Applications Files Tasks.....	11-3
Objectives.....	11-4
Module Overview .....	11-5
AD Administration .....	11-6
Preliminary Tasks .....	11-7
AD Administration Prompts .....	11-8
AD Administration Log Files .....	11-9
AD Administration Main Menu.....	11-12
Generate Applications Files Menu .....	11-13
Generate Message Files .....	11-14
Generate Form Files .....	11-17
Generate Report Files .....	11-23
Generate Product JAR Files.....	11-26
Module Summary .....	11-28
Module Discussion .....	11-29
<b>AD Administration: Maintain Applications Files Tasks .....</b>	<b>12-1</b>
AD Administration: Maintain Applications Files Tasks.....	12-3
Objectives.....	12-4
Module Overview .....	12-5
Maintain Applications Files.....	12-6
Relink Applications Programs.....	12-7
Relink Oracle E-Business Suite Programs.....	12-8
Relink Applications Programs .....	12-9
Copy Files to Destinations.....	12-10
Convert Character Set.....	12-12
Maintain Snapshot Information .....	12-18
Check for Missing Files.....	12-22
File System Tasks and Services.....	12-24
Module Summary .....	12-25
Module Discussion .....	12-26
<b>AD Administration: Maintain Database Entities Tasks.....</b>	<b>13-1</b>
AD Administration: Maintain Database Entities Tasks.....	13-3
Objectives.....	13-4
Module Overview .....	13-5
Maintain Database Entities .....	13-6
Validate APPS Schema .....	13-7
Recreate Grants and Synonyms .....	13-10
Maintain Multi-lingual Tables .....	13-13
Check DUAL Table.....	13-15
Module Summary .....	13-18
Module Discussion .....	13-19
<b>AD Administration: Compile/Reload Database Entities Tasks.....</b>	<b>14-1</b>
AD Administration: Compile/Reload Database Entities Tasks .....	14-3
Objectives.....	14-4
Module Overview .....	14-5
Compile/Reload Database Entities .....	14-6
Compile APPS Schema .....	14-7
Compile Menu Information .....	14-10
Compile Flexfield Data in Oracle AOL Tables .....	14-12
Reload JAR Files to Database .....	14-15
Module Summary .....	14-17
Module Discussion .....	14-18
<b>AD Administration: Non-Interactive Operation and Maintenance Mode .....</b>	<b>15-1</b>
AD Administration: Non-Interactive Operation and Maintenance Mode.....	15-3

Objectives .....	15-4
Module Overview .....	15-5
Creating AD Administration Defaults File .....	15-6
Running AD Administration in Non-Interactive Mode .....	15-7
Menu Options .....	15-10
Maintenance Mode: Introduction .....	15-14
Accessing Maintenance Mode .....	15-15
Changing Maintenance Mode .....	15-16
Module Summary .....	15-17
Module Discussion .....	15-18
<b>Special Utilities.....</b>	<b>16-1</b>
Special Utilities .....	16-3
Objectives .....	16-4
Module Overview .....	16-5
AD Controller .....	16-6
Reviewing Worker Status .....	16-8
Worker Status Flow .....	16-10
Resolving a Failed Worker .....	16-11
Determining Why a Worker Failed .....	16-12
Restarting a Failed Worker .....	16-13
Restarting a Failed Patch Process .....	16-14
Terminating a Hanging Worker Process.....	16-15
Restarting a Terminated Worker.....	16-17
Restarting a Terminated Child Process.....	16-18
Restarting an AD Utility After a Machine Crash.....	16-19
Shutting Down Managers .....	16-20
AD Relink Overview .....	16-21
Running AD Relink .....	16-22
AD Relink Syntax.....	16-23
Upgrade Paths.....	16-25
Module Summary .....	16-26
Module Discussion .....	16-27
<b>AutoConfig .....</b>	<b>17-1</b>
AutoConfig .....	17-3
Objectives .....	17-4
Module Overview .....	17-5
Context Files.....	17-6
Applications Context File .....	17-8
Database Context File.....	17-9
Benefits of the Context Files .....	17-10
Introduction to AutoConfig .....	17-14
AutoConfig and the Applications Context.....	17-15
AutoConfig Template Files .....	17-17
AutoConfig Tasks.....	17-18
AutoConfig Operation .....	17-19
Running AutoConfig: Overview .....	17-21
Running AutoConfig: Application Tier .....	17-23
Running AutoConfig: Database Tier .....	17-24
AutoConfig Log Files .....	17-25
Rolling Back an AutoConfig Session .....	17-26
Editing AutoConfig-Managed Configuration Files .....	17-28
Running AutoConfig In Test Mode: Overview .....	17-29
Running AutoConfig in Test Mode: Application Tier .....	17-30
Running AutoConfig in Test Mode: Database Tier .....	17-31
Running AutoConfig in Test Mode: Configuration Report .....	17-32
AutoConfig Configuration Report: Example.....	17-34

Running AutoConfig from Oracle Applications Manager.....	17-36
AutoConfig Main Screens .....	17-39
Editing Parameters.....	17-41
Confirming Changes.....	17-43
Using the Support Cart .....	17-45
Restoring a Previous Configuration.....	17-48
Comparing Configurations .....	17-51
Other AutoConfig Features: Search Utility .....	17-52
Other AutoConfig Features: Parallel Run Option.....	17-53
Other AutoConfig Features: Profiler .....	17-54
Other AutoConfig Features: Enhanced Check Config Tool .....	17-55
Other AutoConfig Features: Enhanced Service Dependency Management .....	17-56
Other AutoConfig Features: Build Context Utility.....	17-57
Module Summary .....	17-58
Module Discussion .....	17-59
<b>License Manager.....</b>	<b>18-1</b>
License Manager.....	18-3
Objectives .....	18-4
Module Overview .....	18-5
Introduction to License Manager.....	18-6
License Manager Reports .....	18-7
Accessing License Manager .....	18-8
License Manager Home Page .....	18-9
Registering Products.....	18-11
Registering Oracle E-Business Suite .....	18-12
Post-Registration Steps.....	18-17
Registering Component Applications.....	18-18
Registering Individual Products .....	18-21
Registering Country-Specific Functionalities.....	18-23
Registering Languages .....	18-25
License Manager Reports .....	18-31
Licensed Products Report .....	18-32
Shared Products Report .....	18-33
Country-Specific Functionalities Report .....	18-34
Languages Report .....	18-35
License Summary Report .....	18-36
Module Summary .....	18-38
Module Discussion .....	18-39
<b>Reporting Utilities.....</b>	<b>19-1</b>
Reporting Utilities .....	19-3
Objectives .....	19-4
Module Overview .....	19-5
AD Configuration: Introduction .....	19-6
AD Configuration: Features .....	19-7
AD Configuration: Examples .....	19-9
AD File Identification: Introduction .....	19-10
AD File Identification: Examples .....	19-11
AD Job Timing Report: Introduction.....	19-13
AD Job Timing Report: Features.....	19-14
AD Job Timing Report: Introduction.....	19-15
AD Job Timing Report: Examples .....	19-16
AD Job Timing Report: Reducing Downtime .....	19-17
Module Summary .....	19-18
Module Discussion .....	19-19
<b>Configuration Utilities.....</b>	<b>20-1</b>

Configuration Utilities .....	20-3
Objectives .....	20-4
Module Overview .....	20-5
AD Splicer: Introduction .....	20-6
AD Splicer: Usage .....	20-7
AD Splicer: Control Files .....	20-8
AD Splicer: Editing Product Configuration File .....	20-9
AD Splicer: Post-Splice Steps .....	20-11
File Character Set Converter: Introduction .....	20-12
File Character Set Converter: Usage .....	20-13
Module Summary .....	20-16
Module Discussion .....	20-17
<b>Patching and the AutoPatch Process .....</b>	<b>21-1</b>
Patching and the AutoPatch Process .....	21-3
Objectives .....	21-4
Module Overview .....	21-5
Patch Types .....	21-6
Patch Terminology .....	21-8
Patch Components .....	21-9
Unified Patch Driver Files .....	21-10
Other Patch Components .....	21-11
Patch Creation .....	21-13
Patch Creation (Cont.) .....	21-14
Using My Oracle Support .....	21-15
Searching For Patches on My Oracle Support .....	21-16
AutoPatch Overview .....	21-17
AutoPatch Operations .....	21-19
AutoPatch Features: Platform and Translation Checks .....	21-22
AutoPatch Features: Applied Patches Database .....	21-23
AutoPatch Features: Patch History File Changes .....	21-24
Prerequisite Patch Checking Using Codelevels .....	21-25
AutoPatch Features: Checkfile Feature .....	21-26
AutoPatch Features: Applying Merged Patches .....	21-27
AutoPatch Features: Password Hider .....	21-28
Patch Application Assistant .....	21-29
Applying a Patch .....	21-30
Applying a Patch to a Multi-Node System .....	21-32
Patching Application Documentation Files .....	21-34
Reducing Patching Downtime .....	21-35
Module Summary .....	21-37
Module Discussion .....	21-38
<b>Patch Wizard .....</b>	<b>22-1</b>
Patch Wizard .....	22-3
Objectives .....	22-4
Module Overview .....	22-5
Patch Wizard: Introduction .....	22-6
Patch Wizard: Overview .....	22-7
Patch Wizard: Access .....	22-8
Patch Wizard: Results .....	22-10
Patch Wizard: Setup .....	22-11
Patch Wizard: Patch Information Bundle .....	22-12
Patch Wizard: Preferences Page .....	22-13
Patch Wizard: Defining Patch Filters .....	22-15
Patch Wizard: Recommend Patches .....	22-18
Patch Wizard: Download Patches .....	22-21
Patch Wizard: Job Status .....	22-23

Patch Wizard: Recommended Patches Results.....	22-26
Patch Wizard: Patch Impact Analysis.....	22-28
Module Summary .....	22-31
Module Discussion .....	22-32
<b>Running AutoPatch .....</b>	<b>23-1</b>
Running AutoPatch.....	23-3
Objectives.....	23-4
Module Overview .....	23-5
AutoPatch: Setup Tasks.....	23-6
AutoPatch: Usage .....	23-9
AutoPatch: Prompts.....	23-10
AutoPatch: System Questions.....	23-16
AutoPatch: Patch File Name and Location.....	23-17
AutoPatch: Read Patch Driver File.....	23-18
AutoPatch: Translation Patch Reminder.....	23-19
AutoPatch: Number of Workers .....	23-20
AutoPatch: Messages.....	23-21
AutoPatch: Patch History .....	23-22
AutoPatch: Update Snapshot .....	23-23
AutoPatch: Timing Report and Completion Message.....	23-24
AutoPatch: Main Log File .....	23-25
AutoPatch: Other Log Files .....	23-26
AutoPatch: Follow-Up Tasks .....	23-27
AutoPatch: Actions on Failure.....	23-28
AutoPatch: Actions on Worker Failure .....	23-29
AutoPatch: Restarting.....	23-30
Module Summary .....	23-33
Module Discussion .....	23-34
<b>Patch Timing Reports .....</b>	<b>24-1</b>
OAM Timing Reports.....	24-3
Objectives.....	24-4
Module Overview .....	24-5
OAM Timing Reports.....	24-6
Timing Reports: Main Page.....	24-8
Timing Reports: AutoPatch Timing Details .....	24-10
Tracking a Patch Session: Introduction .....	24-14
Tracking a Patch Session: OAM Restricted Mode .....	24-15
Tracking a Patch Session: In-Progress Tasks .....	24-17
Tracking a Patch Session: Completed Tasks .....	24-18
AD Administration Timing Details .....	24-19
Job Timing Report.....	24-20
Phase Information Report.....	24-22
Exceptions Report.....	24-23
Module Summary .....	24-25
Module Discussion .....	24-26
<b>Other Patching Topics.....</b>	<b>25-1</b>
Other Patching Topics .....	25-3
Objectives .....	25-4
Module Overview .....	25-5
AutoPatch Modes .....	25-6
AutoPatch Test Mode .....	25-7
Running AutoPatch in Test Mode .....	25-9
AutoPatch Pre-Install Mode: Overview.....	25-10
AutoPatch Pre-Install Mode: Actions .....	25-11
AutoPatch Pre-Install Mode: Restrictions .....	25-13

AutoPatch Pre-Install Mode: Example .....	25-14
AutoPatch Non-Interactive Mode: Overview .....	25-15
AutoPatch Non-Interactive Mode: Creating a Defaults File.....	25-16
Running AutoPatch in Non-Interactive Mode .....	25-17
Restarting AutoPatch in Non-Interactive Mode .....	25-18
AutoPatch Command Line Options: Overview .....	25-19
AutoPatch Command Line Arguments: apply .....	25-20
AutoPatch Command Line Arguments: driver .....	25-21
AutoPatch Command Line Arguments: patchtop .....	25-22
AutoPatch Command Line Arguments: preinstall .....	25-23
AutoPatch Command Line Arguments: stdin .....	25-24
AutoPatch Command Line Arguments: uploadph .....	25-25
AutoPatch Command Line Arguments: options .....	25-26
AutoPatch Options: autoconfig.....	25-27
AutoPatch Options: checkfile .....	25-28
AutoPatch Options: compiledb.....	25-29
AutoPatch Options: compilejsp .....	25-30
AutoPatch Options: copyportion .....	25-31
AutoPatch Options: databaseportion .....	25-32
AutoPatch Options: generateportion.....	25-33
AutoPatch Options: hotpatch.....	25-34
AutoPatch Options: integrity .....	25-35
AutoPatch Options: maintenancemode.....	25-36
AutoPatch Options: parallel.....	25-37
AutoPatch Options: phtofile .....	25-38
AutoPatch Options: validate .....	25-39
Java Release Infrastructure (JRI).....	25-40
Java File Patching.....	25-41
Adding Translations and New Products .....	25-42
Deploying Patches .....	25-43
Merging Patches with AD Merge Patch .....	25-44
Merging Patches Overview.....	25-45
AD Merge Patch Actions.....	25-46
Source and Destination Directories .....	25-47
AD Merge Patch: Introduction .....	25-48
AD Merge Patch: Naming the Merged Patch .....	25-49
AD Merge Patch: Merging Unzipped ARUs.....	25-50
AD Merge Patch: Using a Manifest File .....	25-51
AD Merge Patch Special Options: -driveronly .....	25-52
AD Merge Patch Special Options: -preinstall.....	25-53
AD Merge Patch Special Options: -admode .....	25-54
AD Merge Patch: Restrictions .....	25-55
Module Summary .....	25-56
Module Discussion .....	25-57
<b>Applied Patches Information.....</b>	<b>26-1</b>
Applied Patches Information .....	26-3
Objectives .....	26-4
Module Overview .....	26-5
Applied Patches Information .....	26-7
Applied Patches Information and AutoPatch Modes .....	26-12
AutoPatch: Normal Mode.....	26-13
AutoPatch: Test Mode .....	26-14
AutoPatch: Pre-Install Mode .....	26-15
Accessing Applied Patches Information.....	26-16
Applied Patches: Search Pages .....	26-17
Applied Patches: Simple Search.....	26-18

Applied Patches: Advanced Search .....	26-20
File History: Search Pages .....	26-22
File History: Simple Search .....	26-23
File History: Advanced Search .....	26-25
Applied Patches Reports .....	26-27
Patch Details Report .....	26-28
Files Copied Report .....	26-30
Bug Fixes Report .....	26-31
Action Summary Report .....	26-32
Action Details Report .....	26-34
Module Summary .....	26-36
Module Discussion .....	26-37
<b>Cloning Oracle E-Business Suite .....</b>	<b>27-1</b>
Cloning Oracle E-Business Suite .....	27-3
Objectives .....	27-4
Module Overview .....	27-5
Principles and Terminology .....	27-6
Cloning Scenarios .....	27-7
Overview of the Cloning Process .....	27-8
Overview of Prerequisite Steps .....	27-9
Verify Source and Target Nodes Software Versions: Perl .....	27-10
Verify Source and Target Nodes Software Versions: Zip .....	27-11
Verify Source and Target Nodes Software Versions: Unzip .....	27-12
Verify Source and Target Nodes Software Versions: OS Utilities .....	27-13
Apply the Latest AD Patch .....	27-14
Apply the Latest AutoConfig Template Patch .....	27-15
Apply the Latest Rapid Clone Patches .....	27-16
Run AutoConfig on the Application Tier .....	27-17
Synchronize Applications Utilities on the Database Tier Nodes .....	27-18
Run AutoConfig on the Database Tier .....	27-19
Maintain Snapshot Information .....	27-20
Cloning Phases .....	27-21
Prepare the Source System Database Tier for Cloning .....	27-22
Prepare the Source System Application Tier for Cloning .....	27-23
Copy Source System Files to Target System .....	27-24
Copy the Application Tier File System .....	27-25
Copy the Database Tier File System .....	27-26
Configure the Target System Database Node .....	27-27
Configure the Target System Application Server Nodes .....	27-28
Finishing Tasks: Overview .....	27-29
Finishing Tasks: Update Instance-Specific Settings .....	27-31
Finishing Tasks: Final .....	27-40
Module Summary .....	27-41
Module Discussion .....	27-42
<b>Advanced Cloning Options .....</b>	<b>28-1</b>
Advanced Cloning Options .....	28-3
Objectives .....	28-4
Module Overview .....	28-5
Refreshing a Target System .....	28-6
Cloning Multi-Node Systems .....	28-10
Adding a New Node to an Existing System .....	28-13
Other Advanced Cloning Options .....	28-15
Module Summary .....	28-16
Module Discussion .....	28-17
<b>Student Practices .....</b>	<b>29-1</b>

Student Practices .....	29-3
Practice - Performing Preliminary Installation Tasks .....	29-6
Solution - Performing Preliminary Installation Tasks .....	29-7
Practice - Performing a Standard Installation .....	29-9
Solution - Performing a Standard Installation.....	29-11
Practice - Accessing Oracle E-Business Suite and Configuring the Client Software .....	29-15
Solution - Accessing Oracle E-Business Suite and Configuring the Client Software .....	29-16
Practice - Reviewing the Environment File .....	29-19
Solution - Reviewing the Environment File .....	29-20
Practice - Starting and Stopping Server Processes.....	29-21
Solution - Starting and Stopping Server Processes.....	29-22
Practice - Navigating the File System.....	29-25
Solution - Navigating the File System.....	29-26
Practice - Locating and Examining the Applications Context File .....	29-27
Solution - Locating and Examining the Applications Context File .....	29-28
Practice - Starting and Stopping the Database .....	29-30
Solution - Starting and Stopping the Database .....	29-31
Practice - Setting the Environment and Locating the AD Utilities .....	29-34
Solution - Setting the Environment and Locating the AD Utilities .....	29-35
Practice - Starting AD Administration.....	29-38
Solution - Starting AD Administration.....	29-39
Practice - Generating Forms Files .....	29-41
Solution - Generating Forms Files.....	29-42
Practice - Relinking Applications Programs.....	29-45
Solution - Relinking Applications Programs .....	29-46
Practice - Copying Files to Destinations.....	29-47
Solution - Copying Files to Destinations .....	29-48
Practice - Maintaining Snapshot Information .....	29-49
Solution - Maintaining Snapshot Information .....	29-50
Practice - Validating APPS schema.....	29-53
Solution - Validating APPS Schema .....	29-54
Practice - Compiling APPS schema.....	29-56
Solution - Compiling APPS Schema .....	29-57
Practice - Compiling Flexfields .....	29-58
Solution - Compiling Flexfields .....	29-59
Practice - Running AD Administration in Non-Interactive Mode .....	29-62
Solution - Running AD Administration in Non-Interactive Mode .....	29-63
Practice - Changing the Status of Maintenance Mode .....	29-64
Solution - Changing the Status of Maintenance Mode .....	29-65
Practice - Managing Worker Processes .....	29-68
Solution - Managing Worker Processes.....	29-69
Practice - Restarting AD Administration.....	29-71
Solution - Restarting AD Administration .....	29-72
Practice - Running AD Relink .....	29-73
Solution - Running AD Relink .....	29-74
Practice - Editing Applications Context .....	29-77
Solution - Editing Applications Context.....	29-78
Practice - Configuring your System.....	29-80
Solution - Configuring your System .....	29-82
Practice - Running AutoConfig in Test Mode .....	29-84
Solution - Running AutoConfig in Test Mode .....	29-85
Practice - Registering Products.....	29-88
Solution - Registering Products .....	29-89
Practice - Registering an Additional Language .....	29-90
Solution - Registering an Additional Language.....	29-91
Practice - Running AD Configuration .....	29-94
Solution - Running AD Configuration.....	29-95

Practice - Reviewing the AD Timing Report.....	29-96
Solution - Reviewing the AD Timing Report.....	29-97
Practice - Downloading Patches .....	29-101
Solution - Downloading Patches.....	29-102
Practice - Defining the Staging Directory.....	29-104
Solution - Defining the Staging Directory.....	29-105
Practice - Defining Patch Filters.....	29-106
Solution - Defining Patch Filters .....	29-108
Practice - Uploading the Patch Information Bundle .....	29-109
Solution - Uploading the Patch Information Bundle .....	29-110
Practice - Submitting and Viewing Requests.....	29-111
Solution - Submitting and Viewing Requests.....	29-112
Practice - Analyzing Patch Impact.....	29-113
Solution - Analyzing Patch Impact.....	29-114
Practice - Preparing to Run AutoPatch .....	29-117
Solution - Preparing to Run AutoPatch .....	29-118
Practice - Running AutoPatch.....	29-119
Solution - Running AutoPatch.....	29-120
Practice - Accessing the Timing Reports.....	29-124
Solution – Accessing the Timing Reports .....	29-125
Practice - Running AutoPatch Non-Interactively .....	29-127
Solution - Running AutoPatch Non-Interactively.....	29-129
Practice - Merging Patches .....	29-131
Solution - Merging Patches .....	29-132
Practice - Searching for Applied Patches Information.....	29-136
Solution - Searching for Applied Patches Information .....	29-137
Practice - Cloning Oracle E-Business Suite: Preparatory Tasks.....	29-140
Solution - Cloning Oracle E-Business Suite: Preparatory Tasks .....	29-142
Practice - Cloning Oracle E-Business Suite: Cloning Tasks .....	29-144
Solution - Cloning Oracle E-Business Suite: Cloning Tasks.....	29-147
Practice - Cloning Oracle E-Business Suite: Finishing Tasks .....	29-150
Solution - Cloning Oracle E-Business Suite: Finishing Tasks.....	29-151

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## Preface

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### Profile

#### Before You Begin This Course

- Thorough knowledge of your operating environment and software.
- Working experience with database software.

#### Prerequisites

- There are no formal prerequisites for this course.

#### How This Course Is Organized

This is an instructor-led course featuring lecture and hands-on exercises. Online demonstrations and written practice sessions reinforce the concepts and skills introduced.

## Related Publications

### Oracle Publications

Title	Part Number
Oracle E-Business Suite Concepts	E12841
Oracle E-Business Suite Installation Guide: Using Rapid Install	E12842
Oracle E-Business Suite Maintenance Procedures	E13675
Oracle E-Business Suite Maintenance Utilities	E13676
Oracle E-Business Suite Patching Procedures	E12148

### Additional Publications

- System release bulletins
- Installation and user's guides
- Read-me files
- International Oracle User's Group (IOUG) articles
- *Oracle Magazine*

# Typographic Conventions

---

## Typographic Conventions in Text

Convention	Element	Example
Bold italic	Glossary term (if there is a glossary)	The <b>algorithm</b> inserts the new key.
Caps and lowercase	Buttons, check boxes, triggers, windows	Click the Executable button. Select the Can't Delete Card check box. Assign a When-Validate-Item trigger to the ORD block. Open the Master Schedule window.
Courier new, case sensitive (default is lowercase)	Code output, directory names, filenames, passwords, pathnames, URLs, user input, usernames	Code output: debug.set ('I', 300); Directory: bin (DOS), \$FMHOME (UNIX) Filename: Locate the init.ora file. Password: User tiger as your password. Pathname: Open c:\my_docs\projects URL: Go to http://www.oracle.com User input: Enter 300 Username: Log on as scott
Initial cap	Graphics labels (unless the term is a proper noun)	Customer address ( <i>but</i> Oracle Payables)
Italic	Emphasized words and phrases, titles of books and courses, variables	Do <i>not</i> save changes to the database. For further information, see <i>Oracle7 Server SQL Language Reference Manual</i> . Enter user_id@us.oracle.com, where <i>user_id</i> is the name of the user.
Quotation marks	Interface elements with long names that have only initial caps; lesson and chapter titles in cross-references	Select "Include a reusable module component" and click Finish.  This subject is covered in Unit II, Lesson 3, "Working with Objects."
Uppercase	SQL column names, commands, functions, schemas, table names	Use the SELECT command to view information stored in the LAST_NAME column of the EMP table.
Arrow	Menu paths	Select File > Save.
Brackets	Key names	Press [Enter].
Commas	Key sequences	Press and release keys one at a time: [Alternate], [F], [D]
Plus signs	Key combinations	Press and hold these keys simultaneously: [Ctrl]+[Alt]+[Del]

## Typographic Conventions in Code

Convention	Element	Example
Caps and lowercase	Oracle Forms triggers	When-Validate-Item
Lowercase	Column names, table names	SELECT last_name FROM s_emp;
	Passwords	DROP USER scott IDENTIFIED BY tiger;
	PL/SQL objects	OG_ACTIVATE_LAYER (OG_GET_LAYER ('prod_pie_layer'))
Lowercase italic	Syntax variables	CREATE ROLE <i>role</i>
Uppercase	SQL commands and functions	SELECT userid FROM emp;

## Typographic Conventions in Oracle Applications Navigation Paths

This course uses simplified navigation paths, such as the following example, to direct you through Oracle Applications.

(N) Invoice > Entry > Invoice Batches Summary (M) Query > Find (B) Approve

This simplified path translates to the following:

1. (N) From the Navigator window, select **Invoice** then **Entry** then **Invoice Batches Summary**.
2. (M) From the menu, select **Query** then **Find**.
3. (B) Click the **Approve** button.

### Notations:

(N) = Navigator

(M) = Menu

(T) = Tab

(B) = Button

(I) = Icon

(H) = Hyperlink

(ST) = Sub Tab

## Typographical Conventions in Oracle Applications Help System Paths

This course uses a “navigation path” convention to represent actions you perform to find pertinent information in the Oracle Applications Help System.

The following help navigation path, for example—

(Help) General Ledger > Journals > Enter Journals

—represents the following sequence of actions:

1. In the navigation frame of the help system window, expand the General Ledger entry.
2. Under the General Ledger entry, expand Journals.
3. Under Journals, select Enter Journals.
4. Review the Enter Journals topic that appears in the document frame of the help system window.



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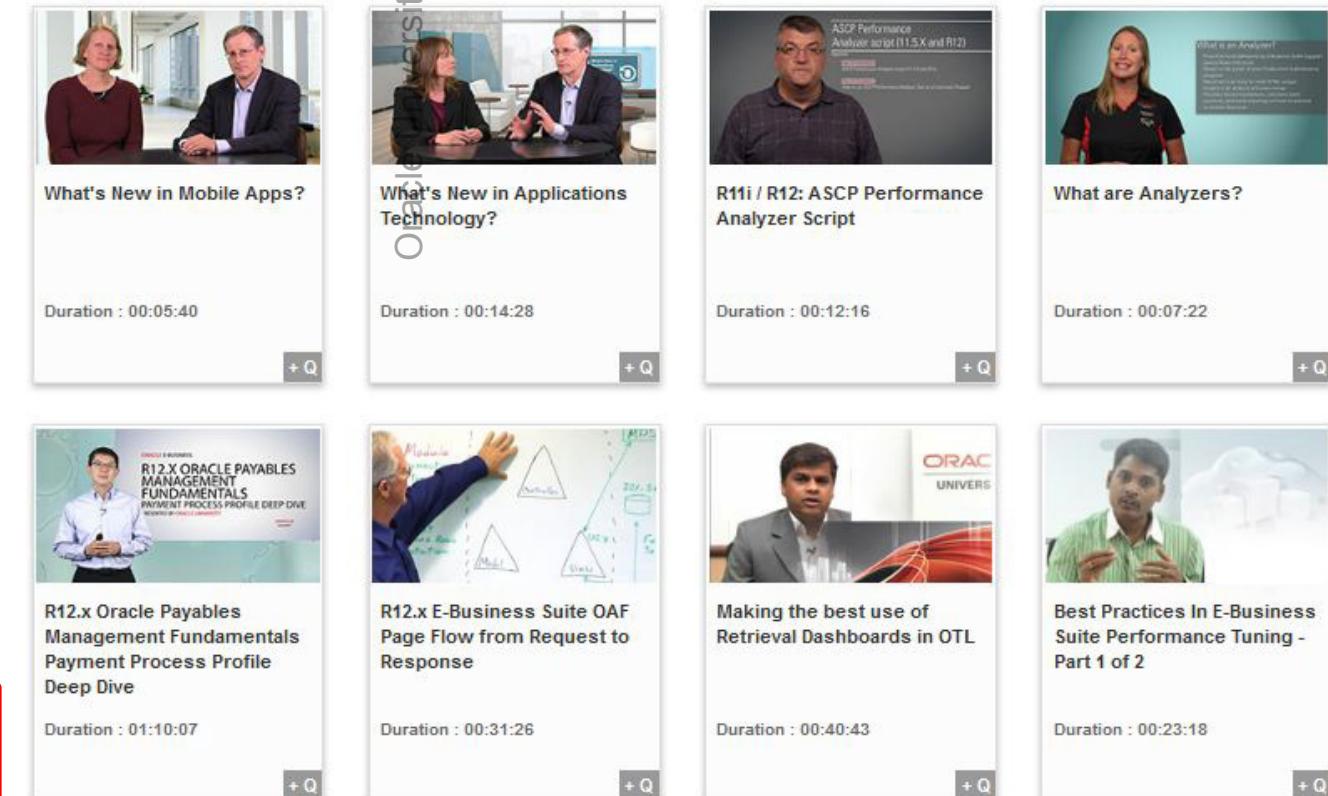
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# **Oracle E-Business Suite Overview**

**Chapter 1**



## Oracle E-Business Suite Overview

### Oracle E-Business Suite Overview

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## Module Overview

### Module Overview

- Introduction to Oracle E-Business Suite
- Oracle E-Business Suite Home Page
- HTML Interface
- Forms Interface
- Oracle E-Business Suite Architecture
- Technology Stack and Database
- Concurrent Processing
- Installing Oracle E-Business Suite
- Product Families and Dependencies
- Vision Demo Database

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### Module Overview

This module introduces the components of Oracle E-Business Suite Release 12.1. It describes the components that are stored and processed in the Oracle E-Business Suite database as well as the components stored in the Oracle E-Business Suite file system. It also lists the various component applications, and the dependencies that exist between them.

Many of the components introduced in this module are described in further detail in subsequent modules.

## Introduction to Oracle E-Business Suite

### Introduction to Oracle E-Business Suite

An integrated suite of applications for e-business

Applications Technology

Financials

HRMS

Projects

CRM

Supply Chain

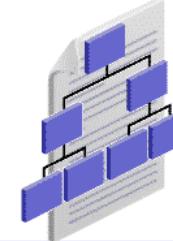
Manufacturing

Public Sector

Stored in an Oracle Database and a file system

Business  
Data

Product  
Files



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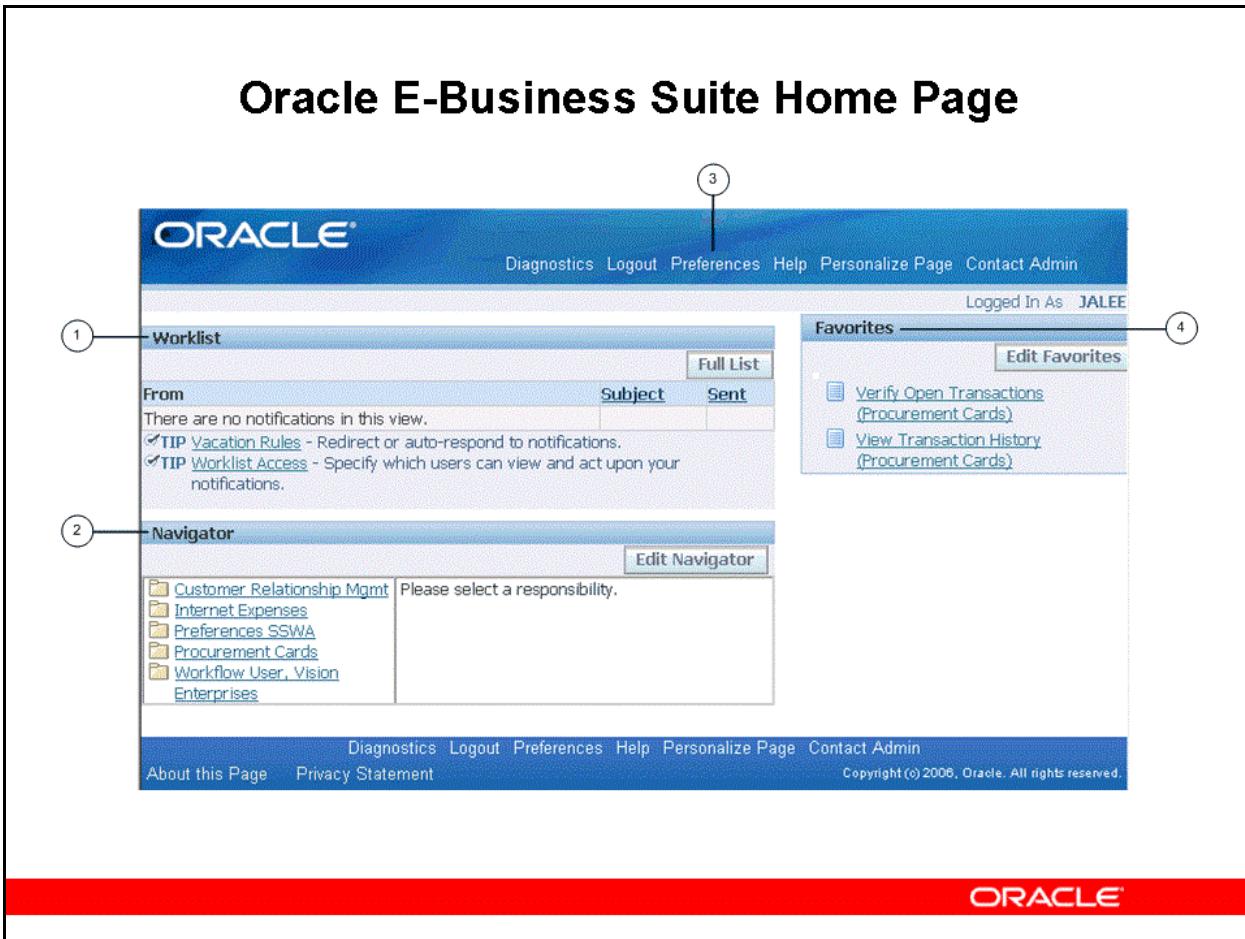
### Overview of Oracle E-Business Suite

Oracle E-Business Suite is a suite of integrated software applications that provides a complete solution to the business needs of enterprises of all types and sizes. Each Oracle E-Business Suite product provides services for a particular business area, such as Inventory or Accounts Receivable.

Oracle E-Business Suite includes component applications such as:

- Applications Technology
- Customer Relationship Management (CRM)
- Financials
- Supply Chain
- Human Resource Management Systems (HRMS)
- Manufacturing
- Projects
- Public Sector

## Oracle E-Business Suite Home Page



### Oracle E-Business Suite Home Page

After logging into Oracle E-Business Suite, the first page the user sees is the Oracle E-Business Suite Home Page, which provides a consistent look and feel across all Oracle E-Business Suite products.

The Oracle E-Business Suite Home Page provides seamless navigation to all areas of the system, and is the starting point for accessing both the HTML interface and the Forms interface (described on the next slides), as well as Business Intelligence applications.

As the screenshot on the slide illustrates, you can:

1. View or respond to your most important notifications from the **Worklist**.
2. Access E-Business Suite functions from the **Navigator**.
3. Set **Preferences**.
4. Navigate to frequently-used functions or Web pages from **Favorites**.

## HTML Interface

### HTML Interface

- Provides fast, accurate information
- Reduces paperwork
- Minimizes administrative costs
- Increases organizational responsiveness
- Provides simple, approachable interface
- Requires very little user training

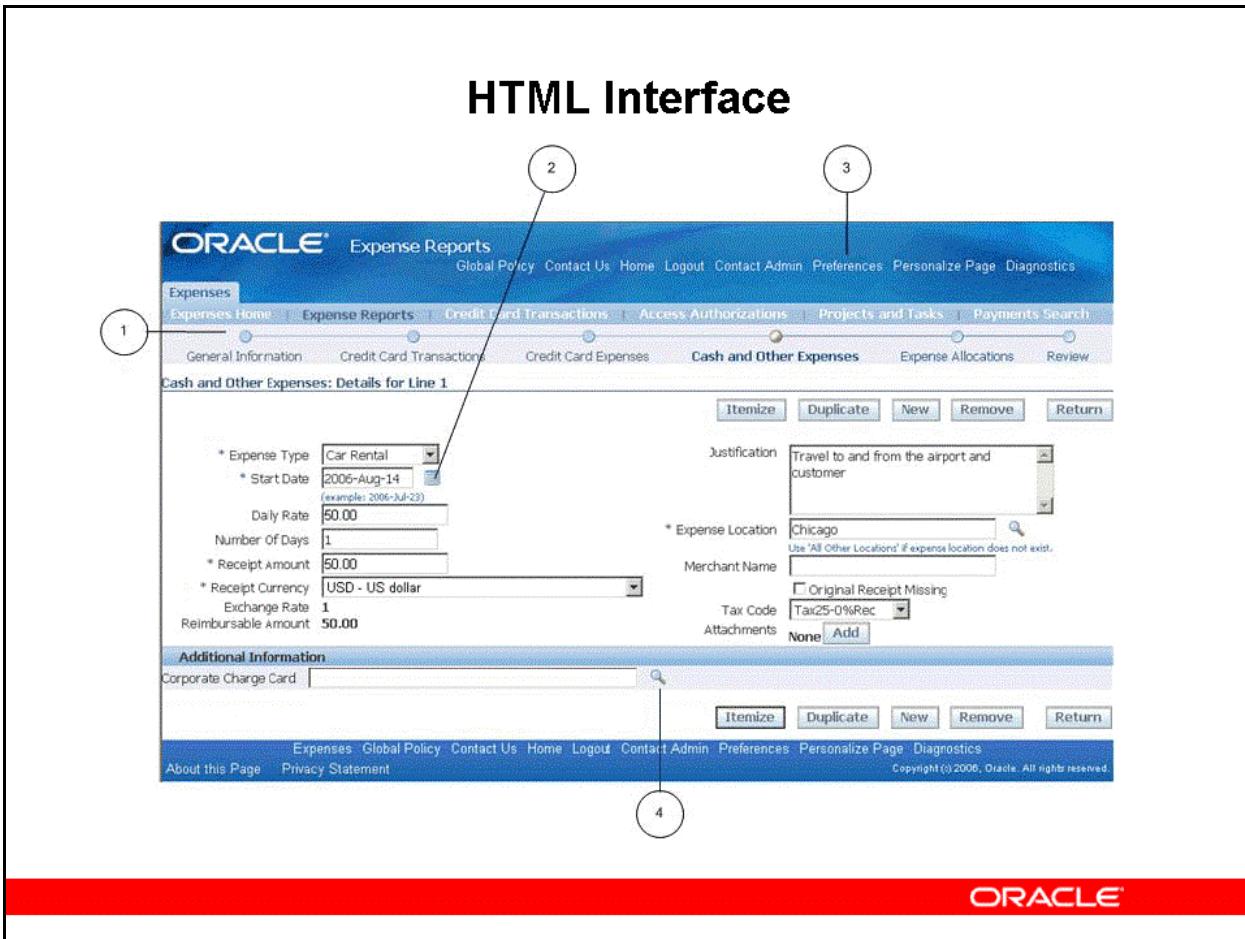
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### HTML Interface

The HTML interface is used for many products, including iExpense (Self-Service Expenses), Self-Service Human Resources, Internet Procurement, Internet Receivables, Self-Service Time, Web Suppliers, iStore, iPayment, iSupport, iMarketing, and eTravel. These products extend the functionality of the Oracle E-Business Suite by adding a browser-based, “walk up and use” functionality. All HTML (Framework-based) pages have an integrated personalization feature that enables both users and administrator to personalize the look and feel of the page.

The HTML-interface applications can be either inquiry or transactional. The difference is that inquiry modules only read the Oracle E-Business Suite database, whereas transactional modules can update the database.

## HTML Interface



## HTML Interface

The HTML Interface architecture includes or utilizes the following components:

- A Web browser
- The Oracle HTTP server, powered by Apache
- HTML and XML files
- JavaServer Pages, JavaBeans, and Servlets
- Oracle database

Features highlighted in the screen shot are:

1. Process Train
2. Date Picker
3. Global Links
4. List of Values Icon

## Forms Interface

### Forms Interface

- Offers a flexible, powerful system for professional administrative users
- Provides a very responsive interface that is optimized for high-volume use
- Optimizes production reporting

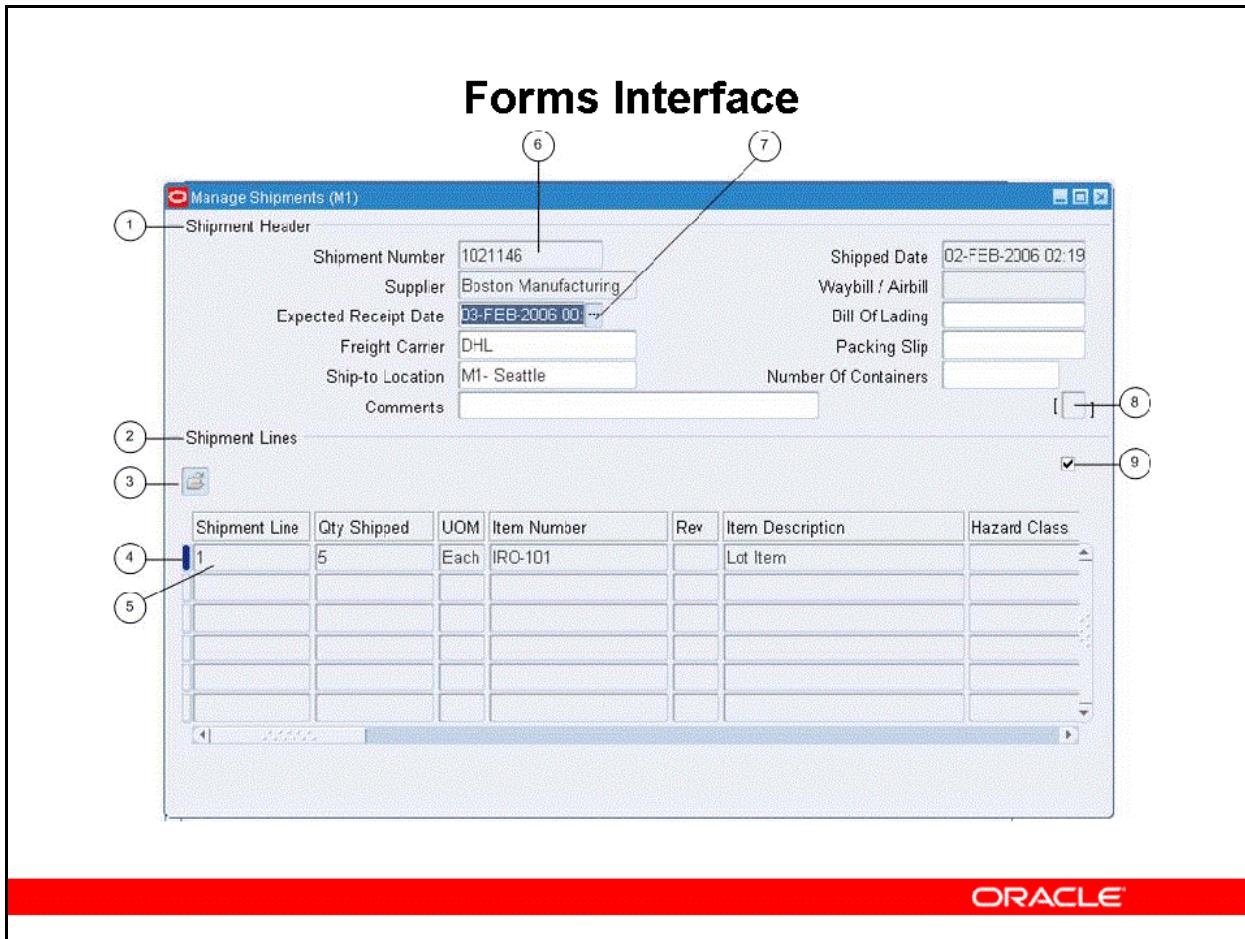
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### Forms Interface

Some products in the Oracle E-Business Suite utilize the Forms interface. This flexible and powerful user interface facilitates performing complex transactions and inputting high volumes of data.

Oracle E-Business Suite Release 12.1 uses Forms 10g (part of Developer 10g).

## Forms Interface



## Forms Interface

One of the key application tier software components used by many Oracle E-Business Suite products is Forms services, which mediate between the Forms client (a Java applet running on the desktop), and the Oracle database server on the database tier.

Features highlighted in the screen shot are:

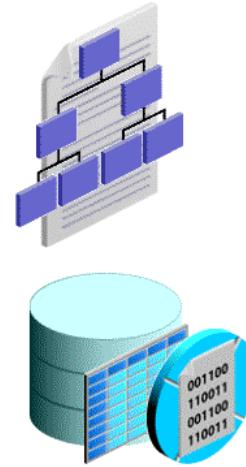
1. Single-Row Block
  2. Multi-Row Block
  3. Folder Indicator
  4. Current Record Indicator
  5. Record
  6. Field
  7. List of Values Indicator
  8. Descriptive Flexfield
  9. Master-Detail Coordination Box

## Oracle E-Business Suite Architecture

### Oracle E-Business Suite Architecture

Oracle E-Business Suite consists of

- A file system containing:
  - Forms
  - Reports
  - Concurrent programs
  - Programs and scripts
  - HTML and Java
- An Oracle database containing:
  - Data objects
  - Code objects

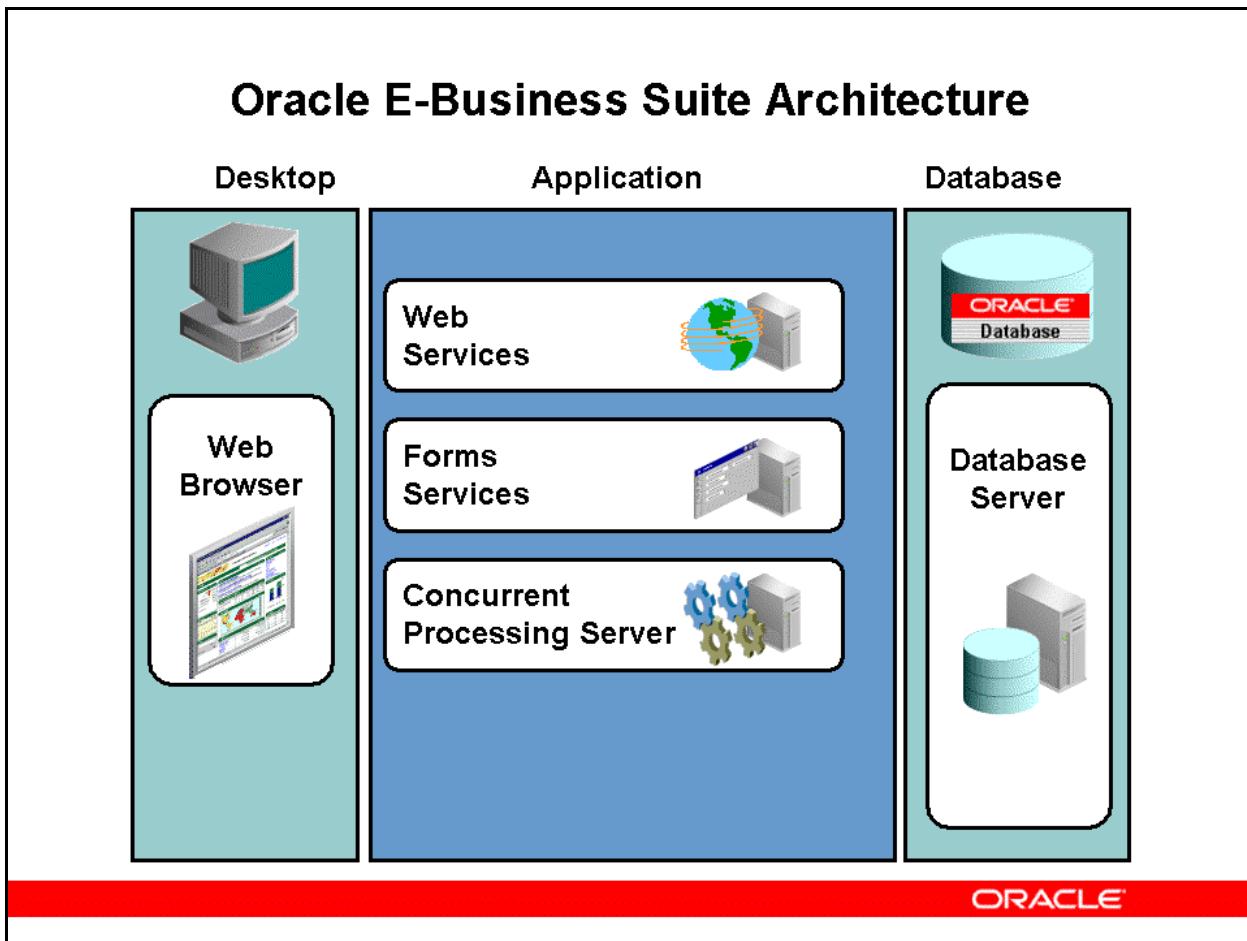


### Oracle E-Business Suite Architecture

Oracle E-Business Suite consists of

- A file system containing:
  - Forms that allow interactive entry and updating of data
  - Reports that allow formatted display of data
  - Concurrent programs that provide high-volume, non-interactive update of data
  - Programs and SQL scripts for maintaining the system
  - HTML, XML, and Java that perform certain user interface and business functions
- An Oracle database containing:
  - Data objects, such as tables and indexes used to store customer data
  - Code objects, such as views, grants, synonyms, and PL/SQL stored procedures and triggers for performing database processing

## Oracle E-Business Suite Architecture



### Oracle E-Business Suite Architecture

Oracle E-Business Suite utilizes a three-tier architecture. These tiers are the desktop tier, the application tier, and the database tier.

- The desktop tier contains a Web browser
- The application (middle) tier includes Web services, Forms services, and the Concurrent Processing server
- The database tier contains the Oracle database server

## Technology Stack and Database

### Technology Stack and Database

#### Oracle E-Business Suite Products

Products

#### Technology Stack

Oracle Developer 10g

Oracle Application Server 10g

#### Oracle Database

Oracle 11g Release 1

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#### Technology Stack and Database

The Oracle E-Business Suite Release 12.1 technology stack utilizes several key Oracle products to provide a multi-tier, distributed processing capability. The Oracle database provides efficient storage for customer data that has been gathered and processed.

## Concurrent Processing

### Concurrent Processing

Concurrent processing is a key feature of Oracle E-Business Suite, and its concurrent programs have the following characteristics:

- Run in the background
- Typically report on, or update, large volumes of data
- May carry out long-running tasks
- Run on the Concurrent Processing server
- Can run simultaneously with online programs as well as other concurrent programs

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### Concurrent Processing

A concurrent program is an executable program that runs in the background. It can run simultaneously both with online (interactive) programs and with other concurrent programs, fully utilizing your hardware capacity.

Typically, concurrent programs are used to support long-running, data-intensive tasks, such as posting a journal or generating a report. Concurrent programs run on the Concurrent Processing server. Reports are translated and available in all languages supported by Oracle E-Business Suite.

## Installing Oracle E-Business Suite

### Installing Oracle E-Business Suite

Oracle E-Business Suite is installed using Rapid Install, which:

- Automates many of the steps required for installing Oracle E-Business Suite Release 12.1
- Simplifies both basic and advanced installations
- Creates, installs, and configures most of the components needed for an Oracle E-Business Suite system
- Minimizes installation time
- Allows you to select languages and corresponding character sets
- Avoids the possibility of certification issues arising

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### Installing Oracle E-Business Suite

Rapid Install is the only supported method of installing Oracle E-Business Suite Release 12.1. All Oracle components packaged with Rapid Install are pre-certified for use with Release 12.1.

## Installing Oracle E-Business Suite

### Installing Oracle E-Business Suite

Rapid Install installs and configures the following technology stack components, including:

- Oracle Database
- Oracle Application Server (including Oracle HTTP Server)
- Oracle Developer, which includes:
  - Oracle Forms
- Oracle E-Business Suite file system
- Oracle E-Business Suite database

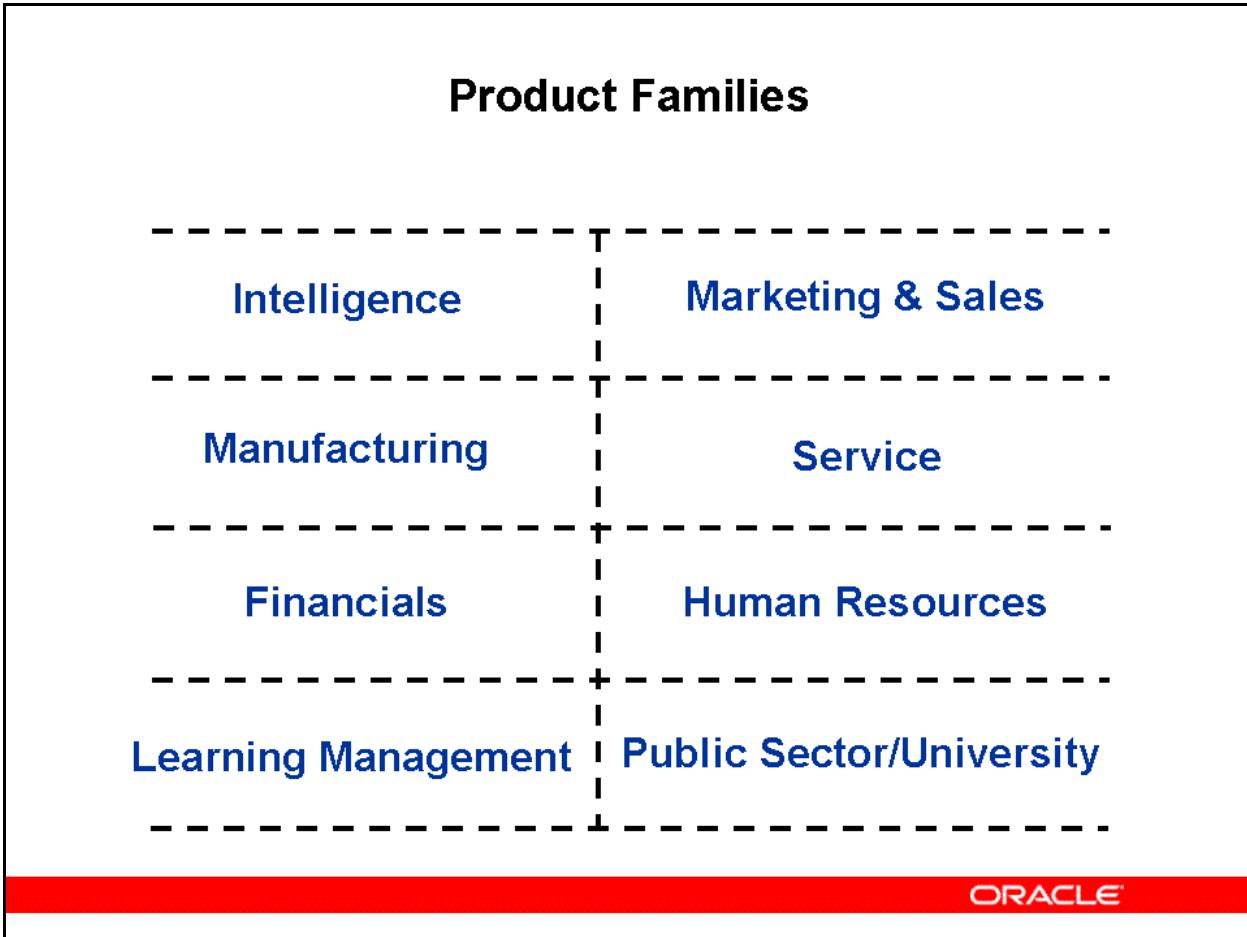
The red bar spans the width of the content area, positioned below the main text block.

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### Installing Oracle E-Business Suite

Before upgrading any technology stack component, refer to Certify on My Oracle Support to verify that the combination of platform and components that you plan to deploy are certified for use with Oracle E-Business Suite.

## Product Families



### Product Families

The component products that make up Oracle E-Business Suite are grouped into product families by functionality. Some examples are shown on the slide. Each component application may contain a number of products. For example, Payables, Receivables, and General Ledger are three of the many members of the Financials product family.

## Product Identifiers

### Product Identifiers

ID	Abbreviation	Full Name
0	FND	Application Object Library
101	GL	General Ledger
222	AR	Receivables
401	INV	Inventory

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### Product Identifiers

Each Oracle E-Business Suite product has several identifiers:

- **ID:** Applications ID, used when identifying setup data for the product.
- **Product abbreviation:** A two- or three-letter abbreviation for the product that appears in the file system path and names of files. Also used as the standard prefix for relevant database objects.
- **Full name:** The name of the Oracle E-Business Suite product, as displayed in pick lists.

These identifiers are used throughout Oracle E-Business Suite and are commonly used when referring to Oracle E-Business Suite products. Some example identifiers are shown on the slide.

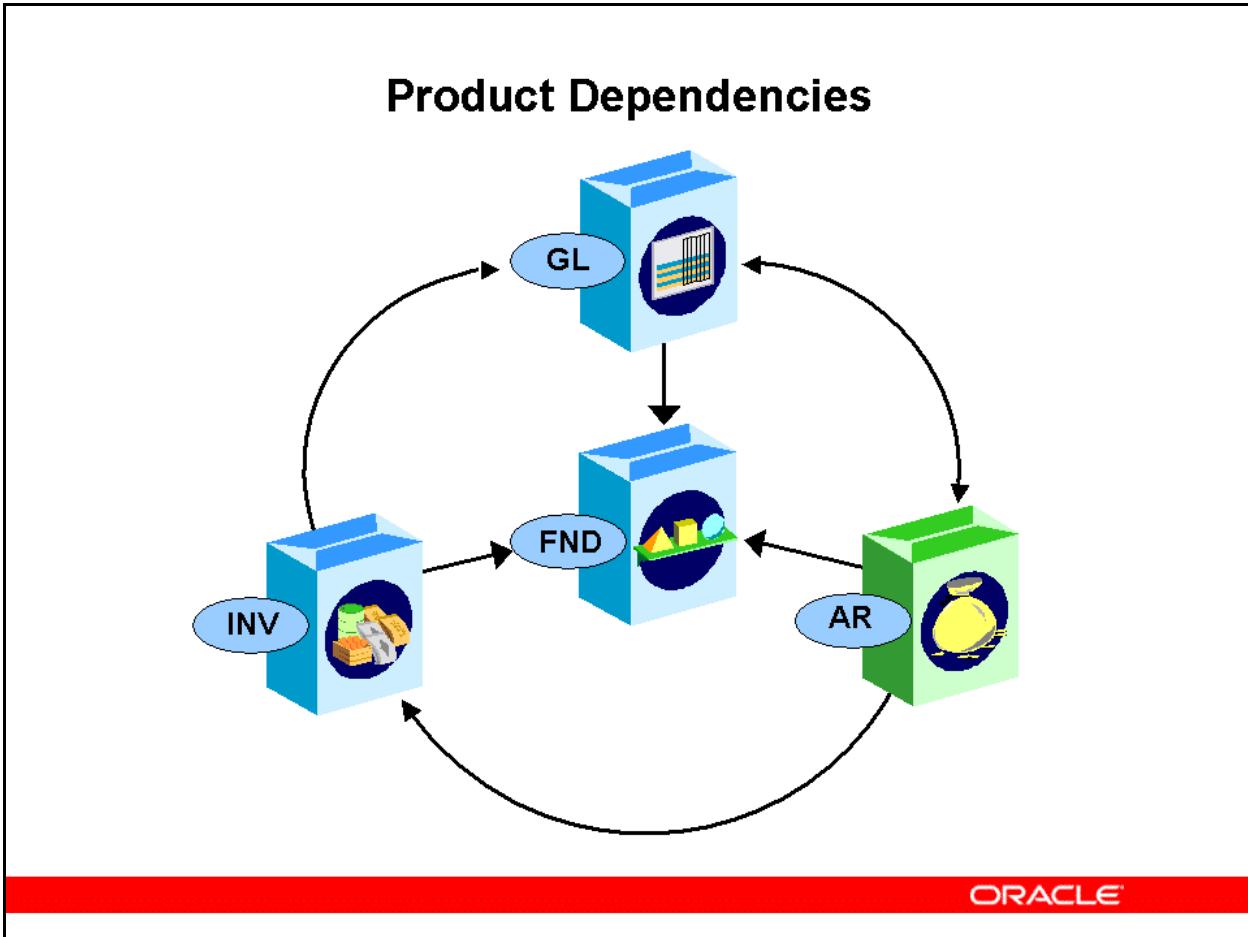
## Product Registration

### Product Registration

- To simplify maintenance, the database objects and file system components for *all* Oracle E-Business Suite products are installed
- When you install Oracle E-Business Suite, you use the Rapid Install screens to register the products you intend to implement
  - The license status of dependent products is automatically marked as Shared or Installed, according to product dependencies
- After you install Oracle E-Business Suite, you use License Manager to register any additional products you wish to implement

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## Product Dependencies



### Product Dependencies

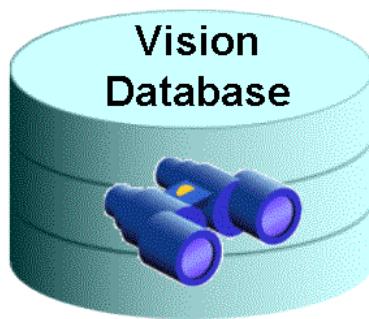
The products that make up Oracle E-Business Suite are tightly integrated. Some products depend on components from other products, called dependent or shared products, for full functionality.

The slide shows a simplified example of product dependencies:

- General Ledger (GL) depends on the Application Object Library (FND) and Oracle Receivables (AR).
- Inventory (INV) depends on FND and GL.
- Receivables (AR) depends on FND, INV, and GL.

## Vision Demo Database

### Vision Demo Database



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#### Vision Demo Database

The Vision Demonstration database provides a sample set of transaction data for a fictitious company that uses most of the Oracle E-Business Suite Release 12.1 products. The Vision Demo is installed using Rapid Install.

The Vision Demo simulates a real production configuration. As such, it can be updated and maintained using Oracle E-Business Suite utilities.

You can use the Vision Demo as a testing and training environment. You can also use it to learn about new products to help decide whether you want to expand the number of Oracle E-Business Suite products you currently have licensed and implemented.

## Module Summary

### Module Summary

This module covered the following topics:

- Introduction to Oracle E-Business Suite
- Oracle E-Business Suite Home Page
- HTML Interface
- Forms Interface
- Oracle E-Business Suite Architecture
- Technology Stack and Database
- Concurrent Processing
- Installing Oracle E-Business Suite
- Product Families and Dependencies
- Vision Demo Database

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# **Preparing for Your Installation**

## **Chapter 2**



## Preparing For Your Installation

---

### Preparing For Your Installation

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- Identify the features and benefits provided by Rapid Install
- Describe the Oracle E-Business Suite technology stack components installed by Rapid Install
- Describe the preparatory steps for running Rapid Install

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## Module Overview

### Module Overview

This module consists of the following topics:

- Rapid Install
- Rapid Install environments and platforms
- Planning the installation
- Staging the DVDs
- Starting Rapid Install

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### Module Overview

This module discusses Rapid Install and its key role in the installation of Oracle E-Business Suite Release 12.1.

## Overview of Rapid Install

### Overview of Rapid Install

The Rapid Install utility:

- Installs and configures all the components needed for your Oracle E-Business Suite system
- Automates most of the steps required to install Oracle E-Business Suite
- Simplifies both standard and advanced installations
- Minimizes installation time
- Allows you to select languages and corresponding character sets
- Eliminates the possibility of certification issues

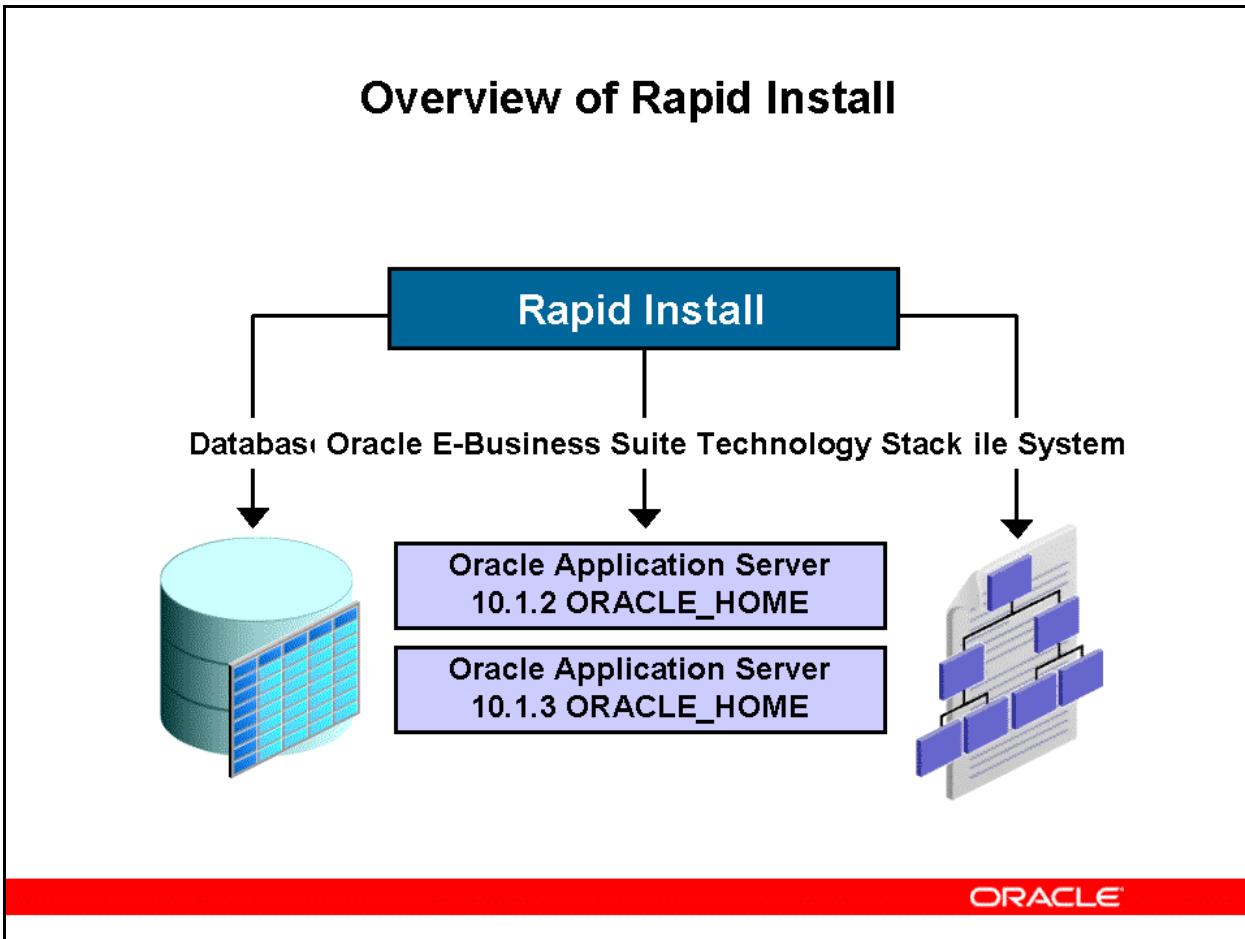
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### Overview of Rapid Install

With Rapid Install, you can perform the following tasks:

- Install a new, fully configured Oracle E-Business Suite system, including the latest certified technology stack, patches, and other updates available at the time of release.
- Lay down the file system and configure server processes for an upgraded system.
- Install a new database node or Applications node technology stack.

## Overview of Rapid Install



### Overview of Rapid Install

Rapid Install lays down each of the components shown in this slide:

- Oracle database, including all necessary database files.
- Oracle E-Business Suite technology stack, which includes two different Oracle Application Server (OracleAS) 10g releases, installed in separate ORACLE\_HOMEs. This strategy enables Oracle E-Business Suite to take advantage of the latest technologies, and is described further on the following slides.
- Oracle E-Business Suite file system, including Instance Top (\$INST\_TOP).

## Technology Stack Components

### Technology Stack Components

Rapid Install installs and configures the technology stack components listed on this and the next two slides

The key components are:

- Oracle Database 11g Release 1
- Oracle Application Server 10.1.2 (provides Forms services via Oracle Developer 10g)
- Oracle Application Server 10.1.3 (provides Web services)

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### Technology Stack Components

A multi-node installation of Release 11*i* required each application tier to maintain its own file system, consisting of the APPL\_TOP file system (APPL\_TOP, COMMON\_TOP, and a few related directories) and the application tier technology stack file system (8.0.6 ORACLE\_HOME and iAS ORACLE\_HOME). Later, the Release 11.5.10.2 Rapid Install introduced support for a shared file system.

In Release 12.1, Rapid Install will by default create a system that shares the application tier file system as well as the APPL\_TOP and COMMON\_TOP file systems. The application tier file system can therefore be shared across multiple application tier nodes (provided they are running the same operating system).

## Technology Stack Components

### Technology Stack Components

- Oracle Developer 10g, which includes:
  - Oracle Forms
  - Oracle Reports (for Concurrent Processing only)
- Installed in the OracleAS 10.1.2 Developer (Tools) Oracle Home

The red bar spans most of the width of the slide, centered horizontally.

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#### Oracle Developer 10g

The Applications node technology stack includes Oracle Developer 10g, which includes:

- Oracle Forms
- Oracle Reports (only for use with Concurrent Processing, not a stand-alone server)

The Developer products are installed in the Oracle Application Server 10.1.2 Oracle Home directory, which is sometimes also referred to as the Tools Oracle Home or C Oracle Home.

## Technology Stack Components

### Technology Stack Components

- Oracle HTTP Server:
  - Based on Apache
  - Installed in the OracleAS 10.1.3 Web (Java) Oracle Home

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#### Oracle HTTP Server

The Oracle Application Server 10.1.3 ORACLE\_HOME directory is used for the Oracle HTTP Server. It is sometimes also referred to as the Web Oracle Home or Java Oracle Home.

## Summary of Technology Stack Differences From Release 11i

### Summary of Technology Stack Differences From Release 11*i*

New versions of database tier technology:

- Oracle Database 9*i* → Oracle Database 11g Release 1

New versions of application tier technology:

- Application Server: 1.0 → 10.1
- Oracle HTTP Server/Apache: 1.3.19 → 10.1.3 (in OracleAS 10.1.3 Oracle Home)
- Oracle Developer: 6*i* → 10g (in OracleAS 10.1.2 Oracle Home)
- Oracle JDeveloper: 9*i* → 10g

New application tier technology component:

- Servlet Container: JServ → OC4J

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### Summary of Technology Stack Differences From Release 11*i*

This slide summarizes the main differences in the Release 12.1 Oracle E-Business Suite technology stack, compared to Release 11*i*.

## Release 12.1 Platform Support

### Release 12.1 Platform Support

Release 12.1 is supported on:

- Linux (32-bit and 64-bit)
- HP-UX (Itanium)
- HP-UX (PA-RISC)
- IBM AIX
- Microsoft Windows
- Sun Solaris (SPARC)

The Oracle E-Business Suite *Installation Update Notes* list platform-specific software requirements

- These notes are all available on My Oracle Support
- See notes page of this slide for the references

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### Release 12.1 Platform Support

It is essential to review the relevant platform-specific installation update note before installation.

For Release 12.1.1, these notes are available on My Oracle Support as knowledge documents:

- Linux x86 – 761564.1
- Linux x86-64 – 761566.1
- HP-UX PA-RISC (64-bit) – 762894.1
- HP-UX Itanium – 762891.1
- IBM AIX on Power Systems (64-bit) – 761569.1
- Microsoft Windows Server (32-bit) – 761567.1
- Sun Solaris SPARC (64-bit) – 761568.1

Separate notes for Release 12.0.x are also available on My Oracle Support.

## Software Requirements

### Software Requirements

- Maintenance Tools and Utilities
  - Solaris: ar, cc, ld, make, X Display Server
  - Linux: ar, gcc, g++, ld, ksh, make, X Display Server
  - Windows: Microsoft Visual C++, MKS Toolkit, GNU make
    - See notes page for further details of these components
  - HP-UX (PA-RISC): ar, cc, aCC, make, X Display Server
  - HP-UX (Itanium): ar, cc, aCC, make, X Display Server
  - IBM AIX: ar, ld, linkxIC, make, X Display Server
- The Java Development Kit (JDK) is automatically installed by Rapid Install

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## Software Requirements

The utilities listed on the slide must be included in the PATH environment variable of the user account that will run Rapid Install.

### X Display Server

This display must always be accessible during runtime. Set it to an active and authorized X Windows display, pointing to a machine that is always available to the instance. For more details, see My Oracle Support Knowledge Document 153960.1, *X Server Testing and Troubleshooting*.

### Additional Requirements for Windows

Release 12 has additional software requirements for Windows:

- Microsoft Visual C++ 8.0, which must be installed from either the Standard or Professional editions of Microsoft Visual Studio 2005 (<http://www.microsoft.com>)
- gnu make (shareware) Version 3.81 (<http://www.gnu.org>). Also obtainable via Oracle patch 5897842. This patch contains the GNU Make source files and the pre-built executable file, gnumake.exe.

- MKS Toolkit Version 9 (Patch 3) or higher (<http://www.mks.com>), to provide the UNIX scripting commands needed for the AD utilities.

Free software from Cygwin (<http://www.cygwin.com>) can be used instead of MKS Toolkit. However, Oracle recommends using the MKS Toolkit for all critical systems. For further details, see My Oracle Support Knowledge Document 414992.1, *Using Cygwin to Maintain Oracle E-Business Suite Release 12 on Windows*.

## CPU Requirements

### CPU Requirements

CPU requirements for running Oracle E-Business Suite depend on the:

- Number of concurrent users and their usage profiles
- Number of concurrent manager processes and the types of jobs that they are running
- Load for activities other than Oracle E-Business Suite
- Size of the database
- Desired response time

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## CPU 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.

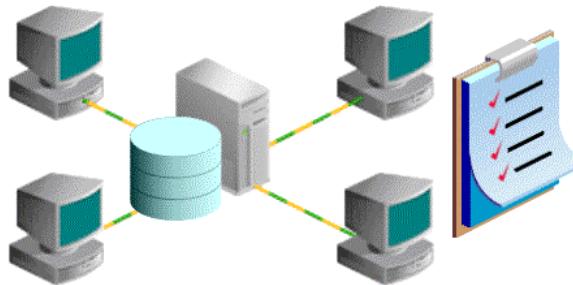
The most reliable strategy to ensure that the hardware is sized appropriately is to install a test environment, and then set a benchmark with a configuration, product mix, and user load that simulates your own current and expected workloads. These conditions can help verify performance before you install your production-ready environment. If creating such a benchmark is not feasible, Oracle Consulting Services and your hardware vendor can help you find another Oracle E-Business Suite system running a product mix and user profile similar to yours.

## Memory Requirements

### Memory Requirements

To calculate memory requirements for the database machine, consider:

- Oracle database overhead
- Size of system global area (SGA)
- Number of concurrent users
- Other software on the machine (*not recommended*)



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### Memory Requirements

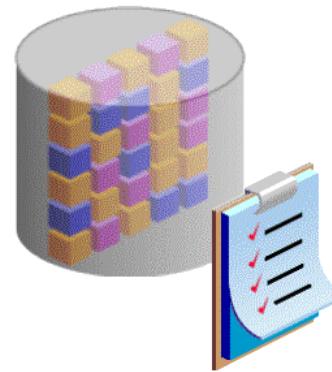
In carrying out the calculations on the slide, you should aim to allow for any expected growth in usage over the planned lifetime of this Oracle E-Business Suite system, although the increasing usage of Oracle Real Application Clusters and related technologies means that it is now easier to scale up a system by adding another machine.

## Disk Space Requirements

### Disk Space Requirements

Consider disk space requirements for:

- Applications node file system (required)
- Database node file system (required)
- Fresh install database (optional)
- Vision demo database (optional)



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### Disk Space Requirements

**Applications and Database Node File Systems:** Rapid Install installs the file system and database files for all products, regardless of their licensed status. The relevant figures are as follows:

- The total size of the application node file system objects is approximately 35 GB (50 GB on HP-UX Itanium). This includes the OracleAS 10.1.2 ORACLE\_HOME, OracleAS 10.1.3 ORACLE\_HOME, COMMON\_TOP, APPL\_TOP, and INST\_TOP.
- The disk space required for the database node files is approximately 55 GB for a fresh install database, or 208 GB for a Vision Demo database (210 GB on HP-UX Itanium).
- The total space required for a standard system (not including the stage area) is approximately 85 GB for a fresh install with a production database, and 233 GB for a fresh install with a Vision Demo database. The corresponding figures will be higher for HP-UX Itanium.

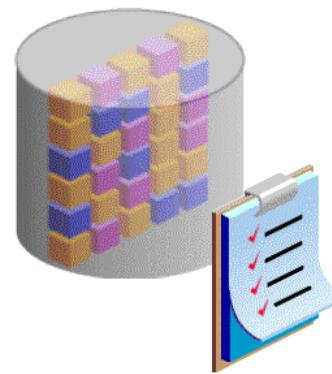
The database node disk space requirements for both the production database and the Vision Demo database include database files (.dbf) and the 11gR1 database Oracle Home.

## Disk Space Requirements

### Disk Space Requirements

Consider disk space requirements for:

- Stage area
- Oracle E-Business Suite log and output files



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### Disk Space Requirements

**Stage area:** For a fresh production database install, running Rapid Install from a *stage area* (described later) requires at least 47 GB to accommodate the file system and database files in the stage area.

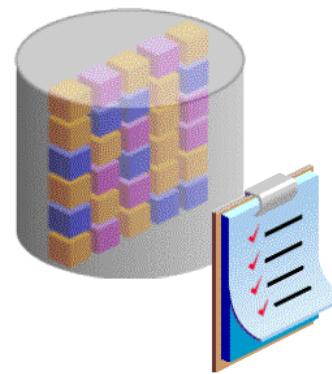
**Oracle E-Business Suite log and output files:** Many Oracle E-Business Suite products generate log and output files during runtime. The disk space that will be needed for log and output files varies with the number of users and frequency of product usage. Since the log and output files are not automatically purged, the space needed will also depend on the purging or archiving strategy you adopt for these files; it is therefore advisable to monitor the disk space they consume.

## Disk Space Requirements

### Disk Space Requirements

Consider disk space requirements for:

- Temporary directories and files
- Updates and patches
- Other files



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### Disk Space Requirements

**Temporary directories and files:** For installation time temporary disk space, Rapid Install uses the temporary directory defined by the TMPDIR variable (on UNIX) or TEMP and TMP variables (on Windows). You should ensure there is at least 1 GB of free temporary space when carrying out an installation.

Oracle E-Business Suite also requires temporary runtime disk space. For example, each concurrent manager writes temporary parameter files and Oracle Forms writes temporary record buffers. Rapid Install sets the temporary directory based on the value you supply on node-specific settings screens.

**Updates and patches:** You need disk space for applying updates, patches, maintenance packs, family packs, and mini-packs, as well as backup copies of files that may be created when applying an update or patch. Translations will also require more disk space.

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

- Custom development files
- Operating system software
- Online backups

## Overview of Preparatory Tasks

### Overview of Preparatory Tasks

The following preparatory tasks will be described in more detail on the following slides:

- Create suitable login accounts (required)
- Set up a stage directory (recommended)

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## Create Operating System Accounts (UNIX)

### Create Operating System Accounts (UNIX)

- Single-user UNIX installations
- Multi-user UNIX installations

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## Create Operating System Accounts (UNIX)

**Single-user installations:** To install Oracle E-Business Suite in a single-user installation, create an *oracle* user account and log in as this user to run Rapid Install.

**Multi-user installations:** To install in a multi-user installation, you can assign one user account to be the owner of the database node file system, and another to be the owner of the Applications node file system, by creating an *oracle* user account and an *aplmgr* user account.

- The operating system user that owns the Oracle database Oracle Home and the Oracle E-Business Suite database is called the *oracle* user. The *oracle* user owns the database node technology stack (Oracle Database 11g Release 1 ORACLE\_HOME), and the database files.
- The operating system user that owns the Oracle E-Business Suite file system is called the *aplmgr* user. The *aplmgr* user owns the Applications node technology stack (APPL\_TOP, COMMON\_TOP, OracleAS 10.1.2 ORACLE\_HOME, and OracleAS 10.1.3 ORACLE HOME).
- Log in as *root* to run Rapid Install, then specify the *oracle* user as the owner of the database ORACLE\_HOME and the *aplmgr* user as the owner of the APPL\_TOP.

The multi-user strategy helps to enhance security and auditability.

## Create Operating System Accounts (Windows)

### Create Operating System Accounts (Windows)

The Windows login account must:

- Have full local administrative privileges
- Have permission to print to either local or network printers
- Be a member of the Administrators and Domain Users groups

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### Create Operating System Accounts (Windows)

On Windows platforms, the user who runs Rapid Install owns the file system for all components (both the database file system and the Oracle E-Business Suite file system). The Windows installation is equivalent to the UNIX single-user installation.

Before you install Oracle E-Business Suite, ensure the user account for the installation (the install user) has full local administrative privileges, and permission to print to either local or network printers. We recommend you create a new account (for example, *oracle*) at the domain level and make it a member of the following groups:

- Administrators (local user)
- Domain Users (domain user)

This account does not need to be a member of any other group, and must *not* be a member of the Guest group.

Refer to Windows Help for information on creating accounts and assigning accounts to groups.

## Set Up Stage Area

### Set Up Stage Area

Running Rapid Install from a stage area:

- Shortens installation time
- Avoids the need for user access to the CD/DVD drive during the installation

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## Set Up Stage Area

For optimal performance, run Rapid Install from a stage area. You do this by running a Perl script that creates the install directory and copies the contents of the Release 12.1.1 software bundle to a designated location in the file system.

The Rapid Install DVDs in the Release 12.1.1 software bundle are labeled:

- Start Here
- APPL\_TOP
- RDBMS
- Tools
- Databases

## Set Up Stage Area

### Set Up Stage Area

To create the stage area directory:

1. Log in as a user with enough privileges to mount DVDs and write to the stage area
2. Insert the Start Here disk in the DVD-ROM drive
3. Mount the DVD (conditional, depending on platform)
4. Confirm perl 5.0053 or higher is installed and available
  - The command `perl -v` can be used to check the version on both UNIX and Windows
5. On UNIX, set the DISPLAY environment variable
6. Run the `adautostg.pl` script

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## Set Up Stage Area

Follow these steps to set up a stage area installation:

1. Log in as a user with enough privilege to mount DVDs, and to write to the stage area.
2. Insert the Start Here disk in the DVD-ROM drive.
3. Mount the DVD (conditional, depending on platform) If your system runs on a UNIX platform, and you do not use AutoMount, you must mount the Start Here disk now.
4. Confirm you have perl 5.0053 installed and in your PATH. Windows users should download ActivePerl (<http://www.perl.com>), as the perl shipped by MKS is not certified.
5. On UNIX platforms, set the DISPLAY environment variable to an active and authorized display.
6. Run the `adautostg.pl` script, substituting your own paths and drive letters:

UNIX:

```
$ perl /mnt/dvdrom/Disk1/rapidwiz/adautostg.pl
```

Windows:

```
D:\>perl d:\mnt\dvdrom\Disk1\rapidwiz\adautostg.pl
```

## Set Up Stage Area

### Set Up Stage Area

To create the stage area directory (continued):

7. Specify the top-level directory for the stage area
8. Respond to prompts about AutoMount and the mount point
9. Specify the components to be staged
10. Insert the Rapid Install DVDs as prompted

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## Set Up Stage Area

Follow these steps to set up a stage area installation:

7. Specify the top-level directory for the stage area. At the prompt for the path where the media is to be staged , enter the directory name of your choice. For example, if you enter /u01 as the top-level directory, the resulting path will be /u01/StageR12.
8. Respond to the prompts about AutoMount use and the mount point location.
9. Specify the components to be staged by choosing from the options displayed. You can indicate that you want to stage the database technology stack only, the database only, the Oracle E-Business Suite technology stack only, or the APPL\_TOP and COMMON\_TOP only. The default is the first option listed, to stage all Oracle E-Business Suite components.
10. Install the relevant DVDs, as prompted. A system message lists the files copied and their location in the stage area directory.

## Set Up Stage Area

### Set Up Stage Area

Disks labeled...	Are copied to this directory...
Start Here - Disk 1	startCD/Disk1
APPL_TOP - Disk <i>n</i>	oraApps/Disk <i>n</i>
RDBMS - Disk <i>n</i>	oraDB/Disk <i>n</i>
Tools - Disk <i>n</i>	oraAS/Disk <i>n</i>
Databases - Disk <i>n</i>	oraAppDB/Disk <i>n</i>



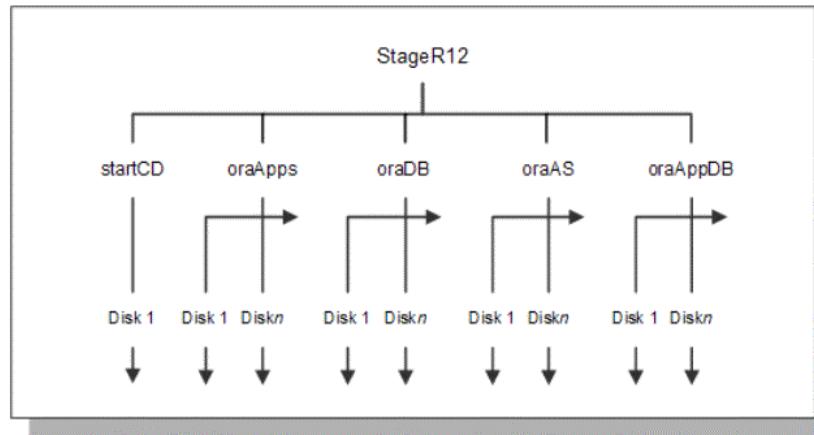
### Set Up Stage Area

The number of disks for each label may vary between platforms.

Installation directories are case-sensitive, and are set up using the capitalization as shown.

## Set Up Stage Area

### Set Up Stage Area



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## Set Up Stage Area

The slide shows the StageR12 directory, with subdirectories startCD, oraApps, oraDB, oraAS, and oraAppDB.

## Running Rapid Install from the Stage Area

### Running Rapid Install from the Stage Area

Once the stage directory structure has been created, you can start Rapid Install:

- UNIX example:

```
$ cd /u01/StageR12/startCD/Disk1/rapidwiz  
$ ./rapidwiz
```

- Windows example:

```
H: \>cd StageR12\startCD\Disk1\rapidwiz  
H: \Stage12\startCD\Disk1\rapidwiz>RapidWiz.cmd
```

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## Running Rapid Install from DVD

### Running Rapid Install from DVD

To run Rapid Install from the DVDs, load the Start Here disk, change directory to the DVD drive, then start the Rapid Install wizard:

- UNIX example, where /dev/cdrom is the DVD:

```
$ cd /dev/cdrom  
$ cd rapidwiz  
$ ./rapidwiz
```

- Windows example, where drive H is the DVD:

```
C:\>h:  
H:\>cd rapidwiz  
H:\RAPIDWIZ>RapidWiz.cmd
```

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### Run Rapid Install from DVD

Oracle does not recommend running Rapid Install from DVD, as the install will take longer.

## Using an Alias for the Host Machine

### Using an Alias for the Host Machine

To use an alias (not the actual name of the host machine), use the **-servername** command line option:

- UNIX example:

```
$ cd rapidwiz  
$ ./rapidwiz -servername myhost
```

- Windows example:

```
H:\>cd rapidwiz  
H:\RAPIDWIZ>RapidWiz.cmd -servername <myhost>
```

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## Using an Alias for the Host Machine

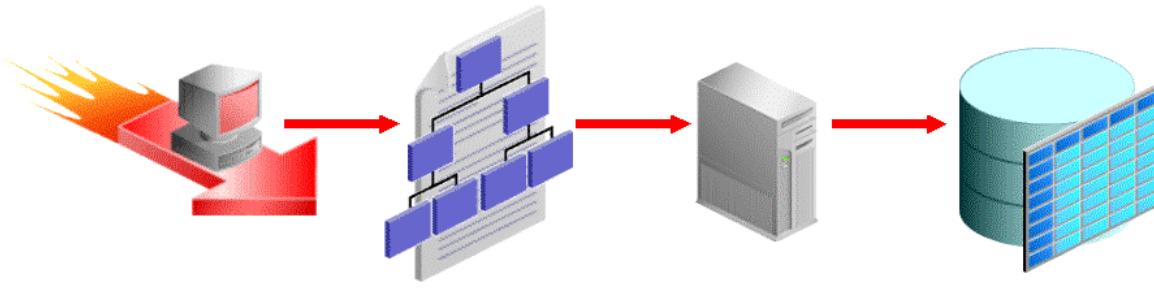
To use an alias rather than the actual name of your host machine, specify the **-servername** command line option when you start Rapid Install.

## How an Installation Works

### How an Installation Works

After you start Rapid Install and enter information specific to your installation, Rapid Install:

- Installs the Oracle E-Business Suite technology stack
- Creates the Oracle E-Business Suite file system
- Configures the services and servers on the application tier
- Installs and configures the database



### How an Installation Works

After using a wizard to gather configuration details for your specific installation, Rapid Install then installs the Oracle E-Business Suite technology stack, creates the Oracle E-Business Suite file system, configures the services on the application tier, and installs and configures the database.

In a basic installation, all servers and services (Database, Concurrent Processing, Forms, and Web) are installed on a single node (machine). This type of installation is generally used for smaller installations or for demonstration purposes. A more typical installation uses a number of nodes, each running the services and servers you specify to meet your requirements.

## Rapid Install Choices

### Rapid Install Choices

- Choose an installation type
- Specify database parameters
- Register products and country-specific functionalities
- Specify directory locations
- Specify port numbers
- Validate the configuration

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### Rapid Install Choices

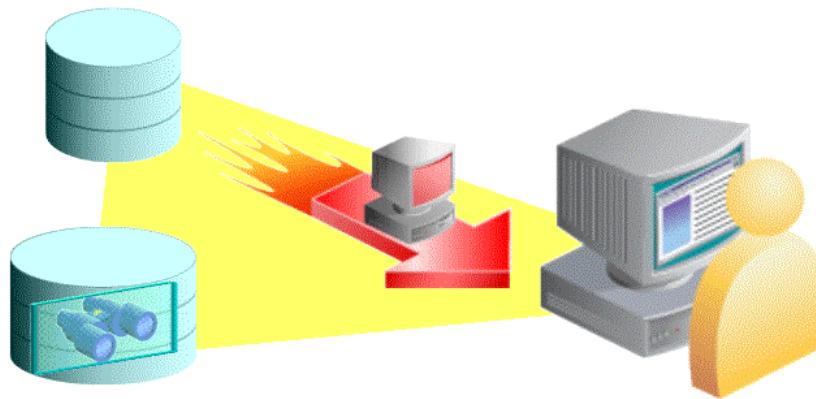
The Rapid Install wizard consists of a series of screens where you enter the information Rapid Install needs to create your system. This slide outlines the type of information collected by the Rapid Install wizard.

## Specifying an Installation Environment

### Specifying an Installation Environment

The database instance types are:

- Fresh database
- Vision Demonstration database



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### Specifying an Installation Environment

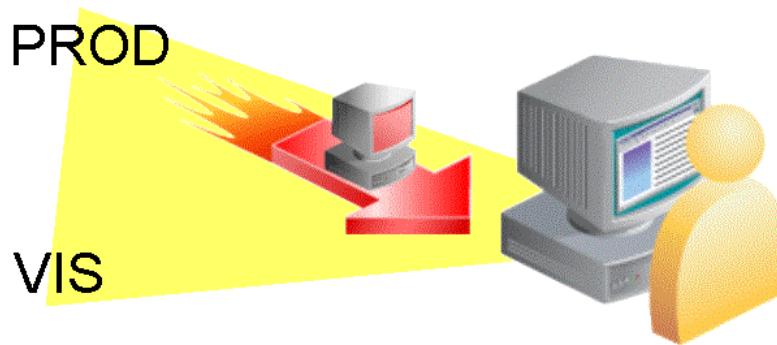
When you set up the instance, you can install a fresh database or a Vision Demonstration database.

## Specifying an Installation Environment

### Specifying an Installation Environment

Rapid Install default names are:

- Production (PROD)
- Vision Demonstration (VIS)



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### Specifying an Installation Environment

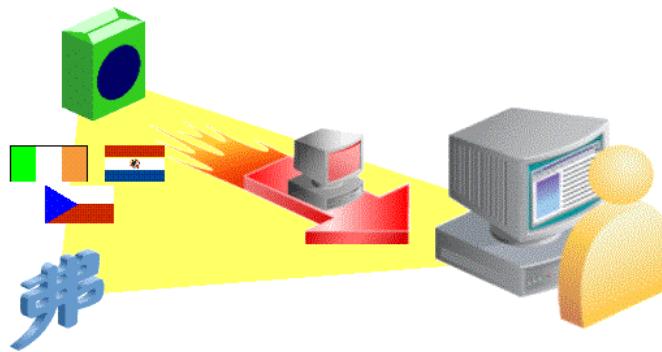
Rapid Install provides default names that suggest possible uses for the environment: they are production (PROD) and Vision Demonstration (VIS).

## Registering Products and Country-Specific Functionalities

### Registering Products and Country-Specific Functionalities

Use Rapid Install wizard screens to register:

- Licensed products
- Country-specific functionalities
- Character Sets



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### Registering Products and Country-Specific Functionalities

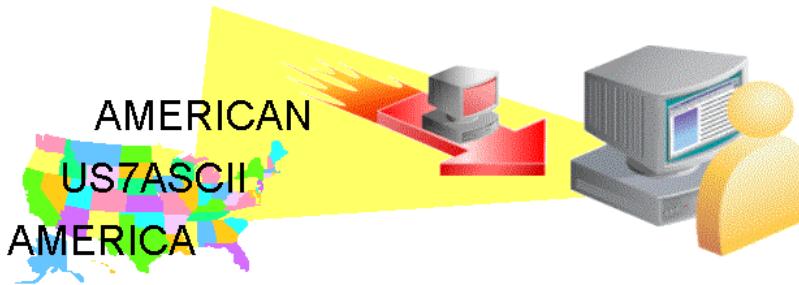
You use the relevant Rapid Install wizard screens to register licensed products, character sets, and country-specific functionalities. During installation, Rapid Install installs all products and country-specific functionalities in the database and in the file system. Language installations require additional language DVDs.

## Selecting NLS Settings

### Selecting NLS Settings

Default NLS settings are:

- American English (AMERICAN) as the base language
- US7ASCII as the default character set
- AMERICA as the default territory



### Selecting NLS Settings

A new Oracle E-Business Suite database installation uses American English (AMERICAN) as the base language with US7ASCII as the default character set and a default territory setting of AMERICA. You can select additional languages and modify the other settings on the Rapid Install wizard screens. Choosing additional languages may require choosing an alternative character set for the database and the APPL\_TOP.

Release 12 provides multilingual support for text parts of Oracle E-Business Suite, and for product data. Because it offers support for the Unicode (UTF8) character set, you can, if required, run a number of languages in a single instance. You choose the character set for both the database and the Oracle E-Business Suite products when you run Rapid Install.

The Vision Demo database is set up for multiple-organization use, and installed with the UTF8 character set. The default character set for a production database is US7ASCII.

The choice of database character set should be made carefully. While it is possible to convert from some character sets to others at a later stage, it is a very time-consuming operation, and there are restrictions. For example, you can convert from US7ASCII to UTF8, but not from UTF8 to US7ASCII.

The profile options for language and territory are configured at the site level when you run Rapid Install. The language you choose as the base language is used for the language profile. The default settings for date and number formats are derived from the territory profile setting.

## Selecting Configuration Parameters

### Selecting Configuration Parameters

Indicate the main settings for

- Mount points
- Directory paths
- Ports
- Top-level and sub-level directories
- User accounts
- Other information needed to configure the APPL\_TOP

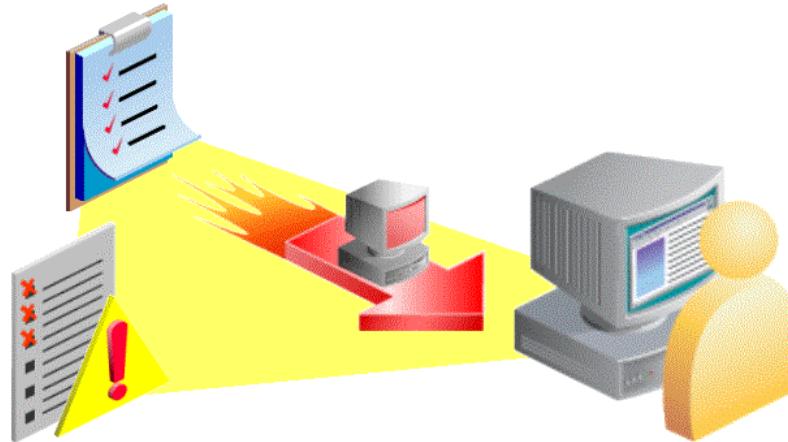
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## Validating Configuration Parameters

### Validating Configuration Parameters

#### Rapid Install

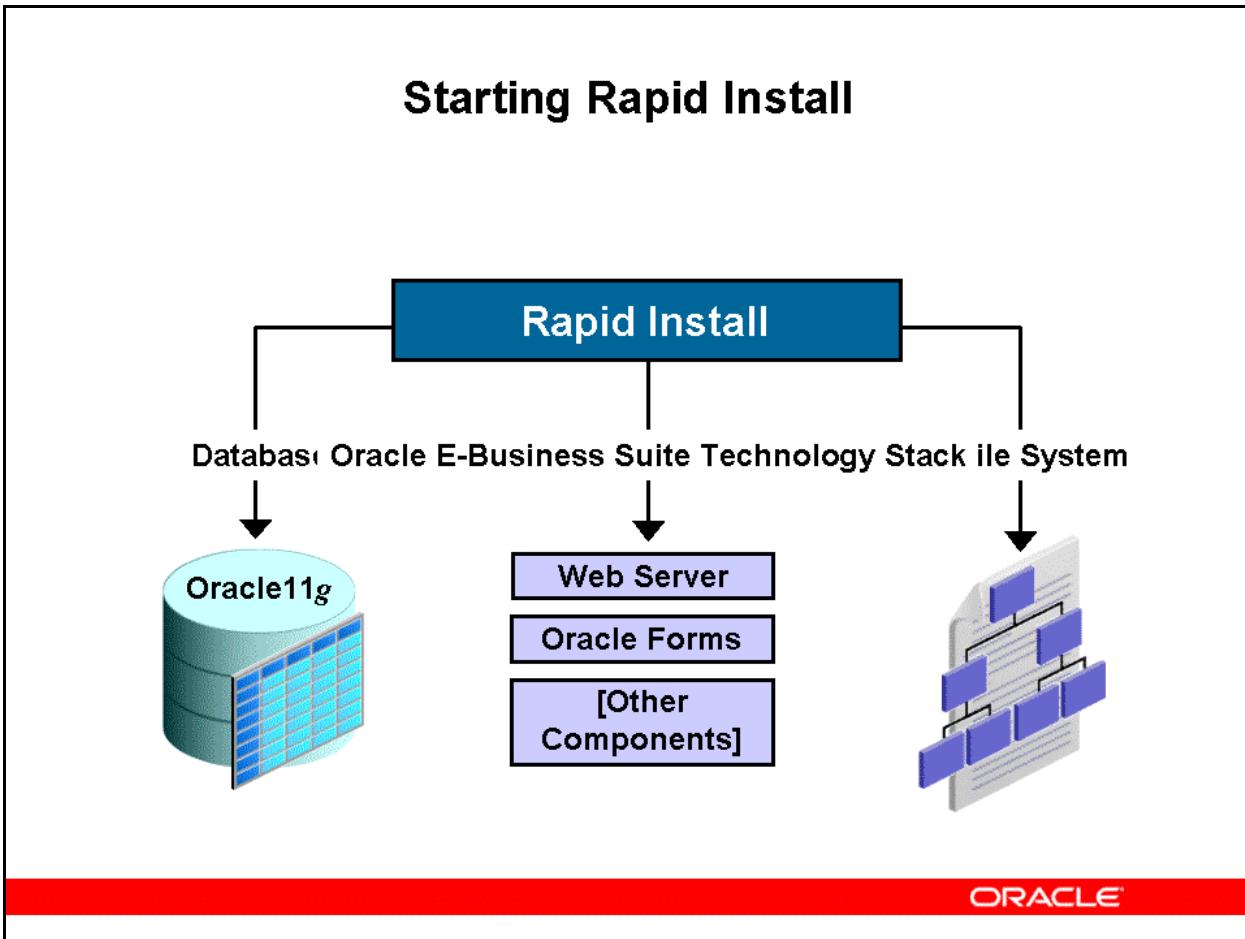
- Performs a series of system validation checks
- Reports any potential issues



### Validating Configuration Parameters

Once you have indicated the parameters for your installation, Rapid Install performs a series of system validation checks and notifies you of the results.

## Starting Rapid Install



### Starting Rapid Install

When you are sure the configuration parameters are correct, let Rapid Install complete the installation. When the process completes, you may need to perform additional finishing or implementation steps.

## Restarting an Installation Run

### Restarting an Installation Run

If the installation run terminates before successful completion, you can restart it by running the Rapid Install wizard again:

- UNIX example:

```
$ cd rapidwiz  
$ rapidwiz -restart
```

- Windows example:

```
H:\>cd rapidwiz  
H:\RAPIDWIZ>RapidWiz.cmd -restart
```

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### Restarting an Installation Run

The configuration file, conf\_<SID>.txt, is utilized if the user wishes to restart an install in which Rapid Install did not progress as far as creating the database. Other features and uses of the configuration file are described on the following slide.

## Configuration File Usage

### Configuration File Usage

In Release 12.1, the configuration file is:

- Called `conf_<SID>.txt` (was `config.txt` in Release 11i)
- Used where the database has not yet been created
- Stored in three separate locations:
  - Oracle Database 11g Release 1 <ORACLE\_HOME>/appsutil (retained)
  - `$INST_TOP` (retained)
  - `/tmp/<time stamp>` (deleted when installation is complete)
- Also employed in multi-node installs:
  - You can copy the file from one machine to another for Rapid Install to use on the second machine

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### Configuration File Usage

If you are installing in an environment where different machines are used to support the database and application tiers (as is typically the case), you run Rapid Install on each machine in turn, starting with the database machine. For example, if you have a machine for the database tier and two more for the application tier, you would run Rapid Install once on each machine, i.e. a total of three times.

## Rapid Install Log Files

### Rapid Install Log Files

Rapid Install saves the log files associated with the installation. They are located as follows:

- Database tier log files are stored in the  
`<APPS_BASE>/db/tech_st/11.1.0/apputil/  
log/<CONTEXT_NAME>/<timestamp>.log`  
directory on the database tier node
- Application tier log files are store in the  
`<APPS_BASE>/inst/apps/<CONTEXT_NAME>/logs/  
<timestamp>.log` directory on the application tier node

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### Rapid Install Log Files

The default value for context\_name is `<SID>_<host_name>`

## Obtaining Help in Rapid Install

### Obtaining Help in Rapid Install

- Most screens have a Help button, clicking which displays screen-level help
- Many screens also offer "mouse-over" help for individual fields
  - Move the cursor over a field to display a description of the information that is to be entered in the field

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## Module Summary

### Module Summary

In this module, you should have learned how to do the following:

- Identify the features and benefits provided by Rapid Install
- Describe the Release 12.1 technology stack components installed by Rapid Install
- Describe the preliminary steps that must be carried out before running Rapid Install

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## Module Discussion

### Module Discussion

- How many components of the Oracle E-Business Suite technology stack can you list?
- Give a high-level description of how you would prepare your environment for running Rapid Install
- List the specific preliminary tasks you need to perform before running Rapid Install
- What are the advantages and disadvantages of running Rapid Install from a staging area?

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# **Performing an Installation**

## **Chapter 3**



## Performing an Installation

### Performing an Installation

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## Objectives

### Objectives

**At the end of this module, you should have learned how to:**

- **Outline the steps involved in performing a standard installation**
- **Perform a standard installation using Rapid Install**
- **Perform an Express installation**

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## Objectives

This module describes the steps needed to perform both standard and Express installations of Oracle E-Business Suite. Full coverage is given of the Rapid Install screens that are used to provide the information needed to install and configure the system.

## Module Overview

### Module Overview

**This module consists of the following topics:**

- **Introduction to standard installations**
- **Select the installation type**
- **Choose Oracle Configuration Manager options**
- **Choose configuration source**
- **Specify global settings**
- **Configure database node**
- **Select licensing options**
- **Select country-specific functionalities and internationalization settings (if applicable)**
- **Configure application nodes**

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### Module Overview

This module describes the steps involved in performing a standard installation.

A standard installation may be on a single machine (node), which is the easiest installation to perform, or it may be on multiple machines. There are two main parts to an installation:

- Create and save a configuration by accepting the default values or supplying your own configuration values
- Once your configuration has been created, the installation process uses that information to:
  - Create the technology stack components
  - Install all Oracle E-Business Suite product files
  - Register the products you choose to use
  - Create the Oracle E-Business Suite database
  - Create and configure the additional required services, such as Forms and Web services

## Module Overview

### Module Overview

**This module consists of the following topics:**

- **Carry out the installation**
- **Review post-installation tests**
- **Connect to Oracle E-Business Suite**
- **Introduction to Express installations**
- **Differences between Express and standard installations**

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### Overview

After the installation is complete, the module examines the post-installation tests that are carried out and describes how to connect to Oracle E-Business Suite.

The module concludes by describing the simpler Express installation, and how it differs from a standard installation.

## Overview of Basic Installation Procedure

### Overview of Basic Installation Procedure

**The basic procedure to perform a standard installation is as follows:**

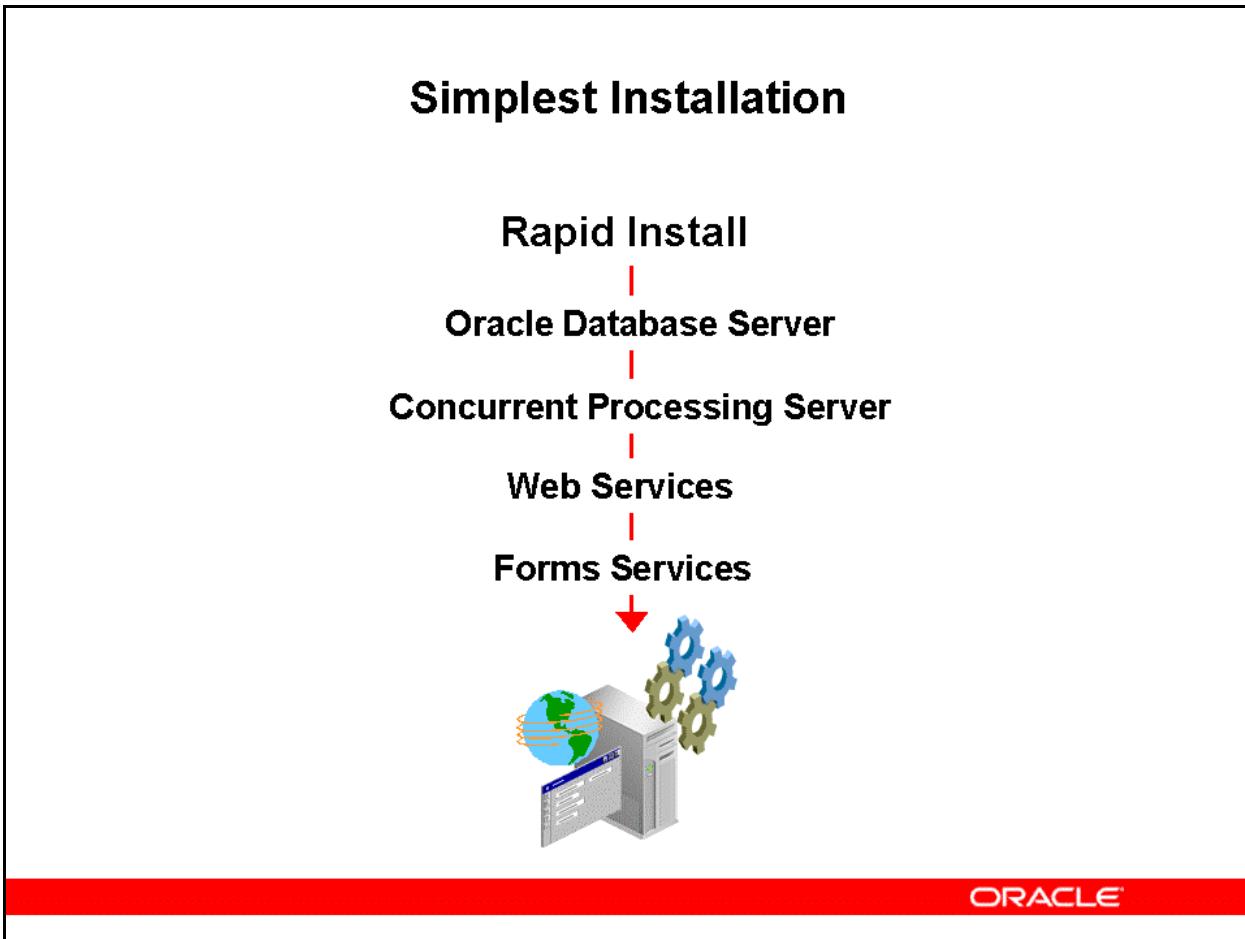
- Perform preliminary installation steps
- Supply configuration values as needed
- Run Rapid Install
- Perform post-installation tasks

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### Overview of Basic Installation Procedure

All installations fundamentally include carrying out preliminary tasks, supplying values for various parameters or accepting defaults, running the Rapid Install wizard, and performing post-installation tasks.

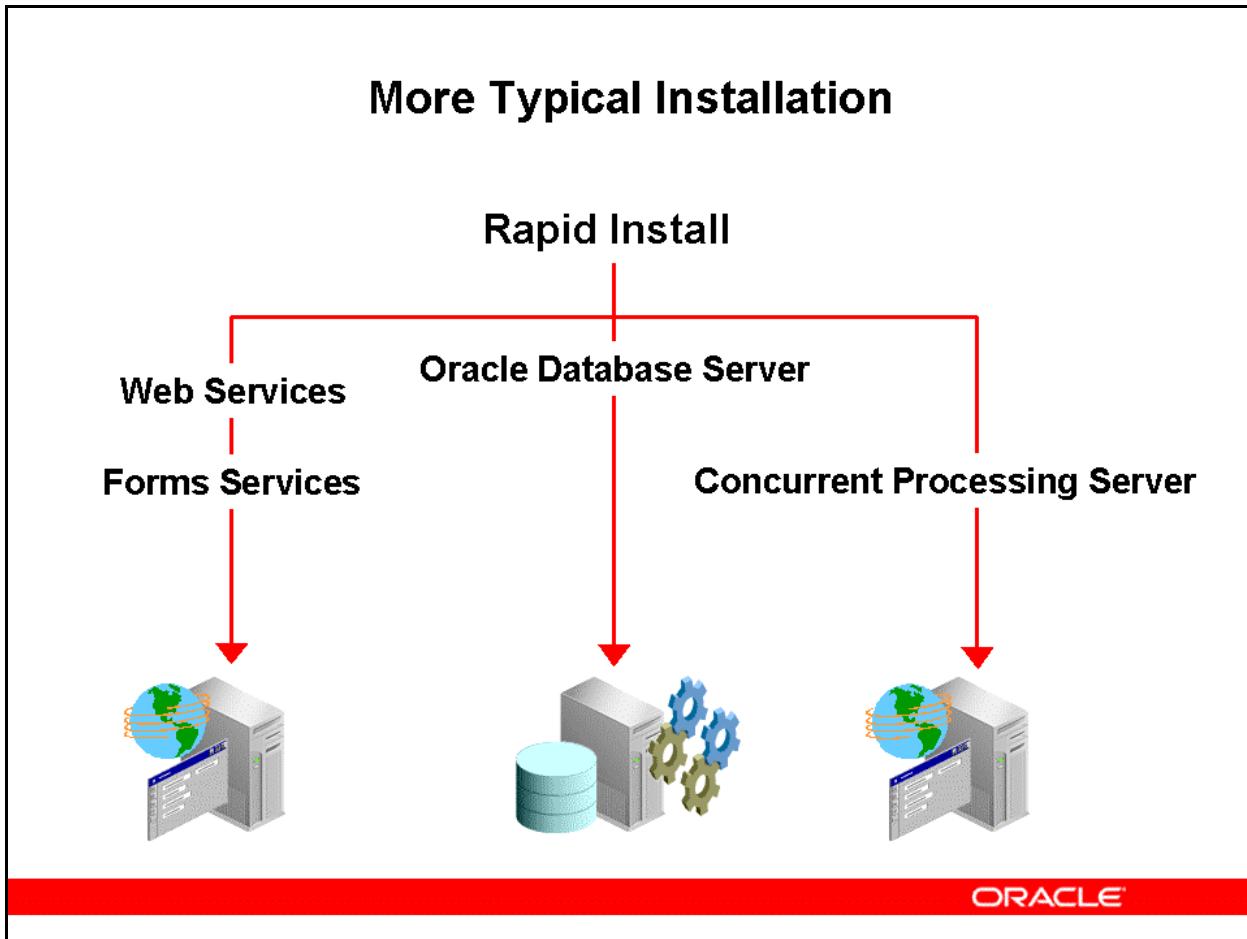
## Simplest Installation



### Simple Installation

In the simplest type of installation, all Oracle E-Business Suite components are installed on the same machine (node).

## More Typical Installation



### More Typical Installation

Applications tier processing can be distributed across multiple Applications nodes. It is also possible to add further application nodes to scale up the application tier. Typically, the additional nodes will be located on their own machines, to help increase availability and flexibility of the system.

To facilitate this, and make overall administration easier, Release 12.1 does not separate the different APPL\_TOP components (such as Concurrent Processing, Forms, and Web), as was done in previous releases. In the Release 12.1 *unified APPL\_TOP*, the same files are present on each application node. The difference between application nodes depends on the service groups that are activated on each node.

## Standard Installation Steps

### Standard Installation Steps

#### Running the Rapid Install Wizard

- Step 1: Start the Rapid Install Wizard**
- Step 2: Select a Wizard Operation**
- Step 3: Oracle Configuration Manager**
- Step 4: Configuration Choice**
- Step 5: Global System Settings**
- Step 6: Database Node Configuration**
- Step 7: Database Directory**
- Step 8: Select Licensing Type**
- Step 9: License Additional Products**
- Step 10: License Products**

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#### Standard Installation Steps

You carry out installation of Oracle E-Business Suite by running the Rapid Install wizard. This and the following two slides outline the steps involved..

## Standard Installation Steps

### Standard Installation Steps

#### Running the Rapid Install Wizard

- Step 11: Select Country-Specific Functionality**
- Step 12: Select Internationalization Settings**
- Step 13: Primary Applications Node Configuration**
- Step 14: Primary Applications Node Services**
- Step 15: Primary Applications Node Directories**
- Step 16: Review Node Information**
- Step 17: Additional Applications Node**
- Step 18: Shared Applications Node**
- Step 19: Review Additional Applications Nodes**
- Step 20: Review Pre-Install Tests**

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#### Standard Installation Steps

You carry out installation of Oracle E-Business Suite by running the Rapid Install wizard. This and the preceding and following slides outline the steps involved.

## Standard Installation Steps

### Standard Installation Steps

#### Running the Rapid Install Wizard

- Step 21: Review Setup Portion**
- Step 22: Start the Installation**
- Step 23: Monitor Status Indicators and Prompts**
- Step 24: Review Post-Installation Tests**
- Step 25: Review Components Installed**

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### Standard Installation Steps

You carry out installation of Oracle E-Business Suite by running the Rapid Install wizard. This and the preceding two slides outline the steps involved.

## Step 1: Start the Rapid Install Wizard



### Step 1: Start the Rapid Install Wizard

Start the wizard from the command line by entering `./rapidwiz` at the prompt. The Welcome screen appears.

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. Notice that a new installation contains a fresh Oracle 11g Release 1 database.

This screen is for information only; no decision is required. Click *Next* to continue.

## Step 2: Select a Wizard Operation



### Step 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.

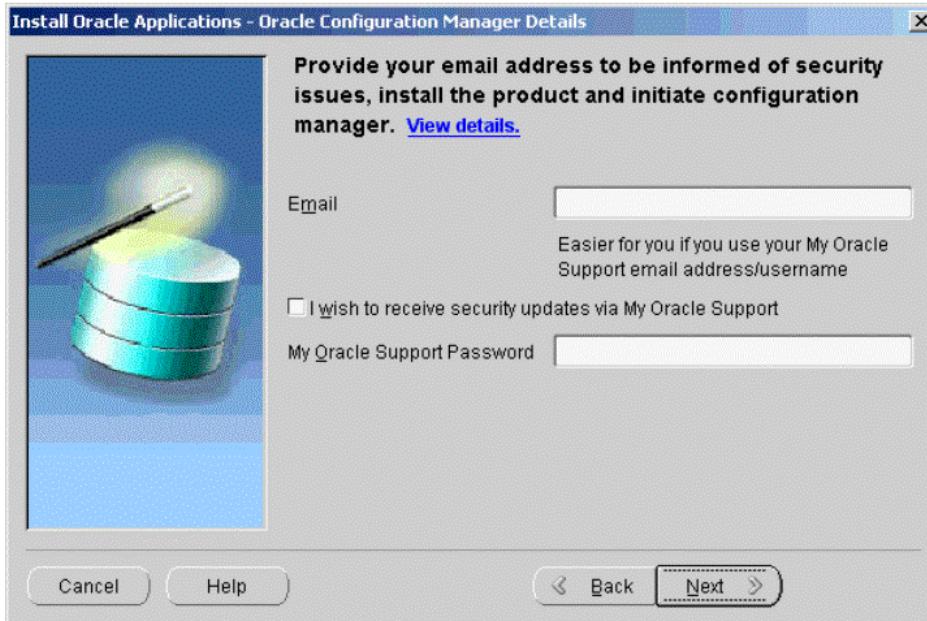
Available actions are as follows:

- Install Oracle Applications Release 12.1.1  
This option installs a new, fully configured system, with either a fresh database or a Vision Demo database. The configuration is derived from the parameters you enter.
  - Use Express Install  
This sub-option installs a fully configured, single-user system, with either a fresh database or Vision Demo database. You supply a few key parameters, such as database type and name. Values for other parameters, such as directories and mount points, are automatically supplied by Rapid Install.
- Upgrade to Oracle Applications Release 12.1.1  
You would choose this option when upgrading a Release 11*i* system to Release 12.1.1.

Select Install Oracle Applications Release 12.1.1, then click *Next* to continue.

## Step 3: Oracle Configuration Manager (Main)

### Step 3: Oracle Configuration Manager (Main)



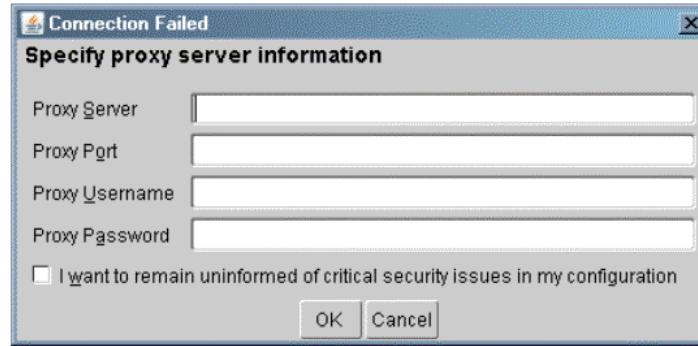
### Step 3: Oracle Configuration Manager (Main)

*Oracle Configuration Manager* (OCM) is a component that facilitates support for your Oracle products. The OCM screen appears as part of a Rapid Install run. Use of Oracle Configuration Manager is optional, but recommended.

A lightweight agent that consumes minimal CPU resources, OCM tracks key Oracle and system statistics of the machine on which it is running, to help reduce the time needed for resolution of support issues. Data collected by OCM is sent securely via HTTPS to Oracle Support, who can thereby maintain an up-to-date view of your Oracle instance.

## Step 3: Oracle Configuration Manager (Proxy)

### Step 3: Oracle Configuration Manager (Proxy)



### Step 3: Oracle Configuration Manager (Proxy)

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

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## Step 4: Configuration Choice

### Step 4: Configuration Choice



### Step 4: Configuration Choice

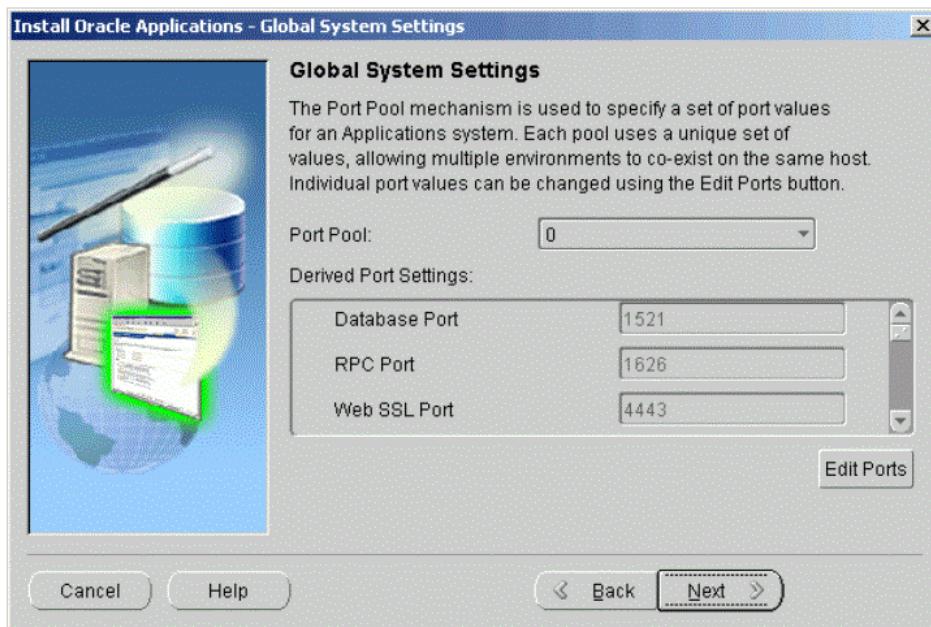
On the Configuration Choice screen, you indicate whether you will be using an existing configuration.

If you choose *Create a new configuration*, Rapid Install saves the configuration parameters you enter on the wizard screens in the Oracle E-Business Suite database, and in a configuration file (conf\_<SID>.txt), which is stored in your system temporary directory until the installation is completed.

If you choose *Load the following saved configuration*, the database connect string field becomes active. For a configuration stored in the database, this field is made up of <hostname>:<SID>:<database port>; for example, appserv2.company.com:VIS:1521 (the host name must include the domain).

Enter the appropriate database connect string (or conf\_<SID>.txt file location, if applicable) to point Rapid Install to a stored configuration whose parameters you wish to use. Typically, you would choose this option when performing a multi-node install, or when restarting Rapid Install after an interruption to the installation process.

## Step 5: Global System Settings



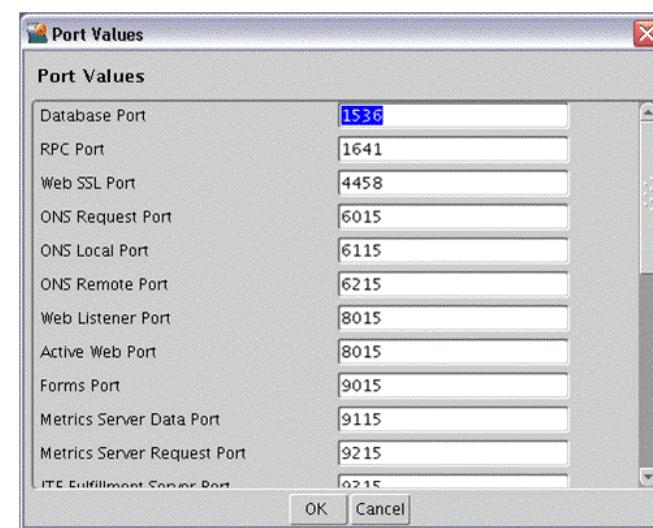
### Step 5: Global System Settings

On the Global System Settings screen, you indicate whether you want to accept the default port values. You can specify a *port pool* setting to enable multiple Oracle E-Business Suite environments to co-exist on the same machine. For example, if you select an increment of 3 from the Port Pool list, the values in the Derived Port Settings will reflect this choice. Use the scroll bar or click Advanced Edit to see the Port Values screen.

The default value of the Port Pool set is zero, but you can customize it by selecting another value from the drop-down list in the Port Pool field. There are 100 port pool selections: if you select an increment of 3, the default values are increased by that value. The Database Port (1521) becomes 1524, the RPC Port (1626) becomes 1629, and so on.

At this point, you can simply accept the values for the chosen Port Pool (and therefore individual ports) by clicking *Next*. This will suffice for many installations. Otherwise, you can click on the *Edit Ports* button to open a screen (shown on the next slide) that allows you to specify the values of any ports you wish.

## Step 5: Global System Settings



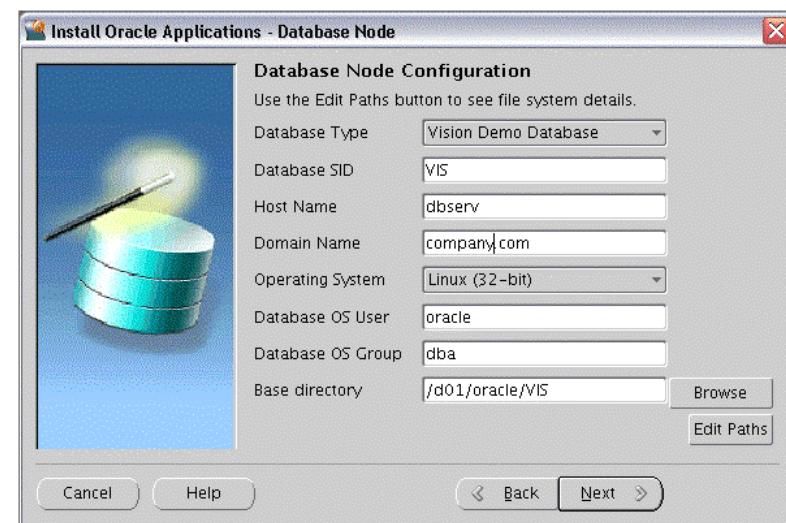
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### Step 5: Global System Settings

This screen allows you to specify *individual* port values to meet particular site-specific requirements, over and above the basic use of the Port Pool mechanism described on the previous slide. For example, you might wish to avoid using a particular port for some reason, perhaps because it will be needed by some other software.

When finished on this screen, click *OK* to return to the Global System Settings screen, and click *Next* on that screen.

## Step 6: Database Node Configuration



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### Step 6: Database Node Configuration

On the Database Node Configuration screen, indicate the kind of database you want to install in the new system, the name you will use to identify it, the machine on which it will run, and that machine's domain name.

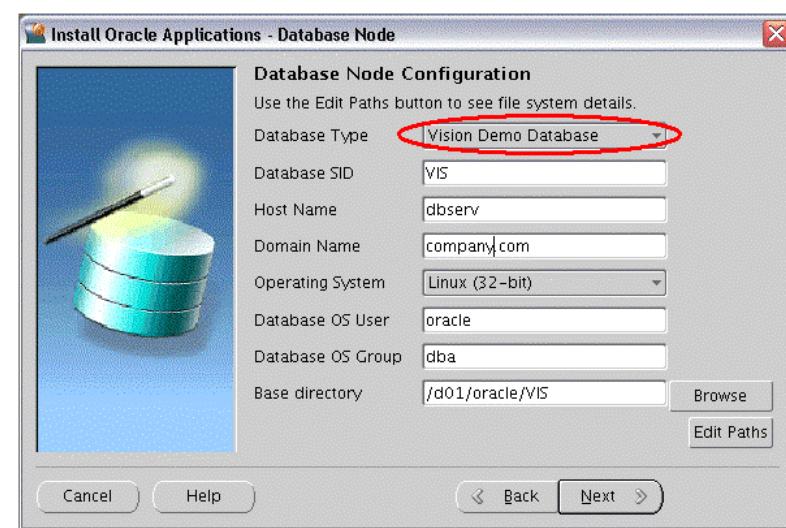
You then need to confirm the operating system shown on the drop-down list is correct, specify the Oracle user's operating system account name and group, and finally specify the base directory under which the installation is to take place.

You can install either a fresh database or a Vision Demo database.

- A *fresh database* is fully configured and ready to be used for a new implementation. This type of database is suitable for any type of system that requires a fresh database, such as a production system or test system. The default name for a production database is PROD, and the default character set is US7ASCII. If you are installing a database for another use, for example as a test system or a backup system, choose the Fresh Database option and enter a database name that reflects its purpose, for example TEST.
- A *Vision Demo* database is used for demonstration or training purposes. It contains a fully configured Oracle E-Business Suite system that has been populated with a set of transactions

for a fictitious company. The Vision Demo database is set up for multiple-organization use, and installed with the UTF8 character set. The default database name is VIS.

## Step 6: Database Node Configuration



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### Step 6: Database Node Configuration

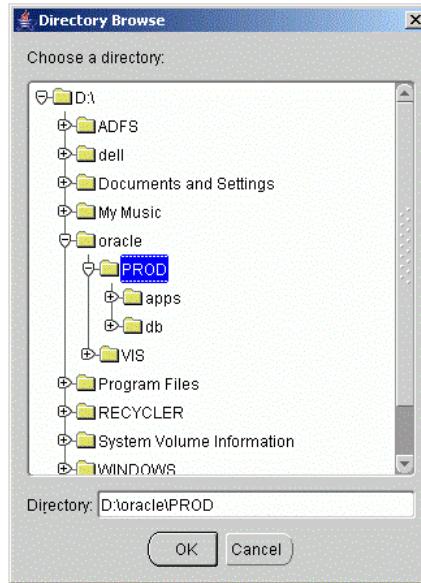
In this example, the *Database Type* drop-down list has been used to select a Vision Demo Database. Accept the default database name (VIS), or type in another name (alphanumeric, not to exceed 8 characters in length, with no spaces) for the local instance. This name is often referred to as the database SID.

The *Database OS User* is the account that will own the database technology stack and file system. Enter the name of the Database OS Group (dba). The Database OS User may belong to other groups, but it *must* belong to this group.

The *Base directory* defaults to a sample directory name, using the operating system syntax for the machine where you started the Rapid Install wizard. This directory is the top-level directory that Rapid Install uses to derive the mount. This is shown on the next slide.

## Step 7: Specify Database Directory

### Step 7: Specify Database Directory



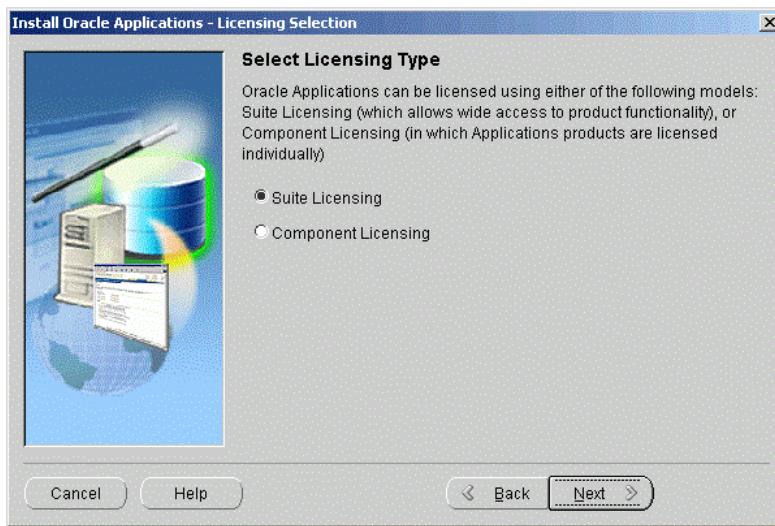
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### Step 7: Specify Database Directory

On this screen, click on a suitable folder, or type a path in the Directory field. Click *OK* to confirm your choice and return to the Database Node Configuration screen, or click *Cancel* to return without making a selection.

After returning to the parent screen, then click *Next* to continue with the install.

## Step 8: Select Licensing Type



### Step 8: Select Licensing Type

When installing a fresh database (not a Vision demo database), the wizard prompts you to indicate the type of licensing agreement you have purchased from Oracle. It then presents the appropriate licensing screen where you can register your products as active (note that completing this screen does not constitute a licensing agreement).

Rapid Install installs all products, including shared and dependent products, regardless of their licensed status. However, you must register products you have licensed so that they are flagged in the system as active. An active flag marks products for inclusion in patching and other tasks that you will perform to update and maintain your system after the initial installation.

You can register products using either the *Suite License Model* or the *Component License Model*. Complete whichever one of these matches your licensing agreement.

If you choose the Suite licensing option on the Suite Selection screen, the Licensing Page for that option appears, as shown on the next slide.

## Step 9: License Additional Products



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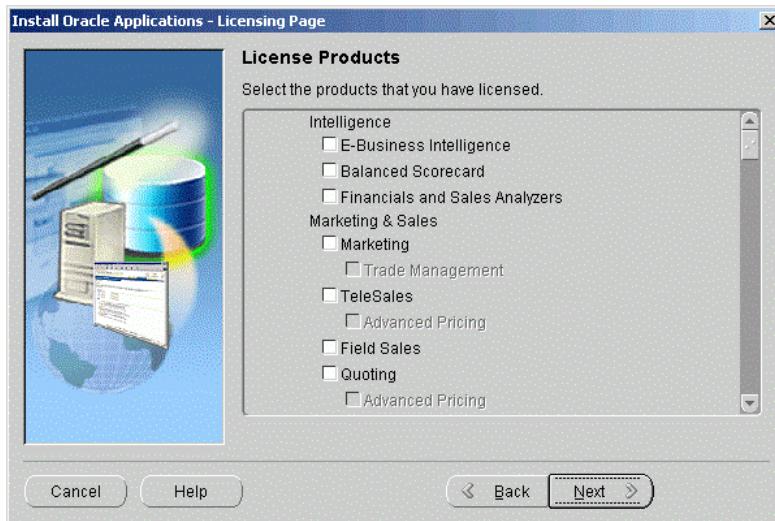
### Step 9: License Additional Products

The Suite Licensing Model allows wide access to Oracle E-Business Suite products. When you choose it, Rapid Install will automatically register all the products that are included in the Oracle E-Business Suite price bundle. Those that are checked and grayed are then licensed automatically as a part of the installation. Those that are not checked and grayed must be registered separately as additional products: they are not part of the price bundle. If you have licensed any additional products and want to register them, place a check mark in the relevant boxes.

If you clicked the Component licensing option on the Suite Selection screen, the Licensing Page for that option appears. This is shown on the next slide.

## Step 10: License Products

### Step 10: License Products



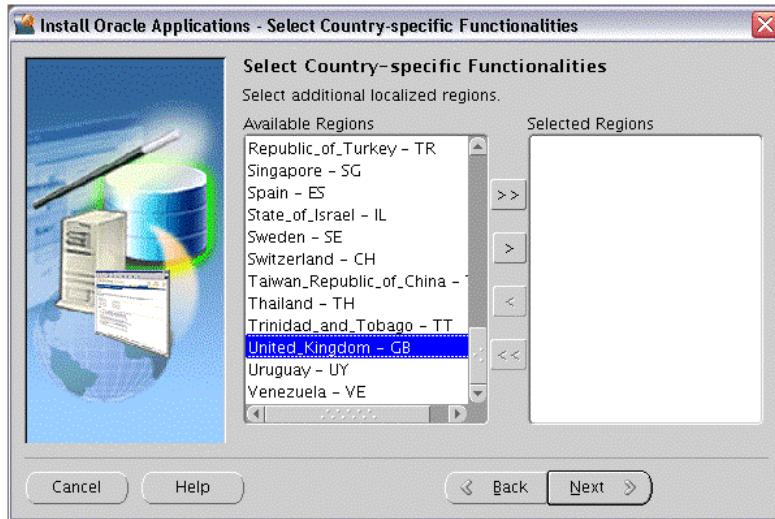
### Step 10: License Products

Choose this option if your licensing agreement is for individual Oracle E-Business Suite component products. These products are licensed based on the number of authorized users or on the number of business transactions processed. All individual products are listed on this screen. Products that are grayed out cannot be selected unless the "parent" component is selected.

You can register additional products after the initial installation, by using the License Manager component of Oracle Applications Manager.

## Step 11: Select Country-Specific Functionality

### Step 11: Select Country-Specific Functionality



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### Step 11: Select Country-Specific Functionality

Some systems require the country-specific functionality of a localized Oracle E-Business Suite product. For example, if your company operates in Canada, products such as Human Resources require additional features to accommodate the Canadian labor laws and codes that differ from those in the United States. You register the name of the region associated with the localized product on the Select Country-specific Functionalities screen.

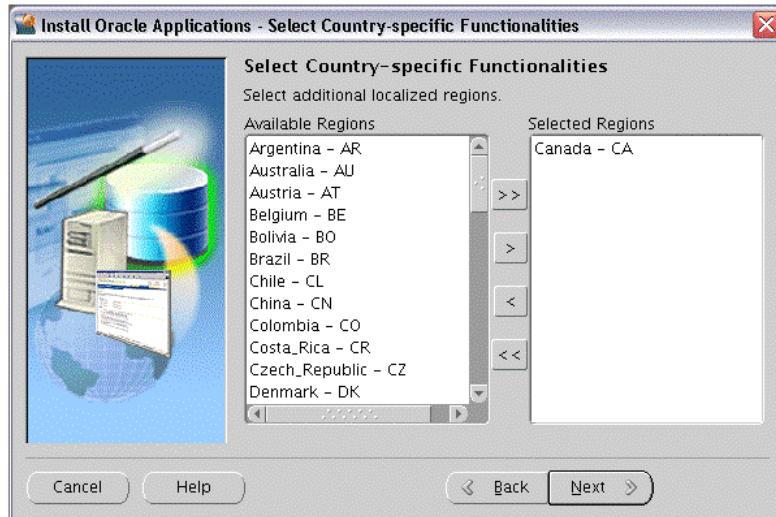
If your company operates only in the United States, you can bypass this screen. If you begin doing business in another country at a later date, you can use License Manager to register the associated region at any time after the original installation or upgrade.

All the country-specific functionalities that Oracle supports are listed on this screen, arranged alphabetically. Double-click a region in the Available Regions box to move it into the Selected Regions box or highlight it and click the right arrow (>). To deselect a region, highlight it and double-click or click the left arrow (<) to remove it from the Selected Regions box.

For example, if you select Canada, the screen would look as shown on the following slide.

## Step 11: Select Country-Specific Functionality

### Step 11: Select Country-Specific Functionality



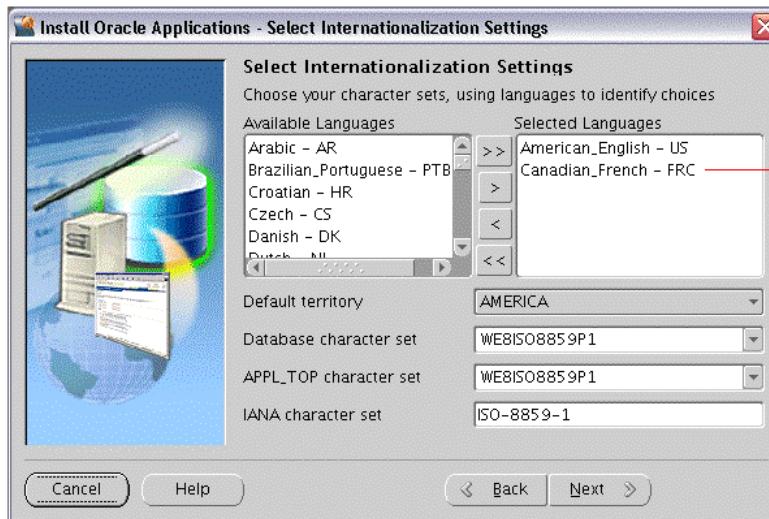
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### Step 11: Select Country-Specific Functionality

As well as using the single arrows to select or deselect individual countries, you can use the double arrows to select or deselect *all* the countries.

## Step 12: Select Internationalization Settings

### Step 12: Select Internationalization Settings



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### Step 12: Select Internationalization Settings

American English is the only language installed in your system by default: you cannot remove it from the Selected Languages box. However, Oracle E-Business Suite also supports numerous other languages. The languages you select help determine the available options for the other NLS-related configuration parameters (such as territory and character set) that your system requires and can support.

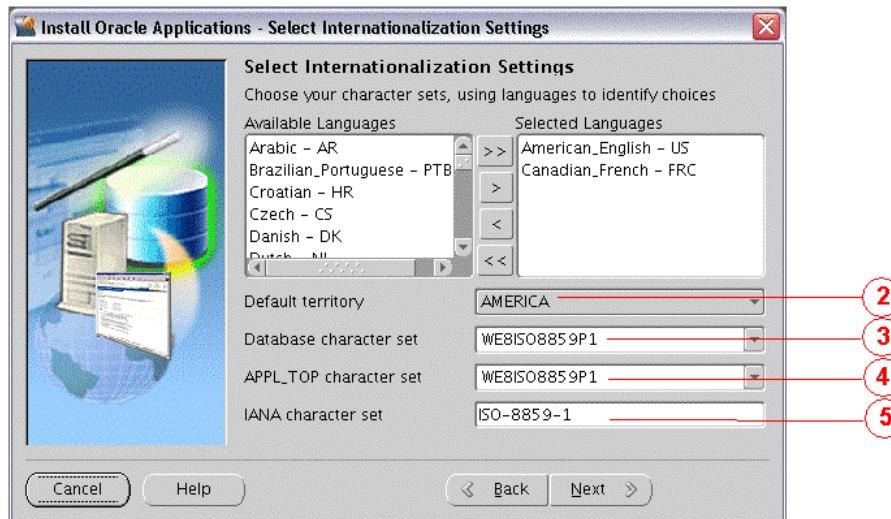
You can double-click a language in the Available Languages box to move it into the Selected Languages box, or highlight it and click the right arrow (>). Conversely, you can highlight a language in the Selected Languages box and click the left arrow (<) to remove it. Point 1 on the slide shows Canadian French selected as an additional language. To select or deselect all languages in a single action, you can use the double arrows, >> or <<.

After the initial Release 12.1.1 installation is complete, additional languages can be installed and then activated using License Manager (part of Oracle Applications Manager).

The NLS language and territory settings are stored as profile options in the database. They are configured at the site level when you run Rapid Install. The base language is used for the default language setting and the default territory is used for the territory profile option. Users inherit these values the first time they log on to Oracle E-Business Suite.

## Step 12: Select Internationalization Settings

### Step 12: Select Internationalization Settings



### Step 12: Select Internationalization Settings

The base language defaults to American English. If you choose additional languages on the Select Additional Languages screen, they appear in the Selected Languages box.

Rapid Install does not set RDBMS date and numeric formats during installation. It uses default formats based on the territory profile setting (as derived from NLS\_LANG). The Default Territory is AMERICA at the site level (Point 2 on the slide).

The "Database character set" (Point 3 on the slide) and the "APPL\_TOP character set" (Point 4) drop-down menus initially show US7ASCII as the default character set. Other compatible character sets are listed as well.

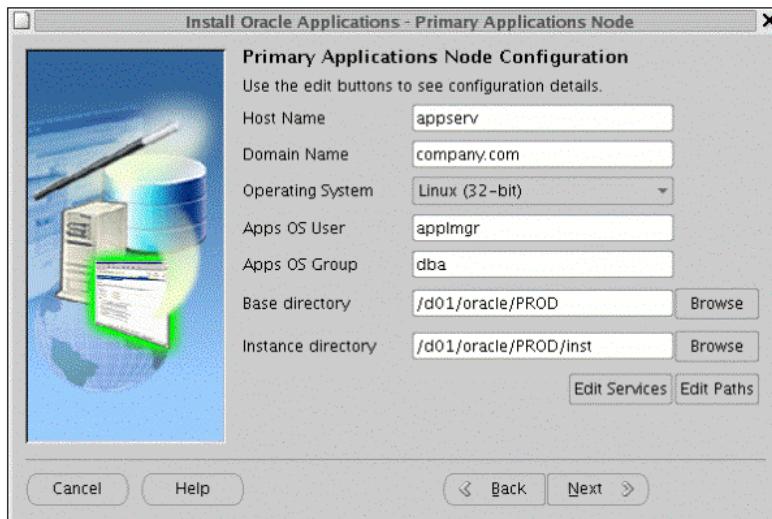
UTF8 is the default character set for the Vision Demo database and the APPL\_TOP. You cannot convert either of these character sets. Because in this example you selected Canadian French as an additional language, the character set choices have changed, and now include only those that are compatible with both American English and Canadian French.

If you want to change the character set in either the database or the APPL\_TOP, select a new value from the drop-down list. Any languages you plan to install after Rapid Install is complete must be compatible with the character set of your Oracle E-Business Suite system.

The IANA character set (Point 5) is the standard character set name used by the Web services.

## Step 13: Primary Applications Node Configuration (UNIX)

### Step 13: Primary Applications Node Configuration (UNIX)



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### Step 13: Primary Applications Node Configuration (UNIX)

You have specified the top-level directory for the RDBMS. Now you must specify top-level directory and subdirectories associated with the Applications nodes.

The default sample directories use the syntax of the operating system where you started Rapid Install. In addition, some of the fields are operating system-specific. The above example shows this screen for a Linux system, where you need to complete the information for Apps OS User (the account that owns the Applications tier file system and technology stack) and Apps OS Group (the group to which the Apps OS User belongs). Accept the defaults, or enter new values.

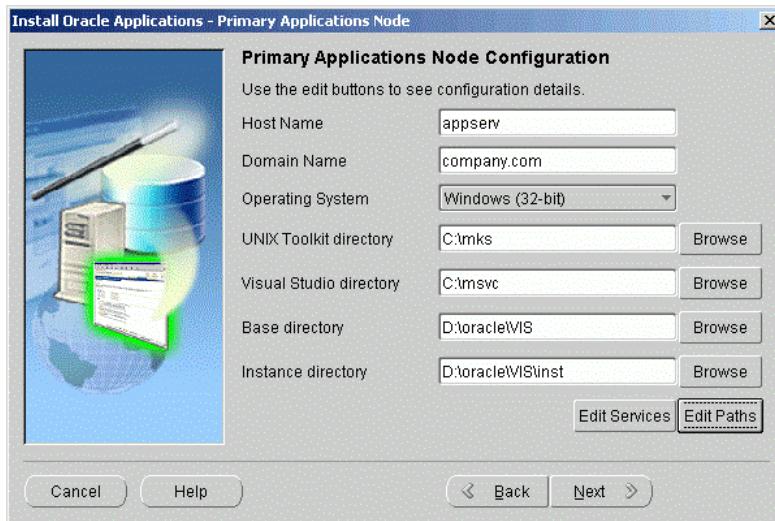
The *Base directory* is the top-level directory that Rapid Install will use to derive the mount points for the Applications nodes. You can accept the default or enter a new value.

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.

Clicking the *Edit Services* button enables you to choose which services are enabled on this Applications node.

## Step 13: Primary Applications Node Configuration (Windows)

### Step 13: Primary Applications Node Configuration (Windows)



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### Step 13: Primary Applications Node Configuration (Windows)

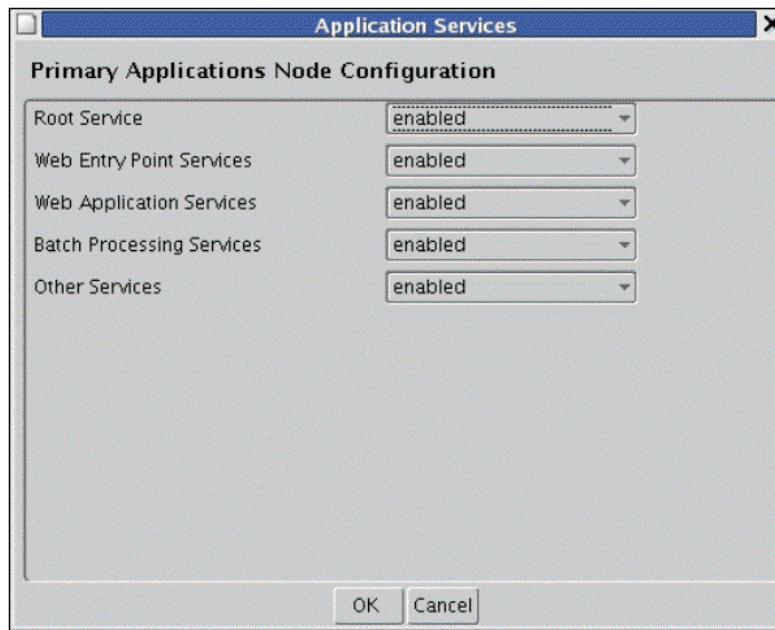
The UNIX Toolkit directory and Visual Studio directories are specific to Windows. Enter the appropriate values in these fields, or accept the defaults if applicable.

The *Base directory* is the top-level directory that Rapid Install will use to derive the mount points for the Applications nodes. You can accept the default or enter a new value.

Clicking the *Edit Services* button enables you to choose which services are enabled on this Applications node.

## Step 14: Specify Primary Applications Node Services

### Step 14: Specify Primary Applications Node Services



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### Step 14: Specify Primary Applications Node Services

The application node services define the set of processes that will be started on each Applications node. In Release 12, all the APPL\_TOPs on a multi-node system contain the same files. This is a change from Release 11*i*, where a role would have files installed according to the function it was to serve. In Release 12, there is no concept of a “Forms node”, “Web node”, and so on, as there is no association between installed files and the services that can be run on that machine. The node’s role is defined by the activated services instead.

The services are divided into the following categories, which differs significantly from the Release 11*i* model, and also uses new terminology:

- Root Service
- Web Entry Point Services
- Web Application Services
- Batch Processing Services
- Other Service Group

At present, Root Service, Web Entry Point Services, and Web Application Services must all be installed on the same node.

## Step 14: Specify Primary Applications Node Services

### Step 14: Specify Primary Applications Node Services

This Service Group:	Supports:
Root Service	• Oracle Process Manager (OPMN)
Web Entry Point Services	• HTTP Server

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### Step 14: Specify Primary Applications Node Services

Applications nodes should have services enabled as follows:

- **For Web and Forms services:** Root Service, Web Entry Point Services, Web Application Services, and Other Service Group
- **For Concurrent Processing services:** Batch Processing Services

## Step 14: Specify Primary Applications Node Services

### Step 14: Specify Primary Applications Node Services

This Service Group:	Supports:
Web Application Services	<ul style="list-style-type: none"><li>OACORE OC4J</li><li>Forms OC4J</li><li>OAFM OC4J</li></ul>
Batch Processing Services	<ul style="list-style-type: none"><li>Applications TNS Listener</li><li>Concurrent Managers</li><li>Fulfillment Server</li></ul>
Other Service Group	<ul style="list-style-type: none"><li>Oracle Forms Services</li><li>Oracle MWA Service</li></ul>

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### Step 14: Specify Primary Applications Node Services

As an example, consider a two-node installation where you wish to deploy the database and Concurrent Processing services on Server A, and Web and Forms services on Server B.

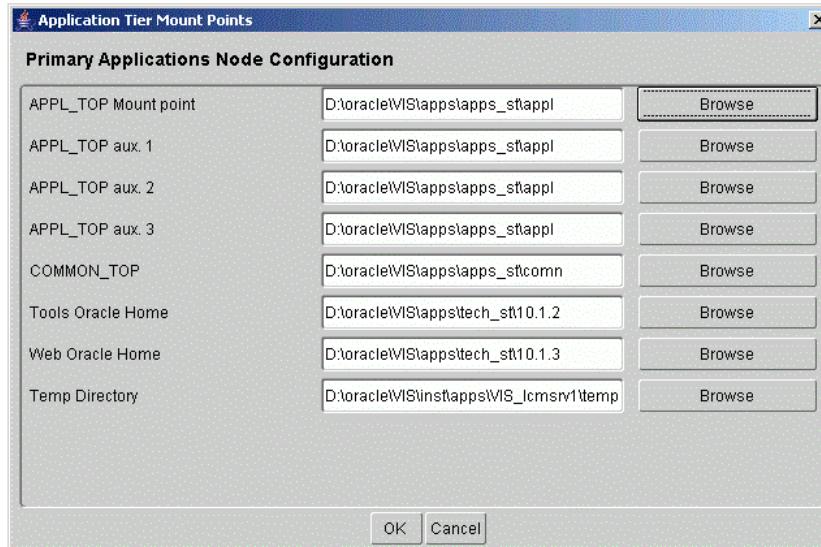
- On **Server A**, you would select Batch Processing Services.
- On **Server B**, you would select Root Service, Web Entry Point Services, Web Application Services, and Other Service Group.

In terms of ORACLE\_HOME creation, the result will be that:

- Server A** has an ORACLE\_HOME for the Oracle 11g Release 1 database, an ORACLE\_HOME for Application Server 10.1.2, and an ORACLE\_HOME for Application Server 10.1.3.
- Server B** has an ORACLE\_HOME for Application Server 10.1.2, and an ORACLE\_HOME for Application Server 10.1.3.

## Step 15: Specify Primary Applications Node Directories

### Step 15: Specify Primary Applications Node Directories



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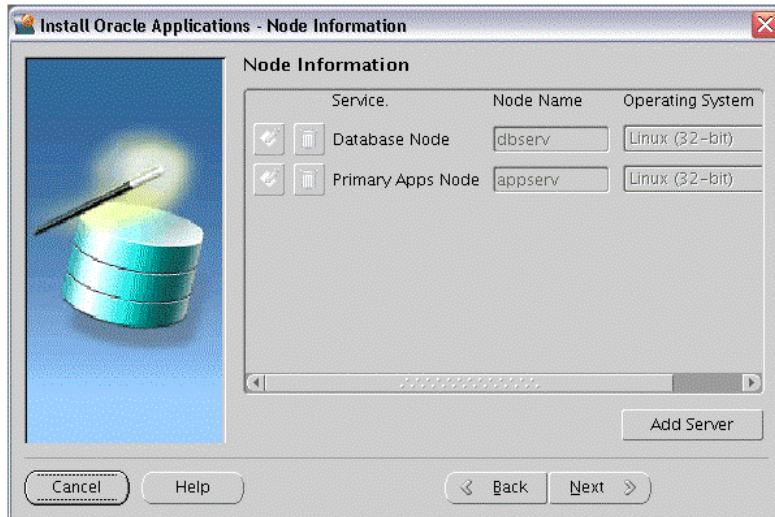
### Step 15: Specify Primary Applications Node Directories

You can use the *Browse* button to navigate to a new directory path for each category, and double-click the path to select it.

After specifying suitable values to suit your site, click *Next* to continue.

## Step 16: Review Information for All Nodes

### Step 16: Review Information for All Nodes



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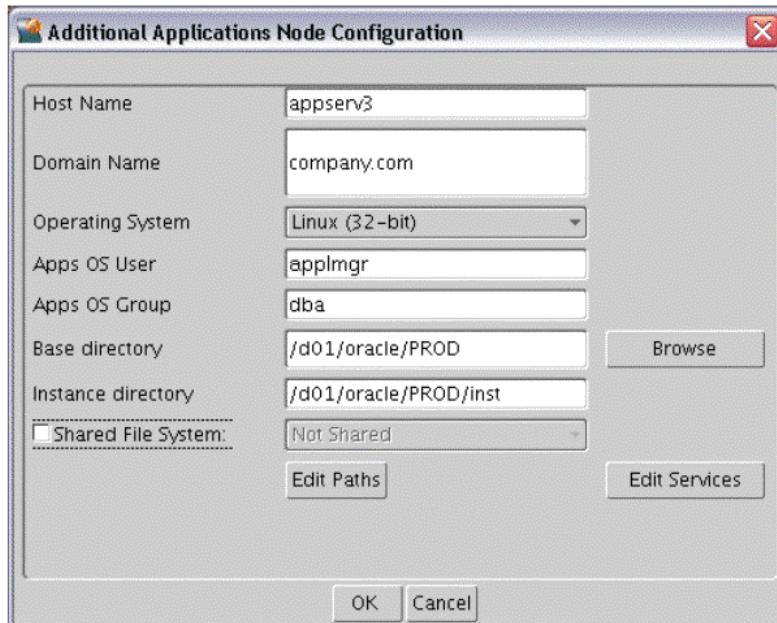
### Step 16: Review Information for All Nodes

At this stage, you have specified details for the database node and the primary Applications node. For a basic environment, you may only want a single Applications node. In such a case you would simply click *Next* to bypass the steps shown on the next two slides, which describe the addition of further Applications nodes.

If you want to specify details for additional Applications nodes, as will typically be the case, click on *Add Server* and proceed to the step shown on the next slide.

## Step 17: Configure Additional Applications Node

### Step 17: Configure Additional Applications Node



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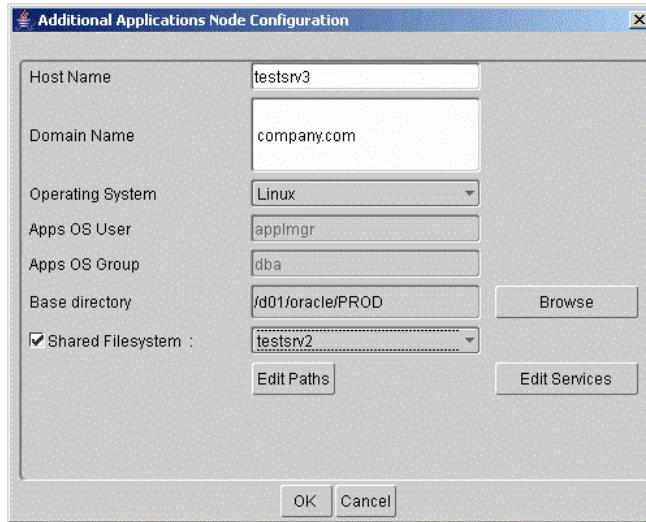
### Step 17: Configure Additional Applications Node

In this optional step, you specify details of an additional Applications node. You can either accept the defaults and suggested values, or edit them as needed. The buttons on this screen fulfill the same roles as their counterparts on the Primary Applications Node screen. The *Browse* button allows you to search the file system for a suitable location to use as the Base directory. The *Edit Paths* button opens a window where you can specify a new value for one or more of the Applications node paths. Clicking the *Edit Services* button enables you to choose which services are enabled on this Applications node.

An additional feature on this screen is the *Shared File System* checkbox and associated drop-down list. By checking the box and selecting a node from the existing Applications nodes that appear on the drop-down list, you enable the node being added on this screen to share the Applications tier file system with the node selected from the drop-down list.

## Step 18: Configure Shared Applications Node

### Step 18: Configure Shared Applications Node



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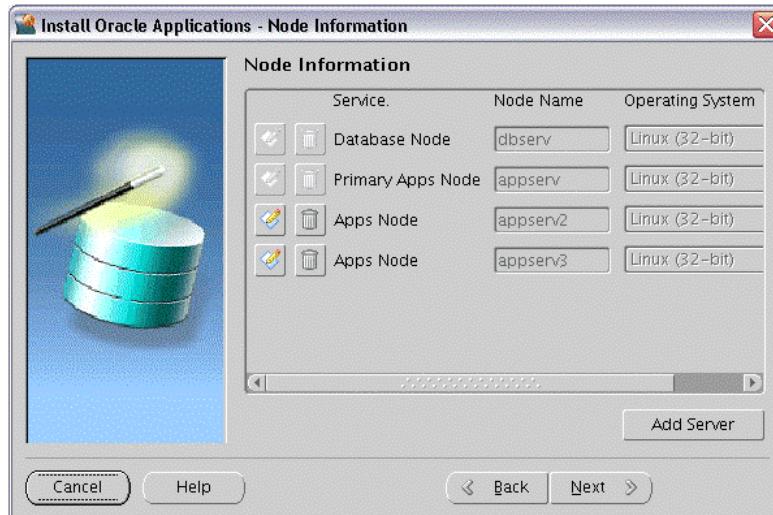
### Step 18: Configure Shared Applications Node

In this optional step, the slide shows the addition of a further Applications node, testsrv3, which shares its file system with an existing Applications node, testsrv2.

When you have finished providing details for the first additional Applications node, click *OK* to return to the Primary Applications Node screen. If you want to add further Applications nodes, click on *Add Server* again (shown in Step 16) and repeat the process.

## Step 19: Review Additional Applications Nodes

### Step 19: Review Additional Applications Nodes



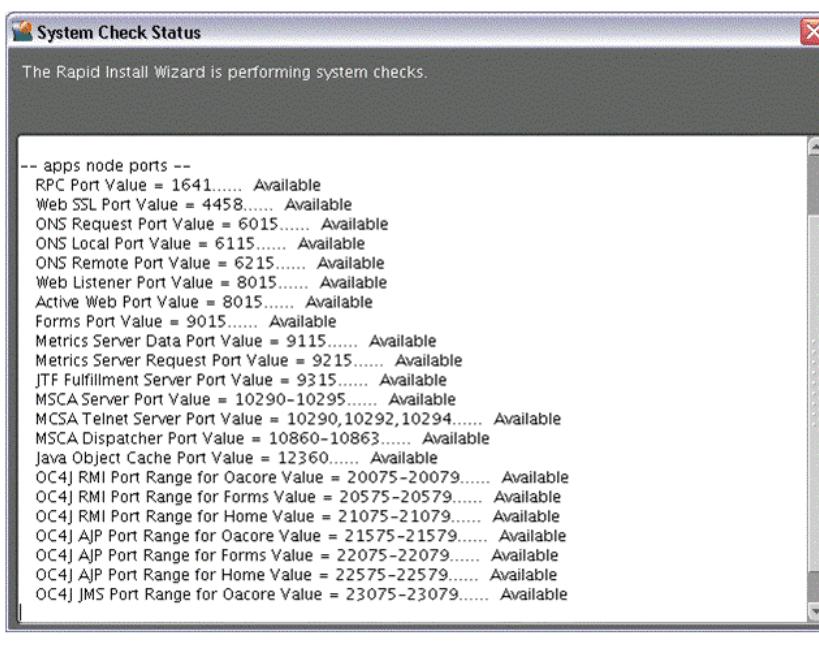
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### Step 19: Review Additional Applications Nodes

This slide shows the result of adding a total of two further Applications nodes, over and above the Primary Applications node.

Two additional actions are available for the new Applications nodes: the icons to their left enable you to edit their details and delete them, respectively. If you click on the wastebasket icon to delete a node, a popup window appears to request confirmation. You cannot delete either the Database Node or the Primary Applications node.

## Step 20: Review Pre-Install Tests

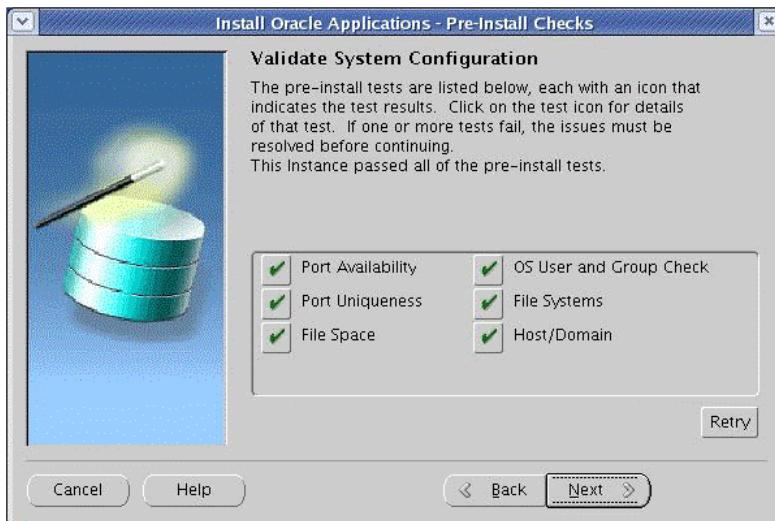


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## Step 20: Review Pre-Install Tests

The System Check Status screen lists the results of checking port availability.

## Step 20: Review Pre-Install Tests



### Step 20: Review Pre-Install Tests

Rapid Install now performs a series of system tests to validate the configuration described in the configuration file. The Pre-Install Checks screen lists the tests that were performed, marking each one with an indication of whether it succeeded or failed.

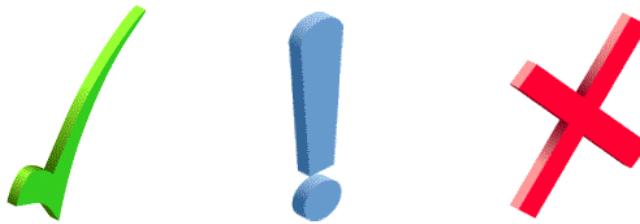
## Step 20: Review Pre-Install Tests

### Step 20: Review Pre-Install Tests

**The results of each test are displayed using check icons**

**There are three result types:**

- **Check (tick) mark:** The test succeeded
- **Exclamation mark (!):** The configuration requires review
- **An x mark:** Issue must be resolved before you continue



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### Step 20: Review Pre-Install Tests

The results of each test are labeled with icons. There are three possible results of a test:

- **Check (tick) mark**

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

- **Exclamation mark (!)**

The configuration requires review. Click the ! to get information about the system test review. Click Yes to continue, or No if you are going to resolve the issues. Rapid Install displays an alert 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 altering the values provided on one of the wizard screens, 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.

The following slide discusses the tests in more detail.

## Step 20 Review Pre-Install Tests

### Step 20 Review Pre-Install Tests

**The parameters that Rapid Install validates include:**

- **Port Availability**
- **OS User and Group**
- **Port Uniqueness**
- **File Systems**
- **File Space**
- **Host/Domain**

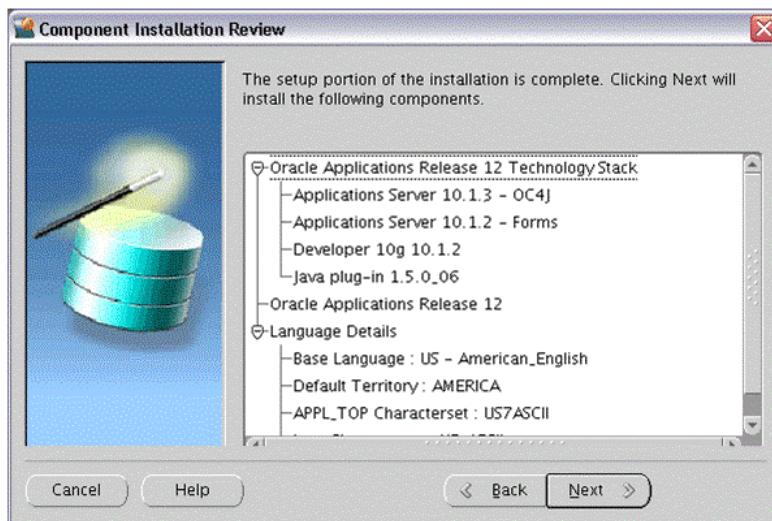
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### Step 20: Review Pre-Install Tests

The parameters that Rapid Install validates include:

- **Port Availability** validates the ports you selected are available for use
- **OS User and Group** indicates whether the OS user account and group exist, and the user account is a member of the group
- **Port Uniqueness** validates that there are no duplicate defined ports for server processes
- **File System** validates that file system mount points exist and have correct privileges
- **File Space** validates that file system mount points have sufficient free space
- **Host/Domain** validates the host and domain names

## Step 21: Review Setup Portion



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### Step 21: Review Setup Portion

On the Component Installation Review screen, Rapid Install lists the components it will install, based on the system parameters you entered in the wizard. Click *Next*.

## Step 22: Start the Installation

### Step 22: Start the Installation



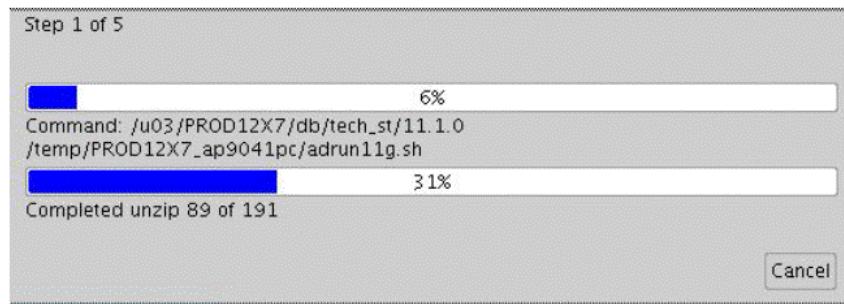
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### Step 22: Start the Installation

Click *Yes* to commence the installation.

## Step 23: Monitor Status Indicators and Prompts

### Step 23: Monitor Status Indicators and Prompts



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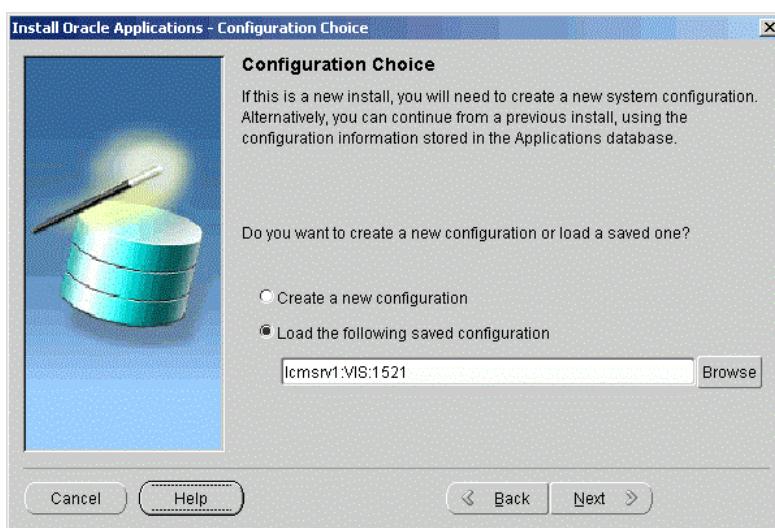
### Step 23: Monitor Status Indicators and Prompts

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.

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

## Restart the Installation (If Required)



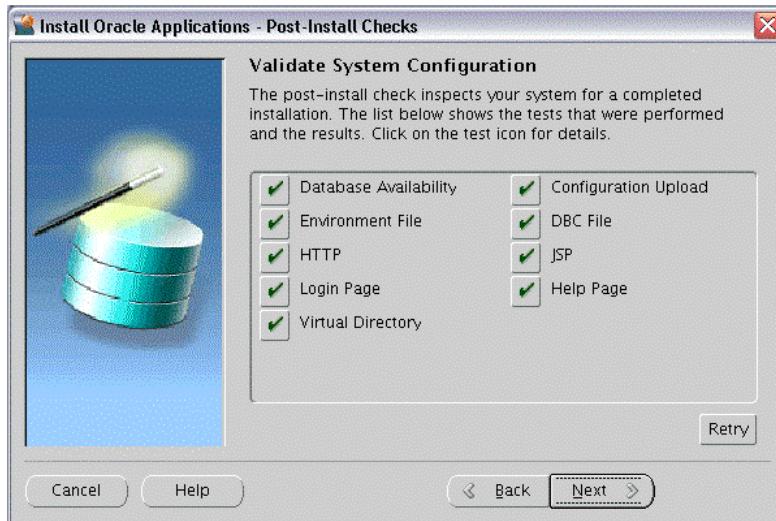
### Restart the Installation (If Required)

If the installation process terminates abnormally before completion, correct any problems, then:

1. Re-run the Rapid Install wizard, this time adding the `-restart` option to the `rapidwiz` command. When the initial Rapid Install choice screen appears, select the same operation you chose originally and click *Next*.
2. As Rapid Install has stored the configuration in the Oracle E-Business Suite database or `conf_<SID>.txt` file, choose "Load the following saved configuration". This avoids having to complete the wizard screens again. Accept the configuration details and click *Next*.
3. Observe that Rapid Install automatically starts at the point where it previously stopped. Previously completed actions start and complete rapidly, as the wizard determines that they have already been carried out successfully.
4. Ignore any validation warnings (for example, port already in use) if your database was already installed before Rapid Install was restarted.

## Step 24: Review Post-Installation Tests

### Step 24: Review Post-Installation Tests



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#### Step 24: Review Post-installation Tests

After the installation is complete, Rapid Install validates the installed system configuration.

Post-installation tests include the following:

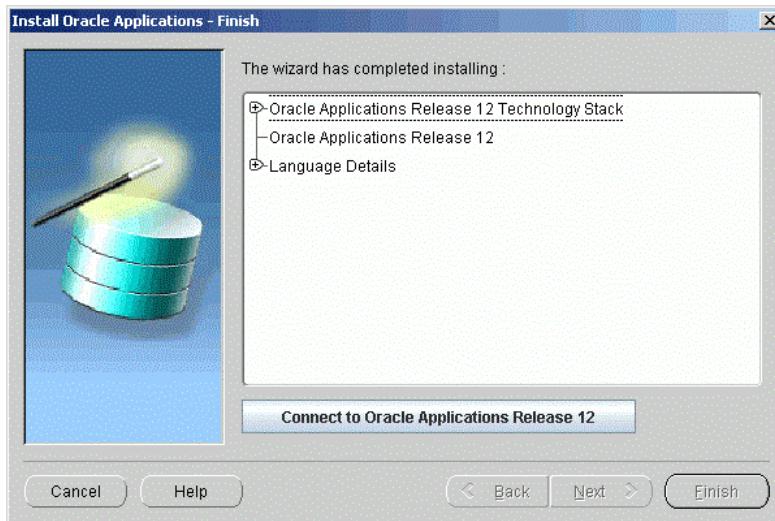
- |                         |  |
|-------------------------|--|
| • Database Availability | Database is running and allows users to log on       |
| • Environment File      | Environment file has been delivered                  |
| • HTTP                  | HTTP listener is working                             |
| • Login Page            | Login Page is working                                |
| • Virtual Directory     | Web Virtual directories are valid                    |
| • Configuration Upload  | Configuration file has been uploaded to the database |
| • DBC File              | DBC file has been created                            |
| • JSP                   | JavaServer pages are working                         |

If an exclamation mark (!) or x icon is shown for any test, click on it to see details of the problem. For any tests that have failed, refer to the Rapid Install log files to determine the reason. After fixing any errors, click *Retry* to perform the post-install validation again.

Click *Next* when no errors are reported, as shown on the slide.

## Step 25: Connect to Oracle Applications

### Step 25: Connect to Oracle Applications



### Step 25: Connect to Oracle Applications

On the Finish screen, Rapid Install shows you the components that it has installed.

If you wish to review the Post-install Checks screen, click *Back*. Otherwise, you can log in to Oracle Applications by clicking *Connect to Oracle Applications Release 12*, or exit the Rapid Install session by clicking *Finish*.

## Overview of Express Installation

### Overview of Express Installation

- An Express installation sets up a fully configured single-user/single-machine system with either a fresh database or a Vision Demo database
- You specify basic configuration parameters, such as database type and name, top-level installation directory, and port increments
  - The remaining directories and mount points are supplied by Rapid Install using default values
- This type of installation contains a default set of core Oracle E-Business Suite products
  - It uses the US7ASCII character set (for a fresh database) and the UTF8 character set for a (Vision Demo install)

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### Overview of Express Installation

An *Express installation* sets up a fully configured single-user/single-machine system with either a fresh database or Vision Demo database. You specify basic configuration parameters, such as database type and name, top-level installation directory, and port increments. The remaining directories and mount points are supplied by Rapid Install using default values.

This type of installation contains (by default) a set of core Oracle E-Business Suite products. It also contains the US7ASCII character set (for a fresh install) and the UTF8 character set (for a Vision Demo install), in both the database and the APPL\_TOP.

You can easily register additional products (according to your Oracle licensing agreement) after the installation is complete, by using License Manager.

## Express Installation Steps

### Express Installation Steps

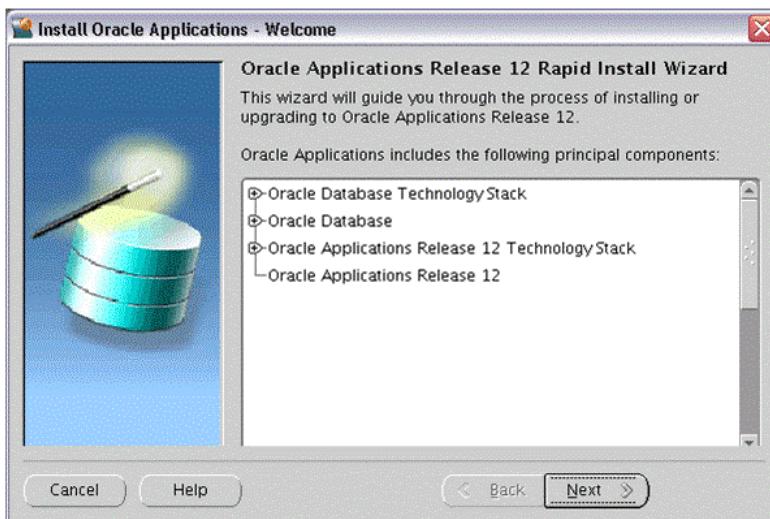
- **Step 1: Start Rapid Install Wizard**
- **Step 2: Select Express Installation**
- **Step 3: Oracle Configuration Manager**
- **Step 4: Configuration Choices**
- **Step 5: Review Pre-install Tests**
- **Step 6: Perform the Installation**

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### Express Installation Steps

The key difference between an Express installation and a standard installation is that with the Express type, default values are supplied for most parameters.

## Step 1: Start Rapid Install Wizard



### Step 1: Start Rapid Install Wizard

Start the wizard from the command line by entering `./rapidwiz` at the prompt. The Welcome screen appears.

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. Notice that a new installation contains a fresh Oracle 11g Release 1 database.

This screen is for information only; no decision is required. Click *Next* to continue.

## Step 2: Select Express installation

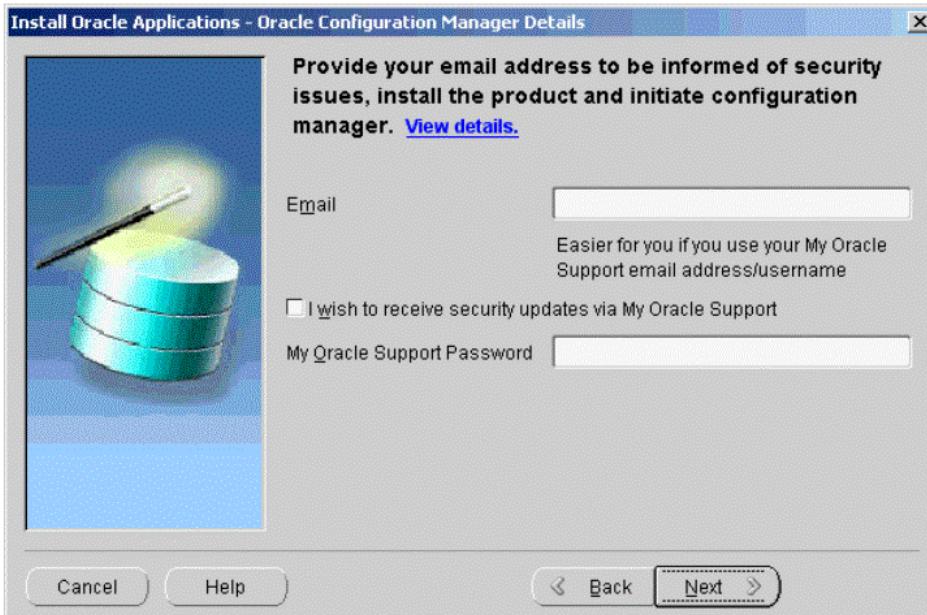


### Step 2: Select Express installation

Start Rapid Install. On the Select Wizard Operation screen, click the *Install Oracle Applications Release 12* radio button, and also check the *Use Express Configuration* box.

## Step 3: Oracle Configuration Manager (Main)

### Step 3: Oracle Configuration Manager (Main)



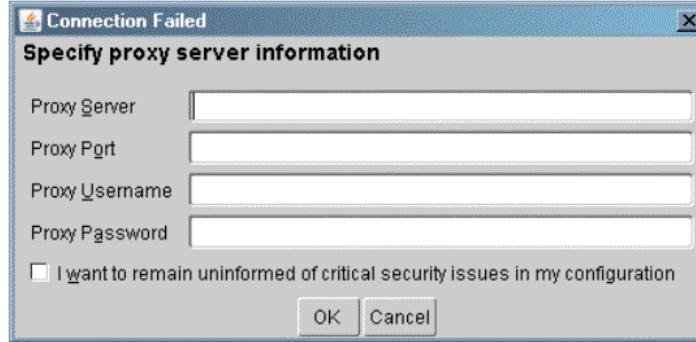
### Step 3: Oracle Configuration Manager (Main)

*Oracle Configuration Manager* (OCM) is a component that facilitates support for your Oracle products. The OCM screen appears as part of a Rapid Install run. Use of Oracle Configuration Manager is optional, but recommended.

A lightweight agent that consumes minimal CPU resources, OCM tracks key Oracle and system statistics of the machine on which it is running, to help reduce the time needed for resolution of support issues. Data collected by OCM is sent securely via HTTPS to Oracle Support, who can thereby maintain an up-to-date view of your Oracle instance.

## Step 3: Oracle Configuration Manager (Proxy)

### Step 3: Oracle Configuration Manager (Proxy)

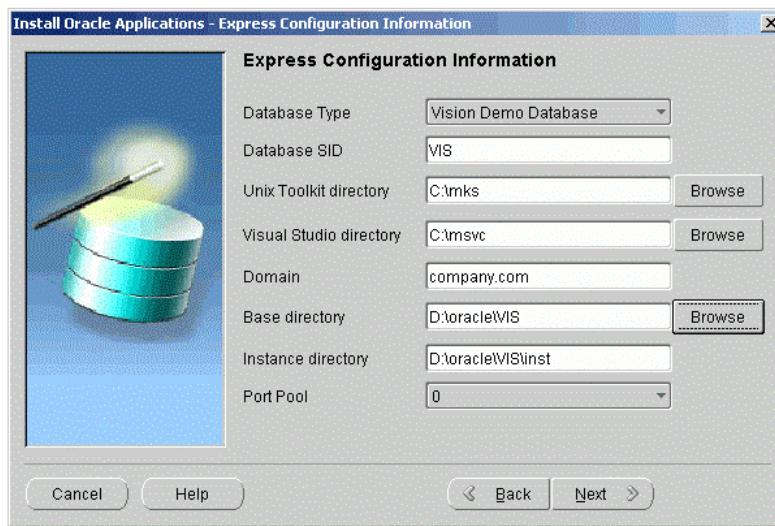


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### Step 3: Oracle Configuration Manager (Proxy)

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

## Step 4: Configuration Choices



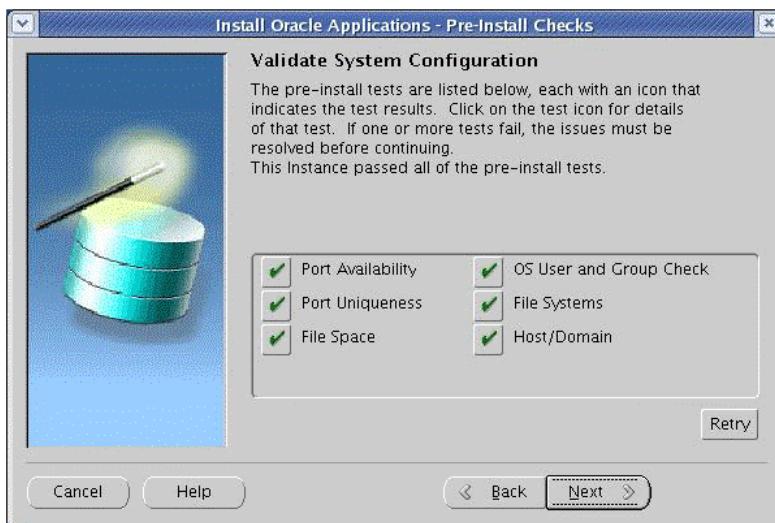
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### Step 4: Configuration Choices

The Express Configuration Information screen prompts for basic configuration values.

- In the Database Type field, use the drop-down list to choose either a Vision Demo database or a fresh database, and then either accept VIS or enter another name in the Database SID field.
- On Windows (as shown in the example on the slide), enter the path to the UNIX Toolkit directory and Visual Studio directory, or click *Browse* and navigate to the desired path for each of these.
- On UNIX systems, set the DISPLAY environment variable to an active and authorized display.
- Enter a valid domain name. This value, when combined with a host (machine) name, must produce a fully qualified domain name. For example, a host name of apps1 and domain name of company.com make up an FQDN of apps1.company.com.
- In the Base Directory field, enter the top-level directory path you want Rapid Install to use to create the derived mount points for the database node and all Applications nodes. Alternatively, click *Browse* and navigate to the desired path.
- Select a Port Pool, or accept the default.

## Step 5: Review Pre-Install Tests

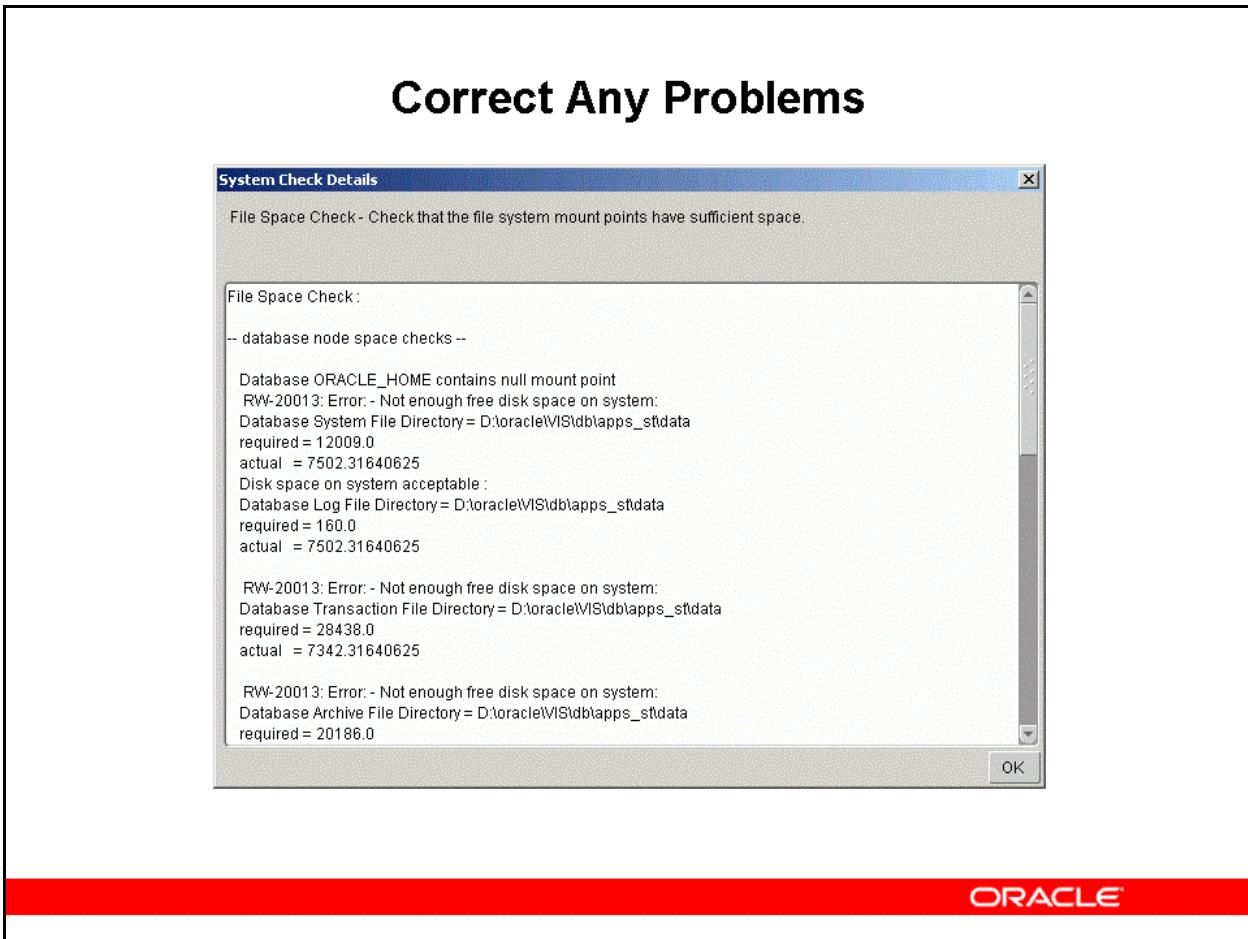


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### Step 5: Review Pre-Install Tests

Rapid Install performs a series of system tests to validate the configuration described in the configuration file. The Pre-Install Checks screen lists the tests that were performed, marking each one with an indication of whether it succeeded or failed.

## Correct Any Problems

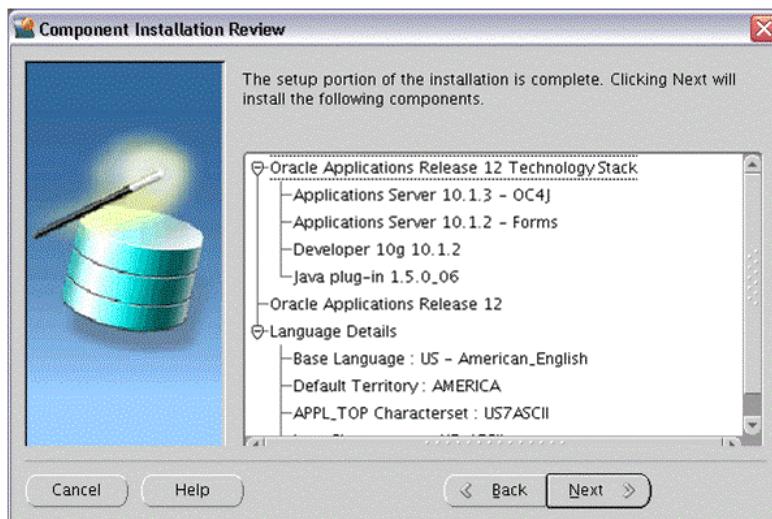


## Correct Any Problems

As described in the earlier section on standard (non-Express) installation, you must correct any problems highlighted by the pre-install tests. If an exclamation mark (!) or x icon is shown for any test, click on it to see details of the problem. For any tests that have failed, refer to the Rapid Install log files to determine the reason. After fixing any errors, click *Retry* to perform the post-install validation again.

The screen on the slide is an example of what you might see if you click on an exclamation mark beside File Space Check.

## Step 6: Perform the Installation



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## Step 6: Perform the Installation

The remainder of an Express Install proceeds in the same as a standard install.

## Module Summary

### Module Summary

In this module, you should have learned how to:

- Outline the steps involved in performing a standard installation
- Perform a standard installation using Rapid Install
- Perform an Express installation

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## Module Discussion

### Module Discussion

- What are the two database types you choose between during an installation, and what type of role is each suited to?
- Describe the difference between Suite Licensing and Component Licensing

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# **Finishing Your Installation**

## **Chapter 4**



## Finishing Your Installation

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### Finishing Your Installation

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- List required post-installation tasks
- Describe the client software configuration process
- List installation-specific post-installation tasks

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## Objectives

Just as the preliminary installation steps are crucial to a successful installation of the software, the post-installation steps are important in providing a fully configured Oracle E-Business Suite system for end-users.

## Module Overview

### Module Overview

This module consists of the following topics:

- Required Post-Installation Steps
- Log In to Oracle E-Business Suite
- Tasks Specific to Your Installation

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### Overview

Once Rapid Install completes the installation of Oracle E-Business Suite, there are a number of post-installation tasks to complete. Some of these tasks are necessary to finish a new installation, an upgrade, or a technology stack installation. Other tasks may be required only for systems with specific functionality. This module discusses the required and conditional tasks.

## Required Post-Installation Steps

### Required Post-Installation Steps

- Check Login to Oracle E-Business Suite
- Change Default Passwords
- Configure Database Initialization Parameters
- Review Security Practices
- Update PL/SQL Log and Out Directory
- Implement Product and Country-Specific Functionality
- Configure Client Software

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### Required Post-installation Steps

These tasks are required for all Oracle E-Business Suite installations.

## Log In to Oracle E-Business Suite



### Log In To Oracle E-Business Suite

You log in via the Oracle E-Business Suite login page at:

`http://<host name>.<domain name>:<HTTP port>/OA_HTML/AppsLogin`

For example:

`http://apps1.company.com:8000/OA_HTML/AppsLogin`

Once the connection has been made, the Oracle E-Business Suite login page appears, as shown on the slide. Enter your username and password.

## Using the E-Business Suite Home Page

### Using the E-Business Suite Home Page

After your credentials have been validated on the login page, the Oracle E-Business Suite Home Page appears. You can use this page to access responsibilities for any of the Oracle E-Business Suite products your organization has licensed. The Home Page provides a single point of access to HTML-based applications, Forms-based applications, and Business Intelligence applications.

The system administrator should log in for the first time via the pre-configured System Administrator account, then use the System Administrator responsibility to launch an Oracle E-Business Suite forms session, from which the implementation steps can be completed.

## Change Default Passwords

### Change Default Passwords

User	Default Password
SYSTEM	manager
SYS	change_on_install
APPS	APPS
AP	AP
INV	INV

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### Change Default Passwords

The default passwords for the SYSTEM and SYS Oracle E-Business Suite database accounts are *manager* and *change\_on\_install*, respectively. To maintain database security and restrict access to these accounts, you should change these passwords without delay, ensuring that your choices meet your organization's security requirements. The password for both SYS and SYSTEM in the Vision Demo is *manager*.

You should also change the default passwords for the Oracle E-Business Suite product accounts of the production and test databases.

## Configure Database Initialization Parameters

### Configure Database Initialization Parameters

- The current init.ora settings allow for a total of 100 connections
- However, after the standard setup is complete, only a few users can be connected because of the connections used by the concurrent managers, AQ workers, and job queues
- For a complete list of parameters, see My Oracle Support Knowledge Document 396009.1, *Database Initialization Parameters for Oracle E-Business Suite Release 12*

The red horizontal bar is positioned at the bottom of the slide content area.

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### Configure Database Initialization Parameters

The current init.ora settings allow for a total of 100 connections. However, after the standard setup is complete, only a few users can be connected because of the connections used by the concurrent managers, AQ workers, and job queues.

The relevant database initialization parameters are listed in My Oracle Support Knowledge Document 396009.1, *Database Initialization Parameters for Oracle E-Business Suite Release 12*. This document is updated as and when required.

## Review Security Practices

### Review Security Practices

- Review the security recommendations listed in My Oracle Support Knowledge Document, *Best Practices for Securing Oracle E-Business Suite Release 12*
  - In particular, any computers requiring direct access to the Oracle E-Business Suite database must have access granted explicitly
  - See Oracle TNS Listener Security section of above document
- Apply the latest available Critical Patch Update (CPU) patches after you install Oracle E-Business Suite
  - These are available on My Oracle Support
  - Refer to the CPU knowledge documents that are published every quarter

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### Review Security Practices

Review the recommended security processes documented in My Oracle Support Knowledge Document 403537.1, *Best Practices for Securing Oracle E-Business Suite Release 12*.

In particular, if you have any computers that require direct access to the Oracle E-Business Suite database, but are not registered nodes in AutoConfig (such as OAM clients), you must explicitly grant access as described in the *Oracle TNS Listener Security* chapter of that document.

Critical Patch Update (CPU) patches are available on My Oracle Support for the Oracle Database, Oracle Application Server, and Oracle E-Business Suite. A new knowledge document is published every quarter, in January, April, July, and October. You should apply the relevant patches listed therein.

## Update PL/SQL Log and Out Directory

- The default temporary directory for PL/SQL log and output files is /usr/tmp (UNIX) or C:\TEMP (Windows)
- This value is specified in the utl\_file\_dir parameter in the init.ora file, and assigned to the APPLPTMP environment variable
- A suitable secure directory should be specified instead
  - Enter your choice as the value for utl\_file\_dir in init.ora
  - Use Oracle Applications Manager to update the APPLPTMP variable in the Applications context file
  - Run AutoConfig to recreate the environment files



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### Update PL/SQL Log and Out Directory

The temporary directory on your database server for log and output files from PL/SQL concurrent programs is set to /usr/tmp (UNIX) or C:\TEMP (Windows) by default. This value is specified in the utl\_file\_dir parameter of the database initialization file, and assigned to the APPLPTMP environment variable. As the temporary files placed in this directory may contain sensitive information, it should have suitably restricted access, such as read and write access for the account that owns the database.

## Implement Product and Country-Specific Functionality

### Implement Product and Country-Specific Functionality

Depending on which products or country-specific functionalities you plan to use in your system, you may need to:

- Perform additional tasks
- Apply additional patches

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### Implement Product and Country-specific Functionality

Depending on which products or country-specific functionality you plan to use in your installation, you may need to perform additional tasks or apply additional patches. Refer to the individual product or country-specific implementation manuals, user's guides, or My Oracle Support for details.

## Configure Client Software

### Configure Client Software

The connection between the client and Oracle E-Business Suite forms is provided via an applet in the client Web browser

- Release 12.1 uses the *Sun JRE Native Plug-in*, which is automatically invoked when a user chooses a function that requires it (such as running a form)

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### Configure Client Software

The connection between the client and Oracle E-Business Suite forms is made by an applet in the client Web browser.

Instead of using the browser's own JVM, Oracle E-Business Suite Release 12.1 uses the *Sun JRE Native Plug-in*, which is invoked when a user chooses to access functions that require it, such as running a form. If the JRE (previously known as J2SE) Plug-in has not been installed, the browser prompts the user to download the required installation executable. Oracle JInitiator (used in Release 11i) is not used in Oracle E-Business Suite Release 12.

For further details, see My Oracle Support Knowledge Document 393931.1, *Deploying Sun JRE (Native Plug-in) for Windows Clients in Oracle E-Business Suite Release 12*.

## Conditional Tasks Specific to Your Installation

### Conditional Tasks Specific to Your Installation

- Set up printers
- Resize your database
- Set up National Language Support (NLS)
- Set up Unicode Character Sets
- Complete Oracle Workflow Notification Mailer configuration
- Set up and implement Oracle Embedded Data Warehouse (EDW)

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### Tasks Specific to Your Installation

These tasks are conditionally required, depending on the configuration of your Oracle E-Business Suite system.

## Conditional Tasks Specific to Your Installation

### Conditional Tasks Specific to Your Installation

- Set up and implement Discoverer End User Layer (EUL)
- Set up Demand Planning
- Convert to a Public Sector, Education, or Non-for-Profit System
- Implement Multiple Organizations
- Back up Oracle E-Business Suite
- Understand system administration and maintenance tasks

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## Set Up Printers: Generic Steps

### Set Up Printers: Generic Steps

To be able to register printers in the Printers form of Oracle E-Business Suite, the system administrator must know each printer's operating system name

To determine the printer name:

- UNIX:
  - At the command prompt, enter the command:  
**\$ lpstat -p**
- Windows:
  - Click the Printers icon in the Start menu

Additional steps at operating system level are required on Windows, as shown on the next slide

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### Set Up Printers: Generic Steps

For details about setting up printers in your Oracle E-Business Suite installation, refer to *Oracle E-Business Suite System Administrator's Guide - Configuration*.

## Set Up Printers: Windows-Specific Steps

### Set Up Printers: Windows-Specific Steps

1. Log in to a Windows operating system account that has Administrator privileges
2. From Start > Administrative Tools > Services, right-click the Concurrent Manager service, and select Start
3. Right-click the service again, go to the *Log On* tab, select *This Account*, and enter the user name and password used to start the concurrent manager
4. Repeat the actions in Steps 2 and 3 for the Oracle TNS Listener service
5. Use the Add Printer option to define a printer for the user account specified in Step 3
6. Reboot the system

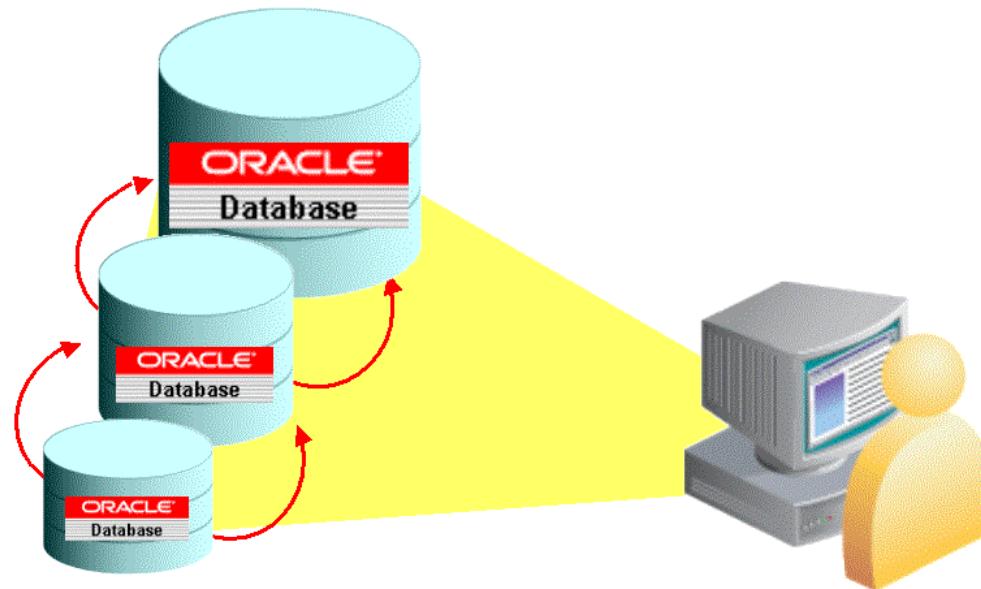
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### Set Up Printers: Windows-Specific Steps

The concurrent manager starts by default under the internal SYSTEM account, which does not have access to network printing devices. To be able to run reports using the concurrent manager, you must complete the steps in the slide.

## Resize Your Database

### Resize Your Database



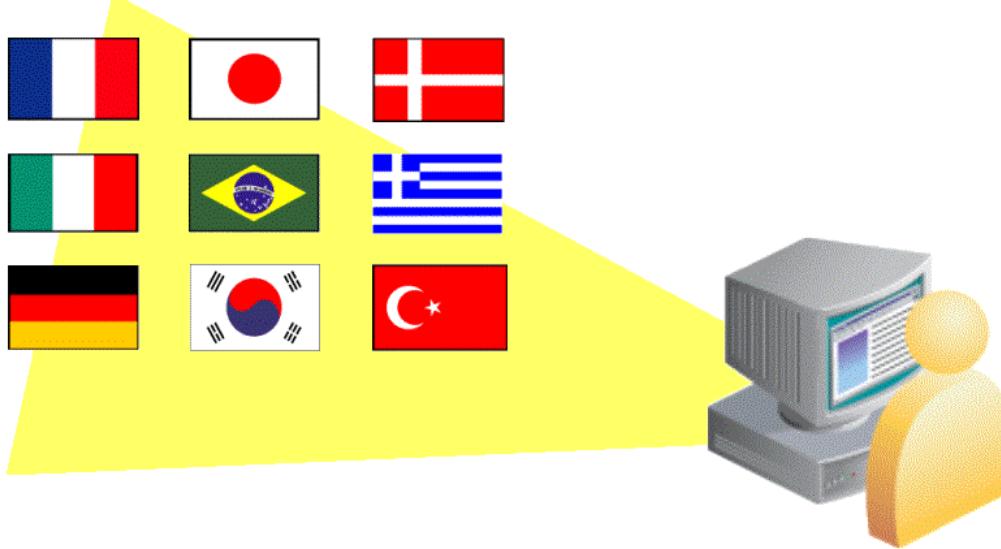
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### Resize Your Database

You will need to increase the size of your database to meet the specific requirements of your system. The increase will in part depend on the products you have licensed and the additional features (such as multiple languages or multiple organizations) you configure in your installation.

## Set Up National Language Support (NLS)

### Set Up National Language Support (NLS)



### Set Up National Language Support (NLS)

Although the base product files are provided in American English, Oracle E-Business Suite is available in many different languages. Running Oracle E-Business Suite in languages other than American English is referred to as National Language Support or NLS. You can also run Oracle E-Business Suite in multiple languages simultaneously, and this is referred to as Multilingual Support or MLS.

If you are performing an NLS installation, Rapid Install installed the translated files for all active languages during the installation. To finish the installation for NLS, follow the instructions in the *Oracle Applications NLS Release Notes* (available on My Oracle Support).

## Set Up Unicode Character Sets

### Set Up Unicode Character Sets

Regardless of the languages installed, you may need to complete additional steps if you use a UTF8 character set

- Release 12.1 supports both UTF8 and AL32UTF8
- If you customize seed data, your changes may be overwritten during an upgrade

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### Set Up UTF8 Character Set

Regardless of the languages installed, you may need to complete additional steps if you use a Unicode character set, such as UTF8, in the database tier.

With Release 12.1, UTF8 and AL32UTF8 are both supported Unicode character sets in the database. However, supplementary characters are not supported.

If you customize seed data, your changes may be overwritten during an upgrade. This also applies to any changes to translations of seed data made using the globe icon.

## Complete Oracle Workflow Notification Mailer Configuration

### Complete Oracle Workflow Notification Mailer Configuration

Before you can send Oracle Workflow email notifications and Oracle Alert email alerts, you must complete the Workflow Notification Mailer configuration

- Use the Notification Mailer configuration wizard in Oracle Applications Manager

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### Complete Oracle Workflow Notification Mailer Configuration

1. From the Oracle Applications Manager Dashboard, select Workflow Manager from the "Navigate to" pull-down menu, and click on the *Go* button.
2. In the Workflow System region, click the Notification Mailers status icon to navigate to the Service Components page for notification mailers. At this point, the Notification Mailers status icon should be showing the status *Down*.
3. In the Service Components page, select the Workflow Notification Mailer service component and click the *Edit* button to navigate to the Notification Mailer configuration wizard.
4. In the Outbound Email Account (SMTP) region, enter the name of the outbound SMTP mail server.
5. If you want to enable inbound email processing, select the Inbound Processing parameter in the Inbound Email Account (IMAP) region, and enter the name of the inbound IMAP mail server, the username and password of the email account that the Notification Mailer uses to receive email messages, and the reply-to address of the email account that receives incoming messages, to which notification responses should be sent.

6. Click *Apply*, then return to the Service Components page and verify that the status of the Workflow Notification Mailer service component is now *Running*.

## Set Up and Implement Oracle Embedded Data Warehouse (EDW)

### **Set Up and Implement Oracle Embedded Data Warehouse (EDW)**

**Embedded Data Warehouse (EDW):**

- Gives users a unified view of the enterprise with its cross-functional analysis capabilities
- Utilizes a common dimension model that enables seamless cross-functional analysis across the entire enterprise
- Includes fact tables from seven intelligence areas
- Provides shorter time-to-benefit with its pre-defined enterprise schemas and hierarchies, and pre-built data collection and integration programs

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### **Set Up and Implement Oracle Embedded Data Warehouse (EDW)**

The Embedded Data Warehouse (EDW) is a foundation technology for Oracle Business Intelligence applications. This end-to-end solution provides an open schema and extensible data warehousing architecture, powered by robust data warehousing tools.

EDW includes fact tables from seven intelligence areas: Financials, Projects, Purchasing, Manufacturing, Marketing, Human Resources, and Supply Chain.

If you licensed Oracle Embedded Data Warehouse (EDW), you must complete additional setup and implementation steps before using this product.

## Set Up and Implement Discoverer End User Layer (EUL)

### Set Up and Implement Discoverer End User Layer (EUL)

The End User Layer:

- Is an intuitive, business-focused view of the database that uses terms you are familiar with and can understand easily
- Insulates you from the complexity usually associated with databases
- Enables you to focus on business issues instead of data access issues

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### Set Up and Implement Discoverer End User Layer (EUL)

To use Discoverer, you need a database account that enables you to connect to Discoverer. You store database account details in a Discoverer connection, along with EUL and language settings.

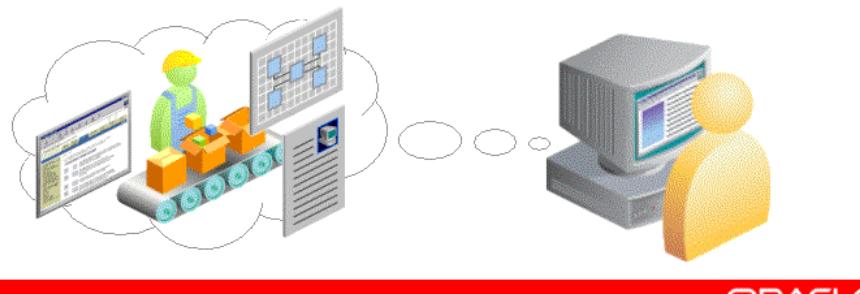
To set up and implement the End User Layer, follow the instructions documented in My Oracle Support Knowledge Document 373634.1, *Using Discoverer 10.1.2 with Oracle E-Business Suite Release 12*.

## Set Up Demand Planning

### Set Up Demand Planning

#### Oracle Demand Planning:

- Enables organizations to produce unconstrained forecasts for future demand, and to generate tactical, operational, and strategic business plans
- Processes information from multiple sources
- Consolidates demand so that it can be summarized by item, product line, region, time, and organization



### Set Up Demand Planning

To set up and begin using Demand Planning, you must perform the implementation tasks outlined in the *Oracle Demand Planning Installation and Configuration Guide*.

## Convert to a Public Sector, Education, or Not-for-Profit System

### Convert to a Public Sector, Education, or Not-for-Profit System

Rapid Install sets up products for commercial use

- You can use License Manager to register public sector, education, or not-for-profit products
- See *Oracle E-Business Suite Maintenance Utilities*

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### Convert to a Public Sector, Education, or Not-for-Profit System

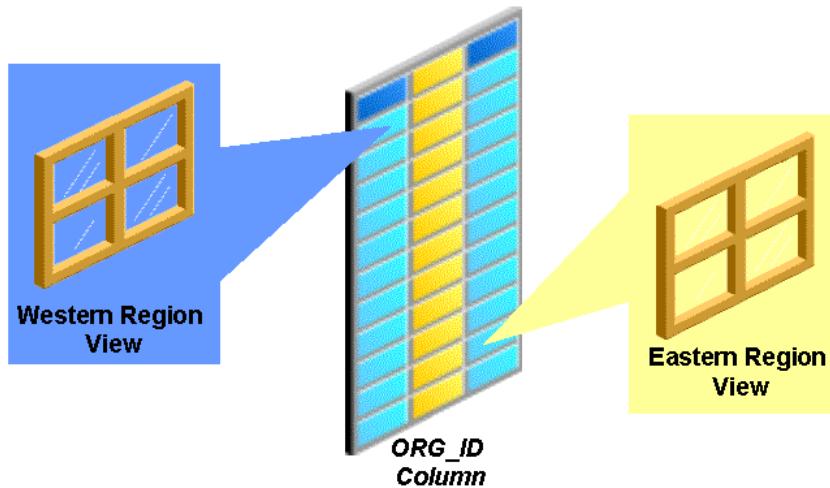
Rapid Install sets up products for commercial or for-profit use. To convert your system to use public sector, education, or not-for-profit products after the installation is complete, use License Manager to register public sector or not-for-profit products.

See *Oracle E-Business Suite Maintenance Utilities* for information on registering products.

## Implement Multiple Organizations

### Implement Multiple Organizations

**SO\_HEADERS\_ALL Table**



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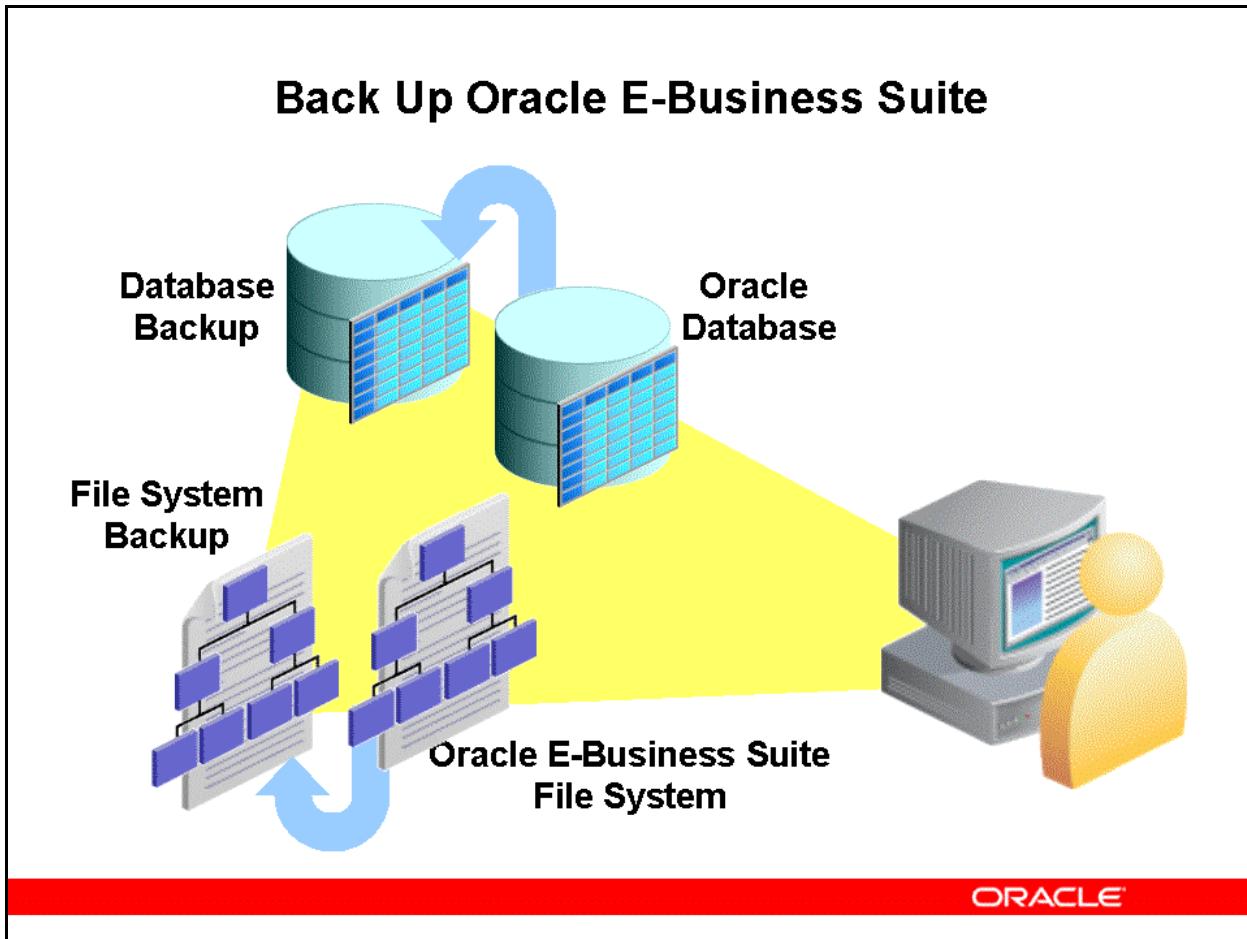
### Implement Multiple Organizations

The *Oracle Applications Multiple Organizations Architecture* provides support for multiple organizations in a single installation of Oracle E-Business Suite, with relationships you define. Multiple Organizations specifies how the different organizations interact, and how transactions flow between them. These organizations can be ledgers, business groups, legal entities, operating units, or inventory organizations.

When you run any Oracle E-Business Suite product in a Multiple Organizations environment, you first choose an organization, either implicitly (by choosing a responsibility), or explicitly (by selecting an operating unit when entering data in transaction entry pages, or by running reports). Inventory organizations can be selected in the Choose Organization window; each subsequent window and report displays information for the chosen organization only.

Tables that contain Multiple Organizations data can be identified by the suffix "\_ALL" in the table name. These tables include a column called **ORG\_ID**, which partitions Multiple Organizations data by organization. The **SO\_HEADERS\_ALL** table, with its corresponding view **SO\_HEADERS**, is an example of a Multiple Organizations partitioned object.

## Back Up Oracle E-Business Suite



### Back Up Oracle E-Business Suite

After installation is complete, your operating system administrator should back up the Oracle E-Business Suite product files and technology stack components. Your database administrator should back up your Oracle E-Business Suite database components.

Subsequently, you should establish a backup policy that meets your organization's needs, balancing the overhead of carrying out the chosen backup type and frequency against the need to be able to recover from a variety of types of system failure. The backup procedures should be tested periodically.

## Understand System Administration and Maintenance Tasks

### Understand System Administration and Maintenance Tasks

- Understand System Administration Tasks
- Understand Oracle E-Business Suite Maintenance Tasks

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#### Understand System Administration Tasks

You should be familiar with the contents of the three volumes of the *Oracle E-Business Suite System Administrator's Guide*, which describe Oracle E-Business Suite configuration, maintenance, and access control respectively.

#### Understand Oracle E-Business Suite Maintenance Tasks

You should be familiar with the contents of the books *Oracle E-Business Suite Maintenance Utilities* and *Oracle E-Business Suite Maintenance Procedures*, which describe the various maintenance tools and their usage. A related book is *Oracle E-Business Suite Patching Procedures*.

## Module Summary

### Module Summary

In this module, you should have learned how to do the following:

- List required post-installation tasks
- Describe the client software configuration process
- List installation-specific post-installation tasks

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## Module Discussion

### Module Discussion

- Name four required post-installation tasks
- What should a System Administrator do after logging into a new Oracle E-Business Suite system for the first time?
- List four conditional post-installation tasks

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# **Oracle E-Business Suite Components**

## **Chapter 5**



## Oracle E-Business Suite Components

### Oracle E-Business Suite Components

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- Identify the high-level technology stack components that make up the desktop, application and database tiers
- Describe how Oracle E-Business Suite utilizes the various technology stack components
- Identify and describe the role of the various Oracle E-Business Suite Technology layer products

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## Module Overview

### Module Overview

This module covers the following topics:

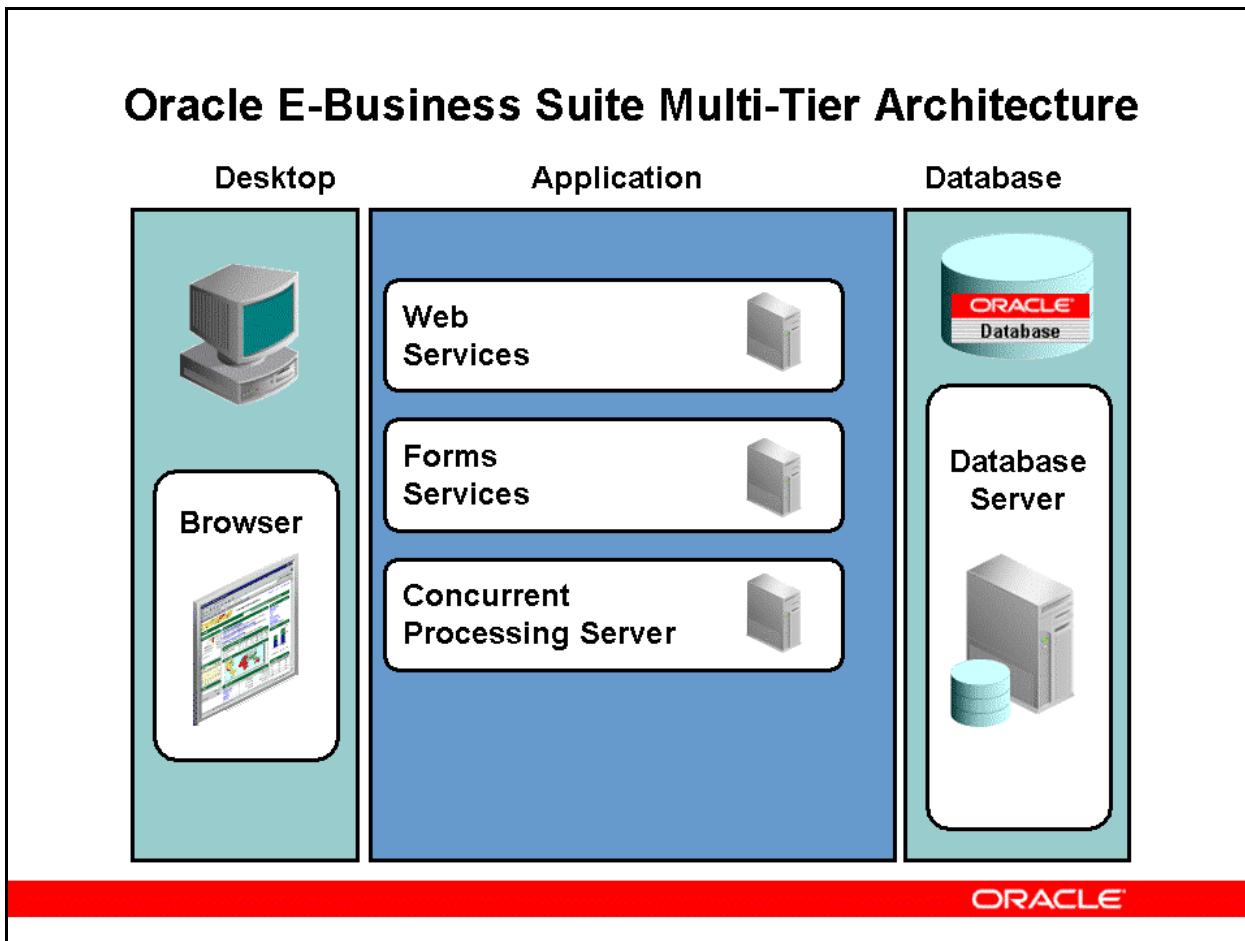
- How Oracle E-Business Suite uses the Oracle E-Business Suite technology stack components
- Components of the desktop tier
- Components of the application tier
- Components of the database tier
- Products of the Application Technology layer
- Introduction to Oracle Applications Manager
- Summary of technology stack changes

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### Module Overview

This module covers the different tiers and components of Oracle E-Business Suite Release 12.1. Some will be described in greater detail than others.

## Oracle E-Business Suite Multi-Tier Architecture



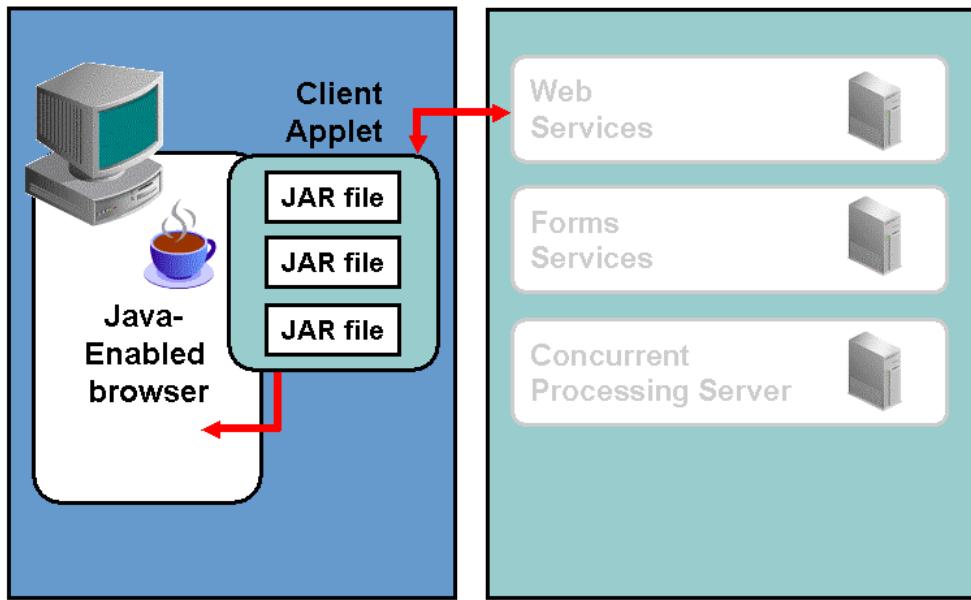
### Oracle E-Business Suite Multi-Tier Architecture

In the multi-tier model, functions of the Oracle E-Business Suite architecture are distributed among multiple levels, or *tiers*. Although many machines may be used in an installation, scalability is derived from the logical division of processing capabilities across three distinct levels: the desktop (or client) tier, the application (or middle) tier, and the database tier.

The tiers referred to are virtual, and do not represent physical machines. Each tier can consist of one or more machines (often called *nodes*). This is particularly true of the application tier, where the various *servers* (groups of processes that run on a single machine and provide a particular functionality) are often divided between several machines. Equally, a node can accommodate more than one tier. For example, the database server can reside on the same node as one or more of the servers in the application tier.

## Desktop Tier: Traditional Forms Interface

### Desktop Tier: Traditional Forms Interface



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#### Desktop Tier

The client interface is provided through either the newer HTML interface or the traditional Forms interface. The HTML interface products require only a Web browser on the desktop tier. For the Forms interface products, an additional component, the Forms Client Applet, is used in conjunction with the Web browser. The Forms Client Applet downloads the necessary JAR files on demand, and they are cached locally for future use.

## Desktop Tier: Forms Client Applet

### Desktop Tier: Forms Client Applet

The Forms Client Applet is a presentation applet that:

- Supports Oracle E-Business Suite products that use the Forms interface
- Is packaged as Java Archive (JAR) files
  - The JAR files contain all classes required for Oracle E-Business Suite
  - They are downloaded on demand and cached on the desktop

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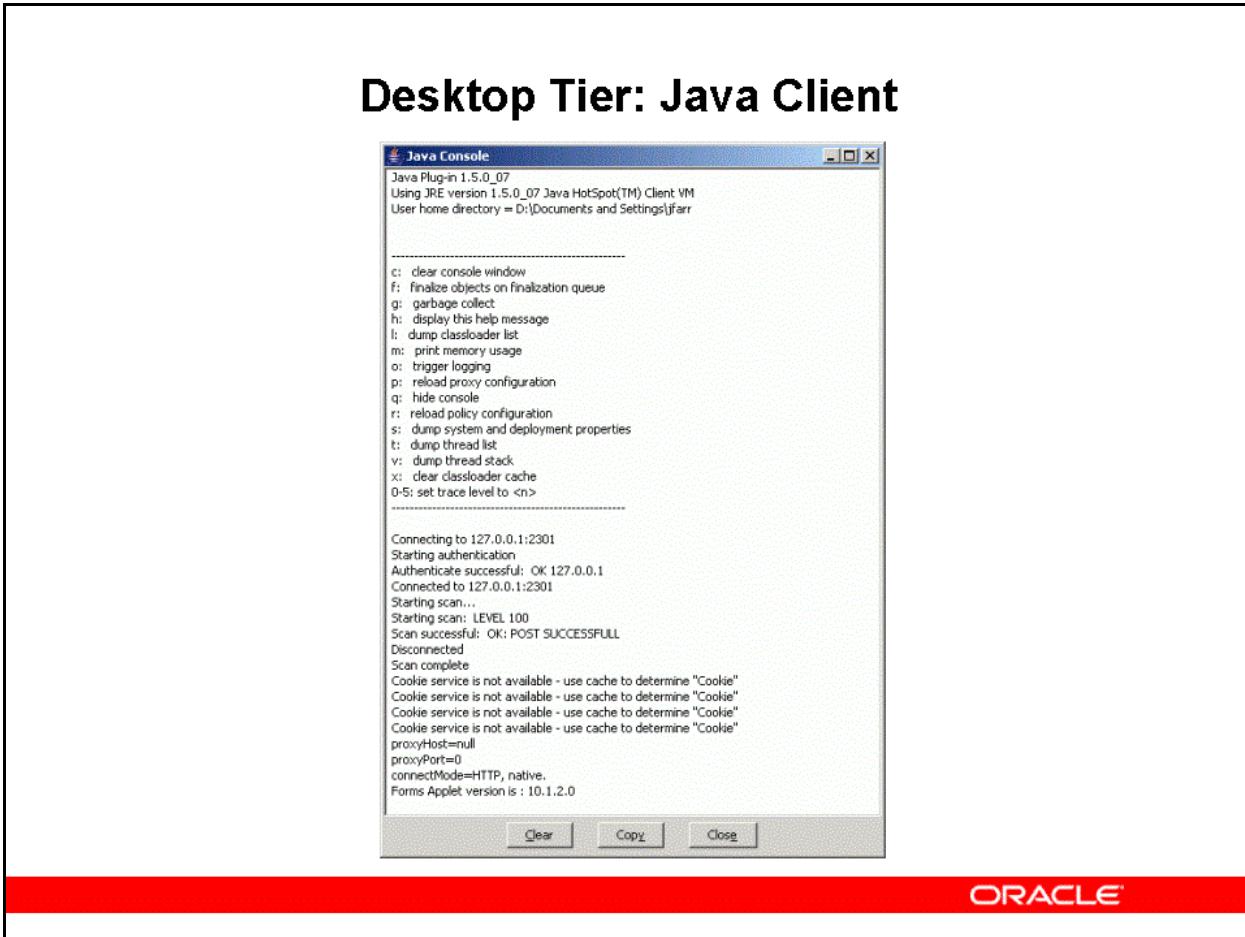
### Forms Client Applet

The Forms Client Applet is a general-purpose presentation applet that supports Oracle E-Business Suite products that use the Forms interface, including those with customizations and extensions. The Forms Client Applet is packaged as Java Archive (JAR) files, which contain all Java classes typically required to run Oracle E-Business Suite forms.

The Forms Client Applet displays Oracle E-Business Suite screens, and supports field-level validation, multiple coordinated windows, and data entry aids such as lists of values (LOVs). The Forms Client Applet sends user requests to the forms server, and handles responses such as screen updates.

Required and commonly used JAR files are downloaded from the Web server at the beginning of the client's first session. Afterwards, they remain in the client's local disk cache, ready for future sessions. When updated versions of the JAR files are installed on the application tier, they are automatically downloaded to the desktop via the Java-enabled Web browser. Less commonly used JAR files are downloaded on demand.

## Desktop Tier: Java Client

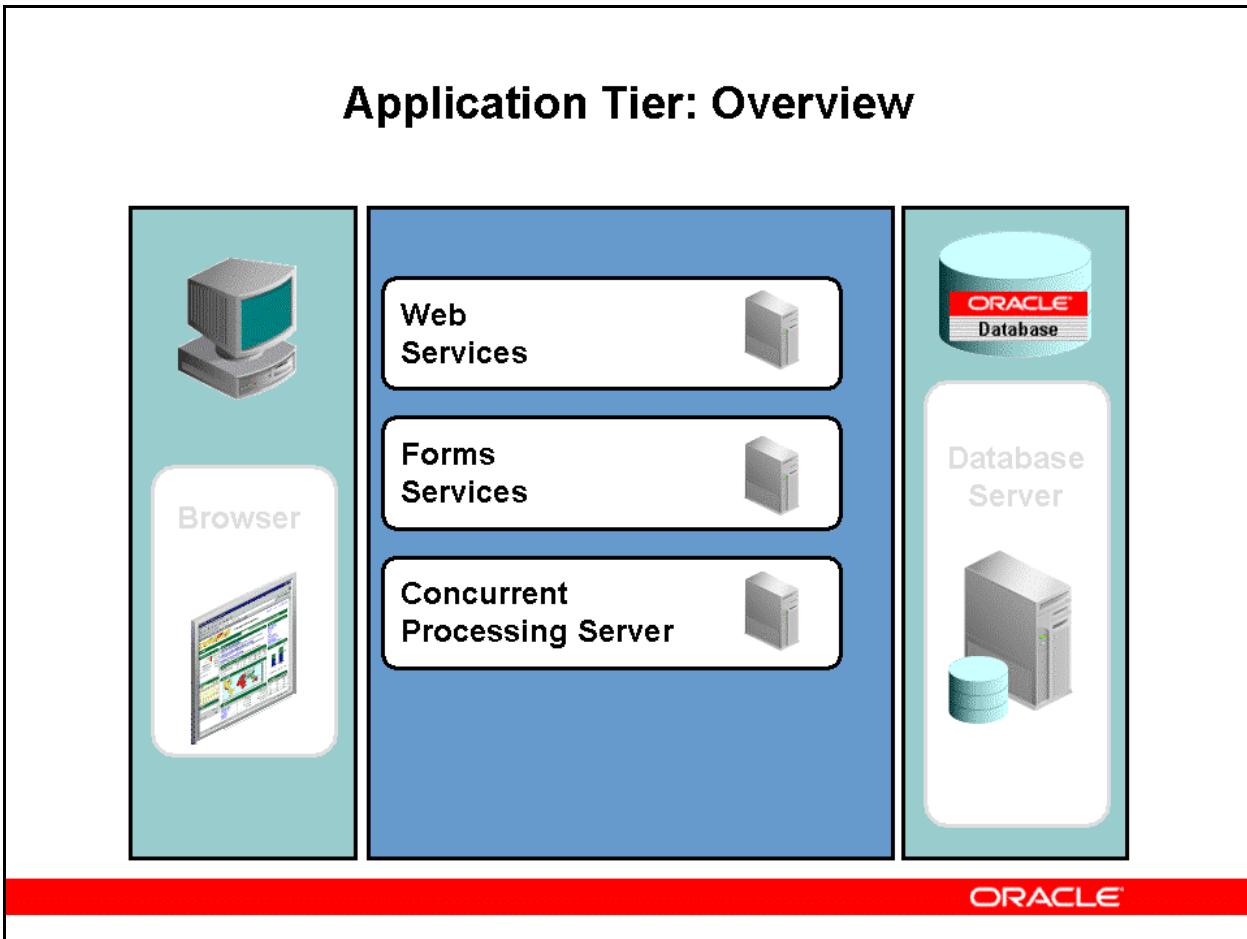


### Desktop Java Client

The Forms client applet must run within a Java Virtual Machine (JVM) on the desktop client. The Sun JRE Plug-in component allows use of the Oracle JVM on web clients, instead of the browser's own JVM. This component is implemented as a browser plug-in.

In the traditional, Forms-based Oracle E-Business Suite environment, the JVM was run as part of the standard Oracle E-Business Suite sign-on process. Now, with the move to a mainly HTML-based environment, the JVM (now the JRE Plug-in) is only invoked when a user chooses to access functions that require it, such as running a form. If the JRE Plug-in has not been installed, the browser prompts the user to download the required installation executable. The slide shows the Java console, which can be displayed by selecting “Show console” on the “Advanced” tab of the JRE plug-in control panel. This can be useful in diagnosing problems with JAR file downloads.

## Application Tier: Overview



### Overview

The application tier, sometimes referred to as the middle tier, hosts the various services and servers that implement and execute the business logic, and mediates communications between the desktop tier and the database tier.

The following services and servers make up the application tier:

- Web Services
- Forms Services
- Concurrent Processing Server

## Application Tier: Load Balancing

### Application Tier: Load Balancing

- The Application tier supports load balancing among different service groups and servers
- Benefits include high availability, fault tolerance, reliability and scalability
- The same platform (such as Linux) should be used for all application tier machines

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#### Load Balancing

The application tier supports load balancing among many of the servers to provide high availability, fault tolerance, reliability and scalability.

Wherever possible, you should use the same platform (such as Linux) for all application tier machines. Do not attempt to use a mixture of UNIX (or Linux) and Windows machines. As well as having to manage patches for the disparate platforms, there are technical limitations.

## Application Tier: HTML-Based Applications

### Application Tier: HTML-Based Applications

The HMTL-based (formerly, Self-Service) applications:

- Do not use Oracle Forms for the interface
- Are designed in pure HTML and JavaScript
- Dynamically generate HTML pages by executing Java code
- Use a metadata dictionary for flexible layout
- Operate by direct connection to the Web server

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### HTML-Based Applications

The HTML-based applications (originally known as Self-Service Applications) have the following characteristics:

- Do not use Oracle Forms for the interface
- Are designed in pure HTML and JavaScript
- Dynamically generate HTML pages by executing Java code
- Use a metadata dictionary for flexible layout
- Operate by direct connection to the Web server

## Application Tier: Oracle Application Framework

### Application Tier: Oracle Application Framework

- Oracle Application Framework is a Java-based application tier development and deployment platform for HTML-based applications
- Framework-based applications logic is controlled by procedures that execute through the Java Servlet Engine

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#### Oracle Application Framework

The *Oracle Application Framework* is the development platform for HTML-based applications. It consists of a Java-based application tier framework and associated services, designed to facilitate the rapid deployment of HTML-based applications.

The Framework-based applications logic is controlled by procedures that execute through the Java servlet engine, which is provided by the Apache JServ module. The servlet engine uses the metadata dictionary in constructing the Framework UI.

## Application Tier: Oracle Application Framework Components

### Application Tier: Oracle Application Framework Components

Oracle Application Framework uses various components, including:

- AOL Java (AOL/J)
- Business Components for Java (BC4J)
- Java Controller
- Metadata UI Definition
- UIX HTML Generator

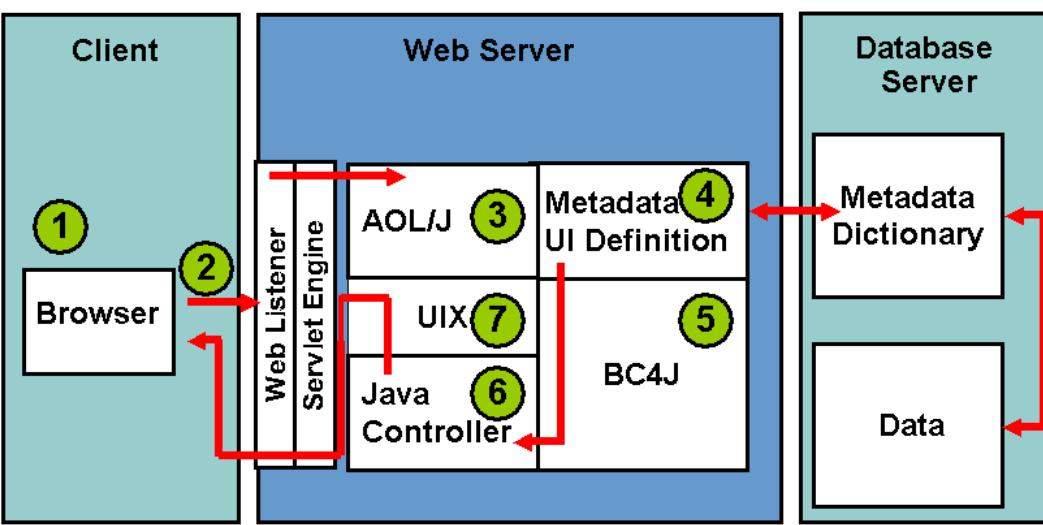
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### Oracle Application Framework Components

Key Oracle Application Framework components include:

- **AOL/J (AOL Java)** - Provides the Oracle Application Framework with underlying security and Java services. It provides the Oracle Application Framework with its connection to the database and with application-specific functionality, such as flexfields and attachments.
- **BC4J (Business Components for Java)** - Included in Oracle JDeveloper, and used to create Java business components for representing business logic. It also provides a mechanism for mapping relational tables to Java objects, and allows separation of the application business logic from the UI.
- **The Java controller** - Processes the programmatic UI definition.
- **The Apache JServ module** - Provides the Java servlet engine, which uses the metadata dictionary to construct the Framework UI.
- **The HTML UI generator**, UIX.

## Application Tier: Oracle Application Framework Processing



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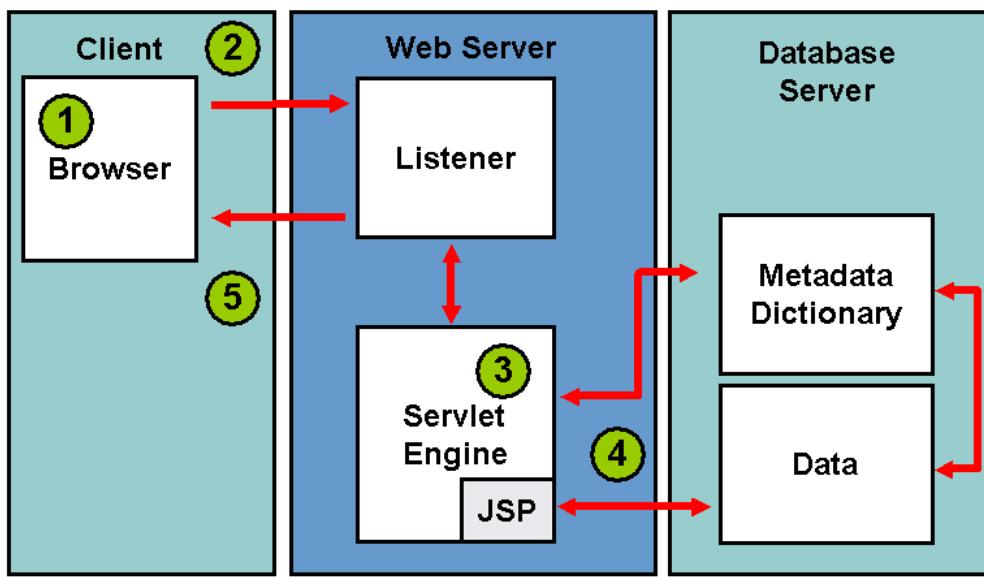
### Oracle Application Framework Processing

With Oracle Application Framework, the access path to an HTML-based product is as follows:

1. The user clicks on the hyperlink of a function from a browser.
2. The browser makes a URL request to the Web listener.
3. AOL/J validates user access to the page.
4. The page definition is loaded from the Metadata Dictionary on the database tier into the application tier (Metadata UI Definition).
5. The BC4J objects that contain the applications logic and access the database are instantiated.
6. The Java Controller programmatically manipulates the page definition as necessary, based on dynamic UI rules.
7. UIX (HTML UI Generator) interprets the page definition, creates the corresponding HTML in accordance with UI standards, and sends the page to the browser.

## Application Tier: Java Servlet Access with HTML Applications

### Application Tier: Java Servlet Access with HTML Applications



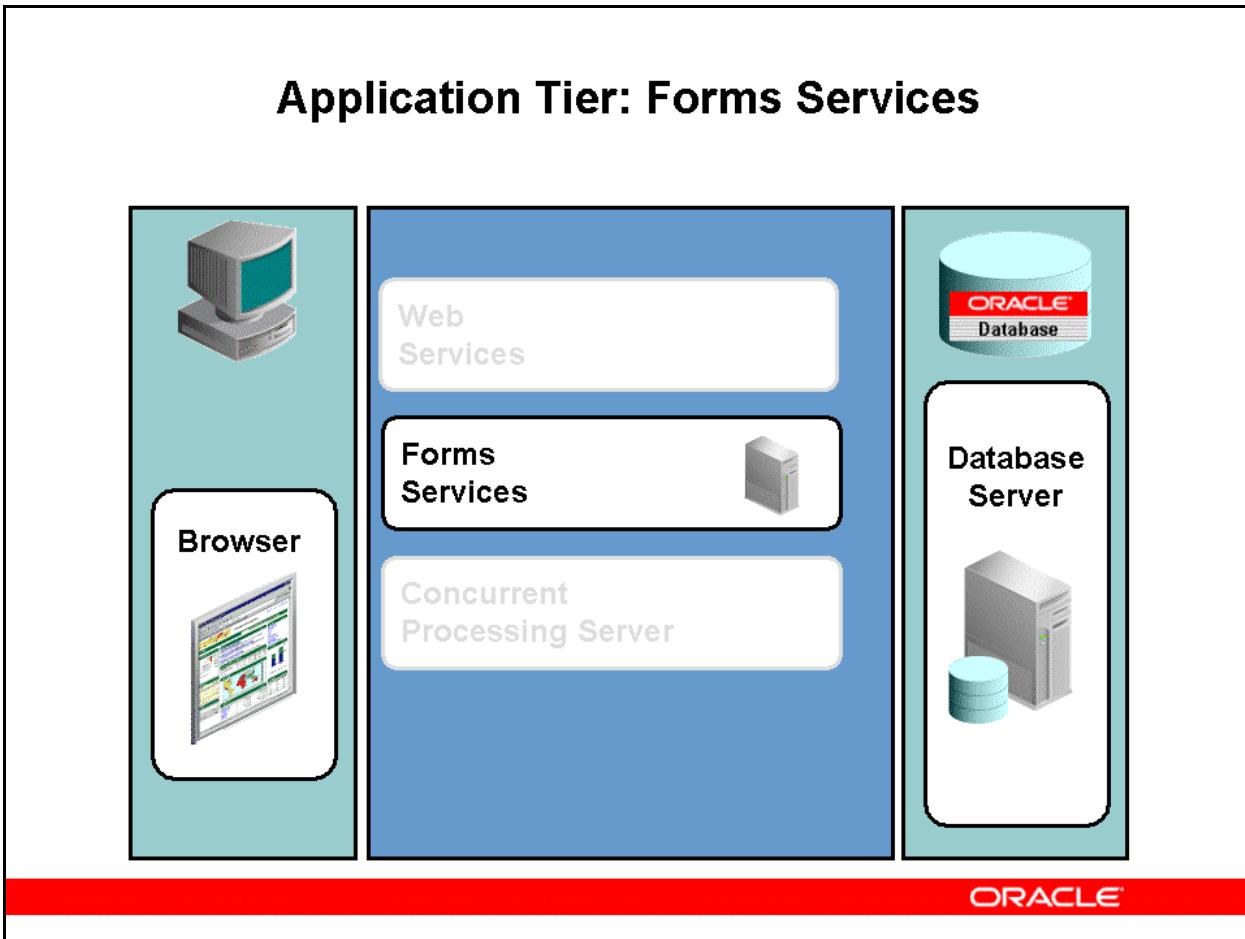
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#### Java Servlet Access with HTML Applications

With a JavaServer Page (JSP), the access path to an HTML interface module is as follows:

1. The user clicks the hyperlink of a function from a browser.
2. The browser makes a URL request to the Web listener.
3. The Web listener contacts the servlet engine (JServ) where it runs a JSP.
4. The JSP obtains the content from the Oracle E-Business Suite tables and uses information from the metadata dictionary to construct the HTML page.
5. The resulting HTML page is passed back to the browser via the Web server.

## Application Tier: Forms Services



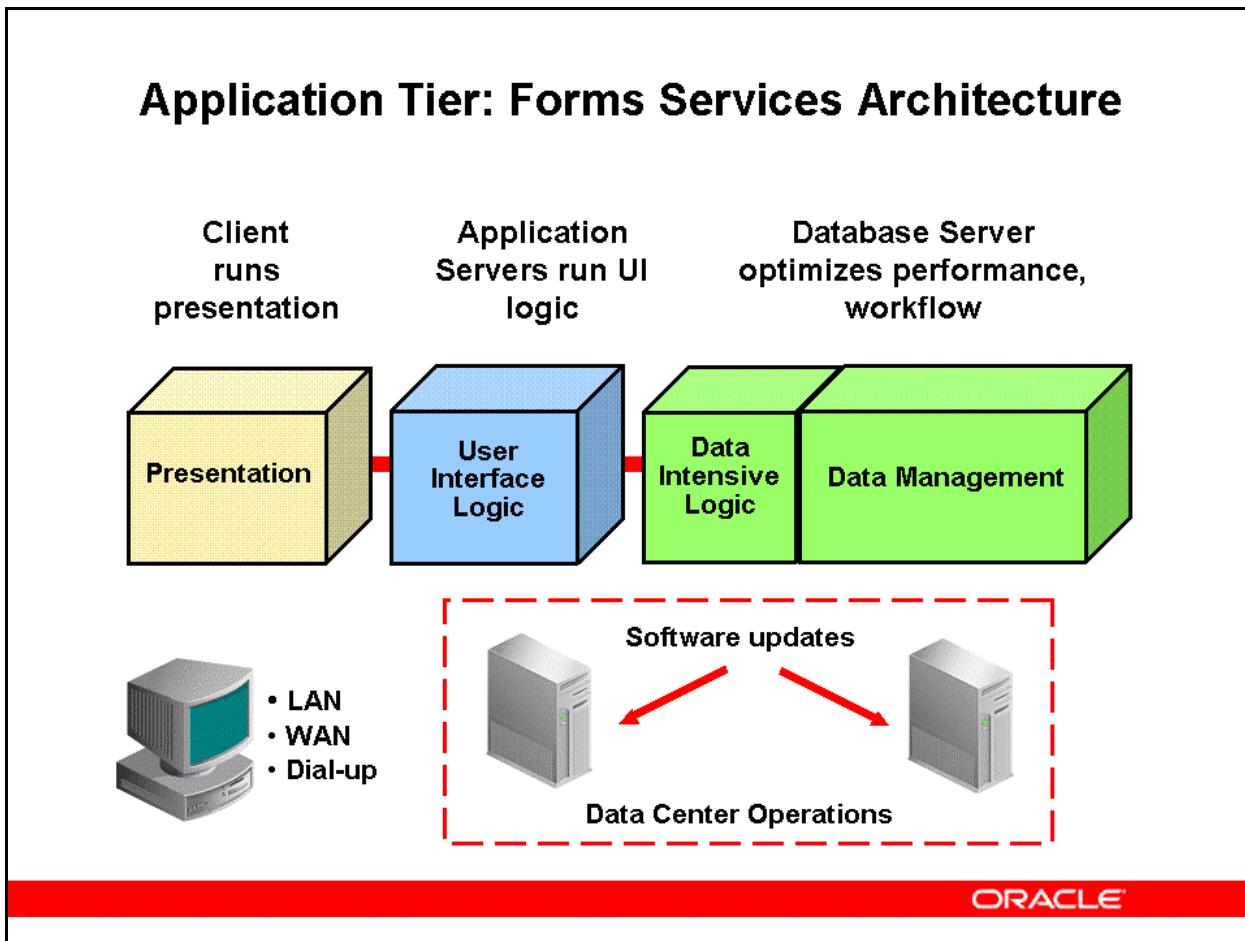
### Forms Services

The Forms services component hosts the Oracle E-Business Suite forms and the Forms runtime engine. Acting as the engine of the Oracle E-Business Suite Forms-based interface, the Forms services component mediates the communication between the desktop client and the Oracle database server. It manages the display of information in the client browser, and also updates the database as necessary.

Where applicable, the Forms services component caches data and provides it to the client as needed. For example, this feature is used when scrolling through multiple order lines that cannot be displayed on a single screen.

By default, Forms services in Oracle E-Business Suite Release 12.1 are provided by the Forms listener servlet, a Java servlet that delivers the ability to run Oracle Forms applications over HTTP or HTTPS connections. It hosts the Oracle E-Business Suite forms and associated runtime engine, mediating the communication between the desktop client and the Oracle database server, displaying client screens, and initiating changes in the database according to user actions.

## Application Tier: Forms Services Architecture



### Forms Services Architecture

The Forms services architecture is essentially a three-tier architecture:

- The Forms client applet is located on the desktop. The user passes information to the application tier by entering text in a field or clicking a button.
- The application tier hosts the user interface logic that determines the response needed when a user initiates an action. For example, this may be to open a new window, run a query, or populate a related field.
- The database tier hosts the database and data-intensive logic. It is contacted to retrieve data not already cached on the application tier, or where additional processing is needed.

In this configuration, where all logic is located on the servers, software updates need only be performed in one data center, and are immediately accessible to users via a LAN, WAN, or even a dial-up connection.

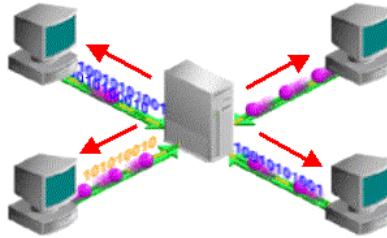
To minimize network traffic, the Forms client applet is downloaded automatically the first time a user accesses Oracle E-Business Suite. The applet is then stored on the desktop, so does not need to be downloaded with each subsequent connection to Oracle E-Business Suite.

## Application Tier: Network Traffic Management

### Application Tier: Network Traffic Management

The application tier minimizes network traffic by the following strategies:

- JAR files for the Forms client applet are downloaded automatically on first use, then cached on the desktop PC
- The browser (with JRE plug-in) will automatically retrieve new JAR files if they have changed on the application tier



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### Network Traffic Management

Forms listener servlet can communicate with the desktop client using these network protocols:

- Standard HTTP network connection
- Secure HTTPS network connection
- TCP/IP connection

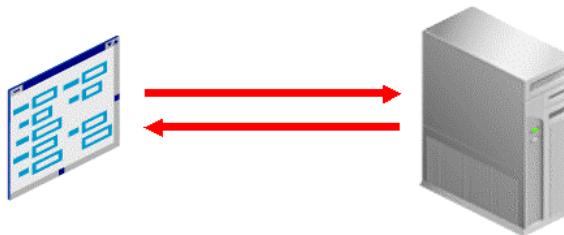
By default, Oracle E-Business Suite Release 12.1 utilizes Forms listener servlet mode. However, socket mode is still supported, and its use may be desirable to enhance performance in a WAN environment.

## Application Tier: Network Traffic Management

### Application Tier: Network Traffic Management

For optimum runtime network usage:

- Many operations can be performed without contacting the Forms services at all
- When tabbing through fields, only one round trip per field is needed
- Compact messages communicate user events and corresponding screen updates



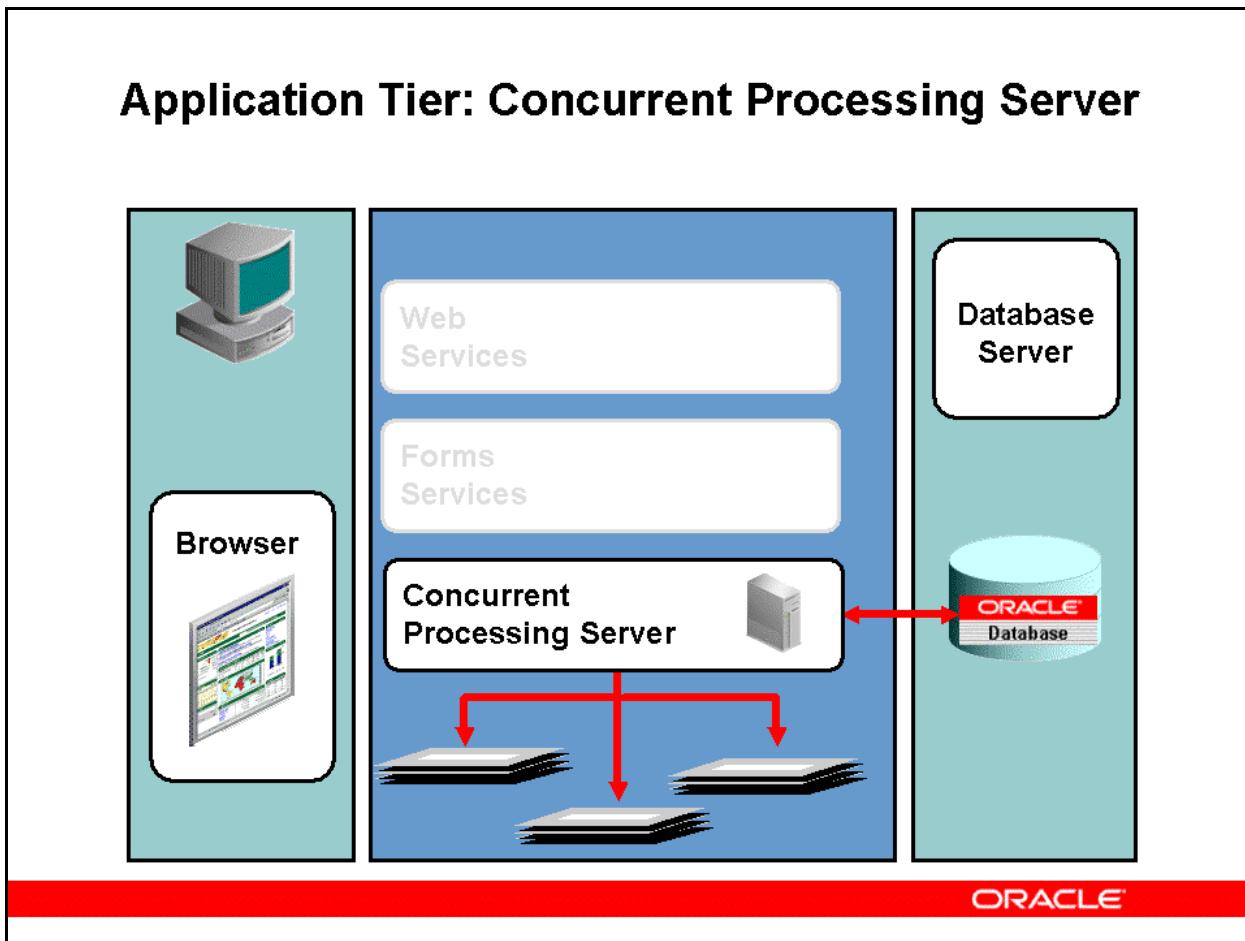
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### Network Traffic Management

Once a connection is made, many operations can be performed on the client either without contacting the Forms services at all, or with minimal interaction.

For example, if a user is entering data for specific field items, there is no need to update an entire screen when only a few fields are updated. In this scenario, only the changed fields are updated with the new values. Consequently, this is much more efficient than a full screen painting application.

## Application Tier: Concurrent Processing Server



### Concurrent Processing Server

Most user interactions with Oracle E-Business Suite data are conducted via the HTML interface or the Forms interface. However, some reporting and updating programs may need to be run either periodically or on an ad hoc basis. As these programs may require a large number of computations, they are run in the background at a time, and with a priority, such that the work of interactive users is not impeded. Such programs are run on the Concurrent Processing server.

You submit a request to run a concurrent program through an Oracle E-Business Suite form. The request inserts a row into a database table, specifying the program to be run. Concurrent managers read the applicable requests in the table and start the relevant concurrent programs. Log and output files from concurrent programs are generated on the Concurrent Processing server. These should be monitored for errors, and archived or deleted when no longer needed. Failure to do so will eventually result in a shortage of disk space.

## Application Tier: Report Review Agent

### Application Tier: Report Review Agent

The Report Review Agent allows:

- Online viewing of report log and output files
- Viewing of reports one page at a time
- Storage of report output on the concurrent processing node

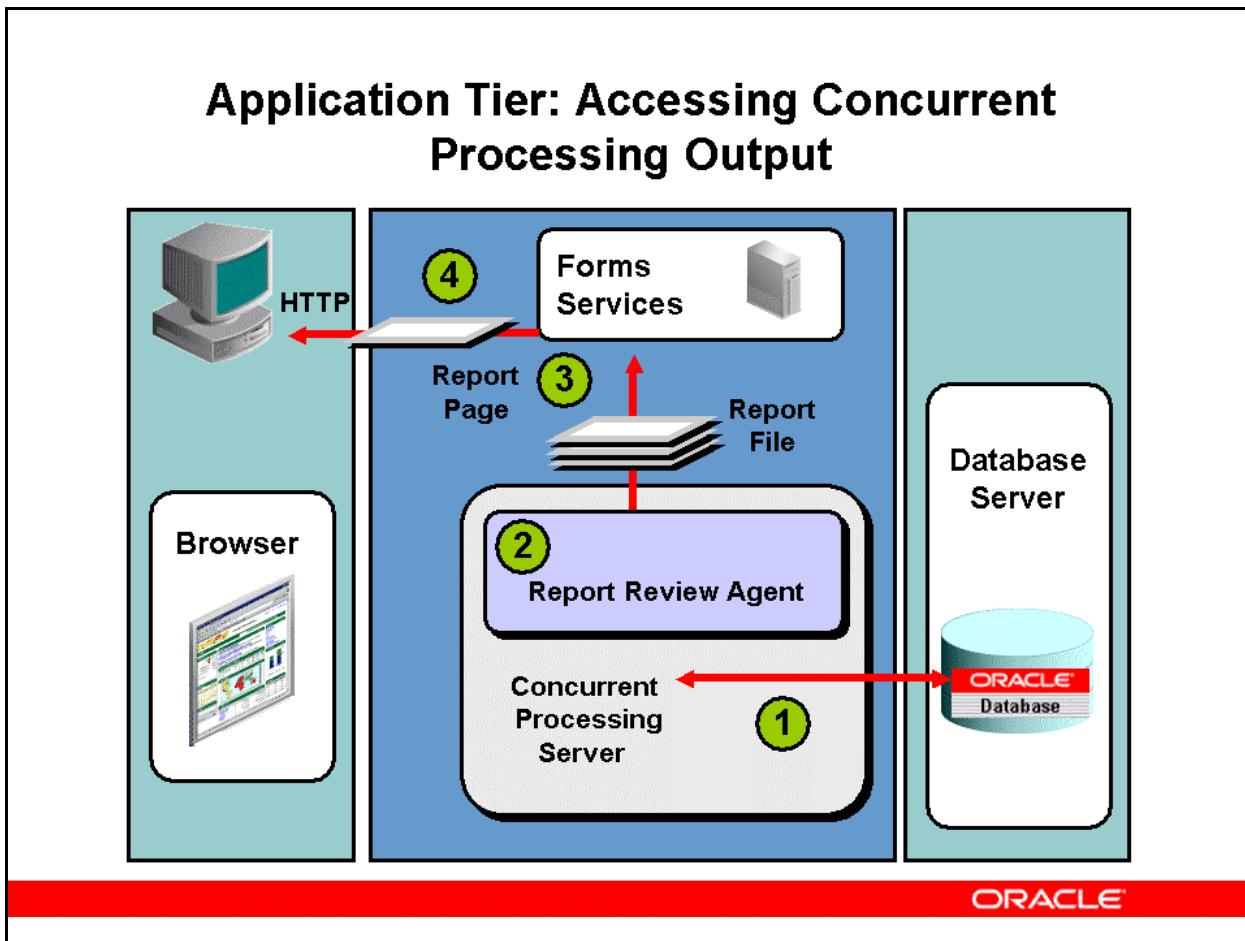


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#### Report Review Agent

The log or output file that results from a concurrent request is sent to a utility known as the *Report Review Agent*, which passes a file containing the entire report to the Forms services, which passes the report back to the user's browser one page at a time.

## Application Tier: Accessing Concurrent Processing Output



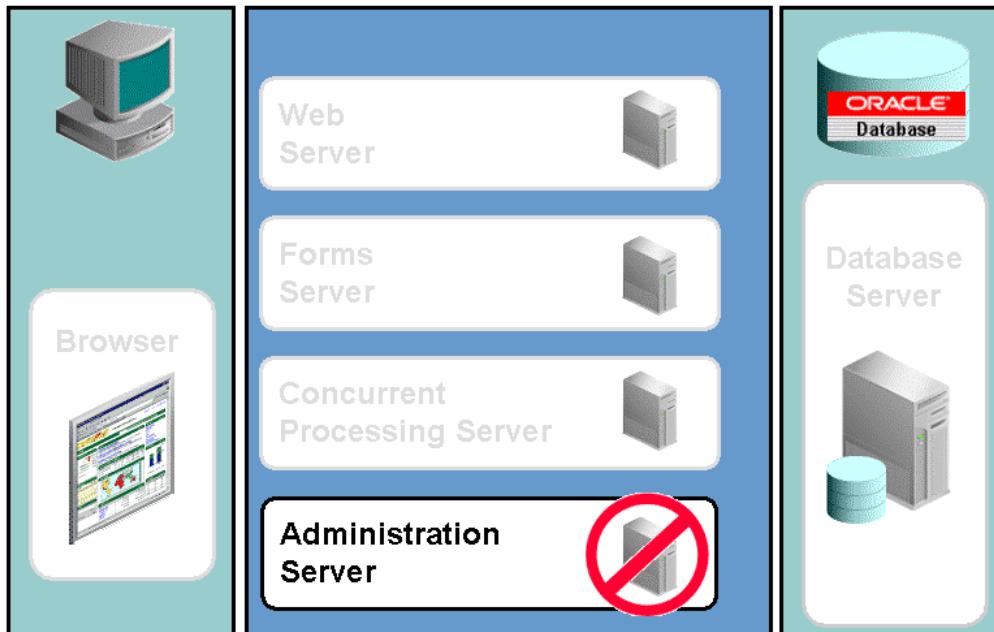
### Accessing Concurrent Processing Output

The concurrent processing output access path is as follows:

1. The Concurrent Processing server communicates with the data server using Oracle Net.
2. The resultant concurrent program log or output file from a request is passed back as a report to the Report Review Agent.
3. The Report Review Agent passes a file containing the entire report to the forms server.
4. The Forms Services component passes the report back to the user's browser one page at time. Profile options can be used to control the size of the files and pages passed, to suit report volume and available network capacity.

## Application Tier: Administration Server (Obsolete)

### Application Tier: Administration Server (Obsolete)

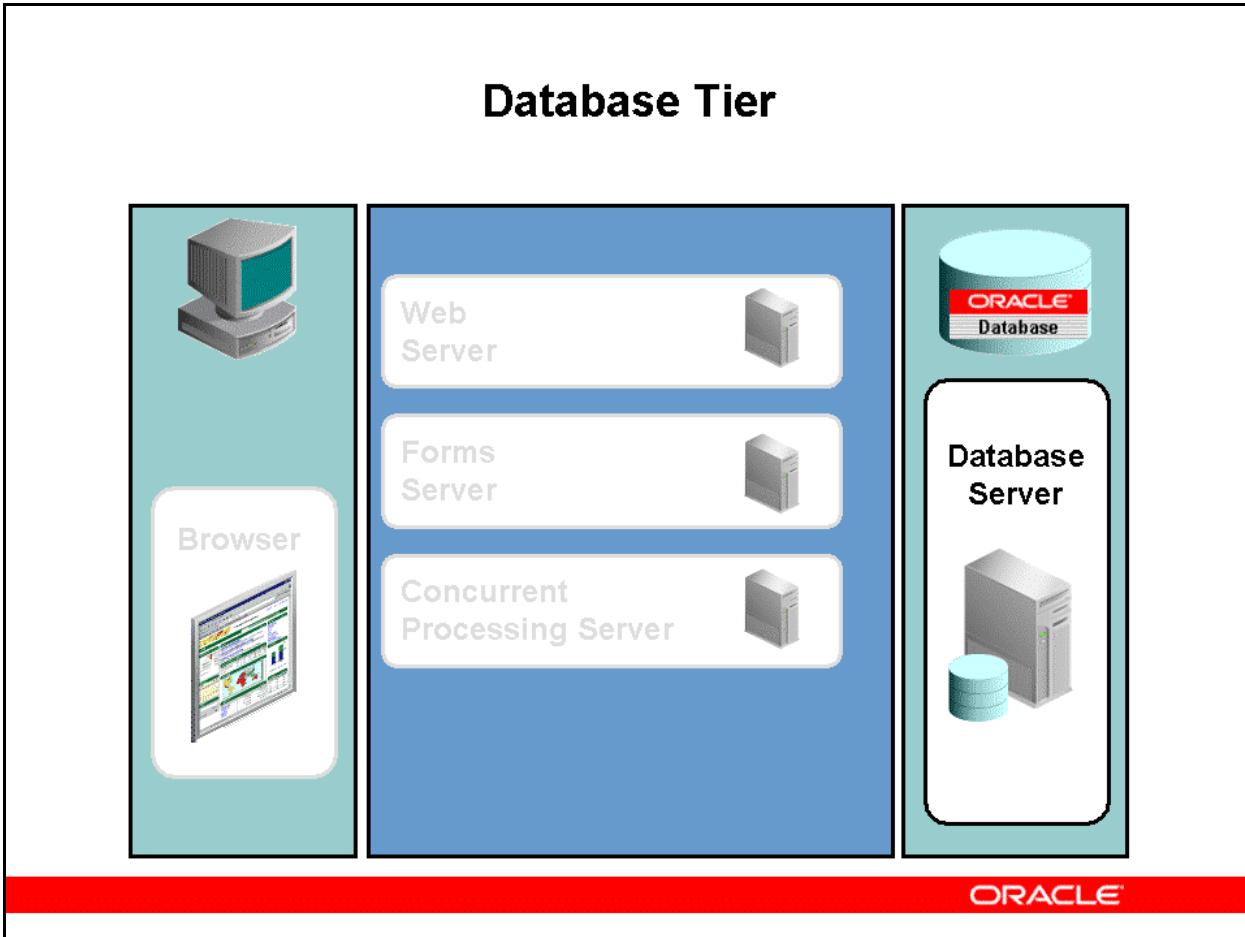


#### Administration Server

The term *Administration server* is an historical one: there is no such component in the Release 12 architecture. By default, any application tier node can be used to carry out the following operations:

- **Applying database patches to Oracle E-Business Suite** - Most patches consist of files and scripts that update the file system and database objects. You use the AutoPatch utility (adpatch) to perform these updates. AutoPatch may also be used to apply cumulative patches such as minipacks and maintenance packs.
- **Maintaining Oracle E-Business Suite data** - Some features require regular maintenance to ensure that the system is operating optimally. The AD Administration utility (adadmin) enables you to carry out this and other file system and database maintenance tasks.

## Database Tier



### Database Tier

The database tier contains the Oracle database server, which stores all the data maintained by Oracle E-Business Suite. The database also stores the Oracle E-Business Suite online help information.

The database server does not communicate directly with desktop clients, but rather with the servers on the application tier, which mediate communication between the database server and the clients.

## Oracle Homes in Release 12.1

### Oracle Homes in Release 12.1

Oracle E-Business Suite Release 12.1 utilizes three Oracle homes:

- Oracle Database 11g Release 1 RDBMS ORACLE\_HOME:
  - Used by the Oracle database server
- Application Server 10.1.2 ORACLE\_HOME:
  - Known as the Tools, C, or Developer ORACLE\_HOME
  - Replaces the 8.0.6 ORACLE\_HOME in Release 11*i*
- Application Server 10.1.3 ORACLE\_HOME:
  - Known as the Web or Java ORACLE\_HOME
  - Replaces the iAS ORACLE\_HOME in Release 11*i*

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### Oracle Homes in Release 12.1

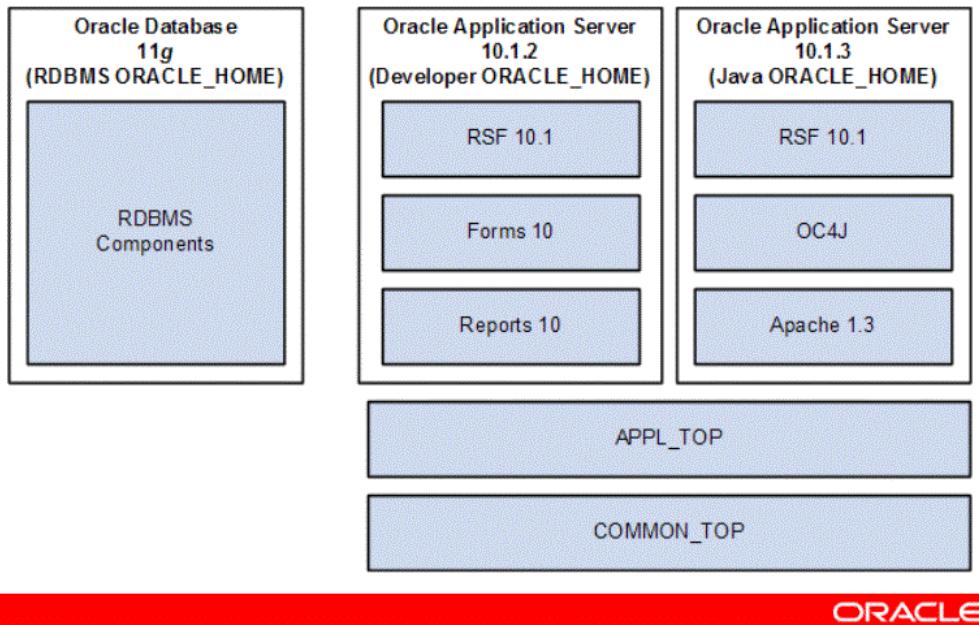
The Oracle E-Business Suite Release 12.1 architecture utilizes three ORACLE\_HOMES:

- The Oracle 11g Release 1 Database ORACLE\_HOME replaces the Oracle9*i* ORACLE\_HOME used in Release 11*i*.
- The Application Server 10.1.2 ORACLE\_HOME (sometimes referred to as the Tools, C, or Developer ORACLE\_HOME) replaces the 8.0.6 ORACLE\_HOME in Release 11*i*.
- The Application Server 10.1.3 ORACLE\_HOME (sometimes referred to as the Web or Java ORACLE\_HOME) replaces the iAS ORACLE\_HOME in Release 11*i*.

## Oracle Homes Architecture

### Oracle Homes Architecture

- The three Oracle Homes fit into the architecture as follows:



### Oracle Homes Architecture

The slide summarizes the Oracle Home architecture in Release 12.1.

## Oracle E-Business Suite Technology Layer

### Oracle E-Business Suite Technology Layer

The Oracle E-Business Suite technology layer is an integrated collection of components that are used by all Oracle E-Business Suite modules:



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### Oracle E-Business Suite Technology Layer

The Oracle E-Business Suite technology layer is an integrated collection of components whose functionality is applicable to all Oracle E-Business Suite modules. These components include:

- Applications DBA (AD)
- Application Object Library (FND)
- Applications Utilities (AU)
- Workflow (WF)
- Alert (ALR)
- OA Framework (FWK)
- Oracle XML Publisher (XDO)

## Applications DBA (AD)

### Applications DBA (AD)

The Applications DBA component provides a range of utilities that are used for installing, maintaining, and patching an Oracle E-Business Suite system:

- AD Administration
- AD Merge Patch
- AutoConfig
- AutoPatch
- Rapid Clone
- Rapid Install

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## Applications DBA (AD)

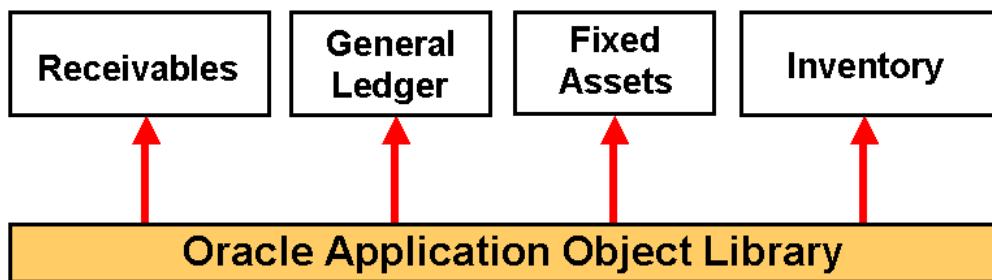
The Applications DBA component provides a set of tools for installing, patching, and maintaining the Oracle E-Business Suite file system and database. The AD utilities include:

- **AD Administration** - Performs general maintenance tasks for Oracle E-Business Suite.
- **AD Merge Patch** - Merges multiple patches into a single, integrated patch.
- **AutoConfig** - Manages configuration changes in an Oracle E-Business Suite system.
- **AutoPatch** - Applies patches and adds new languages and products to an Oracle E-Business Suite system.
- **Rapid Clone** - Used to clone an Oracle E-Business Suite system.
- **Rapid Install** - Sets up a fully configured Oracle E-Business Suite system, including the latest certified technology stack and all patches, minipacks, and other updates.

## Oracle Application Object Library (FND)

### Oracle Application Object Library (FND)

Oracle Application Object Library is a collection of reusable code, programs, and database objects that provides common functionality across all products:



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### Oracle Application Object Library (FND)

The Oracle Application Object Library is a key component of the Oracle E-Business Suite technology layer. It consists of a collection of reusable code, programs, and database objects that provides common functionality across all products.

Oracle Application Object Library offers many features to facilitate system administration. These include:

- Security setup and maintenance features.
- Management of concurrent processing.
- Uniformity between products of flexfield processing and procedures for report submission.
- Capability to allow the creation of custom programs that interact with the base Oracle E-Business Suite modules.

## Oracle Application Object Library: End User Features

### Oracle Application Object Library: End User Features

Oracle Application Object Library includes features that provide uniformity across Oracle E-Business Suite products:

- Standard user interface
- Shared flexfield value sets
- Standard Report Submission (SRS)
- Applications Online Help
- User profiles

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### End User Features

Oracle Application Object Library includes several features that help provide uniformity of function across the various Oracle E-Business Suite products:

- **Standard user interface** - The Application Object Library supports the integration of Oracle E-Business Suite by providing standardized functionality and capabilities across all products so that the look and feel do not vary from product to product.
- **Shared flexfield value sets** - Flexfields allow the entry of certain important information to be standardized across all products. One example is the Accounting flexfield, which is used by Financials products and Manufacturing products.
- **Standard Report Submission (SRS)** - The procedure to submit a background report to the concurrent manager using SRS is the same regardless of the product that owns the report. SRS takes advantage of shared flexfield value sets.
- **Applications Online Help** - The presentation of Applications Online Help is also standardized across all products and accessed through a browser.
- **Profile options** - Applications Object Library allows you to configure Oracle E-Business Suite easily by setting certain profile options.

## Oracle Application Object Library: Developer Features

### Oracle Application Object Library: Developer Features

Various Oracle E-Business Suite features can be utilized when creating custom forms, reports or programs:

- **GUI and coding standards**
  - As used by Oracle Development
- **Standard Report Submission**
  - Custom reports can be submitted using SRS
- **Flexfield development**
  - Custom forms can utilize standard capabilities
- **Custom menus and responsibilities**
  - Can be integrated with Oracle E-Business Suite

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### Developer Features

Application Object Library provides many features for developers creating custom forms, reports or programs that interface with Oracle E-Business Suite.

- **GUI and coding standards** - The same coding and Graphical User Interface (GUI) standards used by Oracle E-Business Suite developers are available to custom developers.
- **Standard Report Submission** - Custom reports can be integrated into Standard Report Submission so that they can be submitted and monitored using the same procedures as other Oracle E-Business Suite reports. Developers can set up certain menus and responsibilities to access custom reports or standard objects.
- **Flexfield development** - Flexfields used in custom forms can take advantage of existing flexfield capabilities such as value sets, validation, and security rules.
- **Custom menus and responsibilities** - Custom menus and responsibilities can be seamlessly integrated with Oracle E-Business Suite.

Detailed information on custom features for developers is available in the *Oracle E-Business Suite Developer's Guide*.

## Oracle Application Object Library: System Administration Features

### Oracle Application Object Library: System Administration Features

- Set up new Oracle E-Business Suite users
- Manage and control security
- Audit user activity
- Set user and system profiles
- Manage concurrent processing

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#### System Administration Features

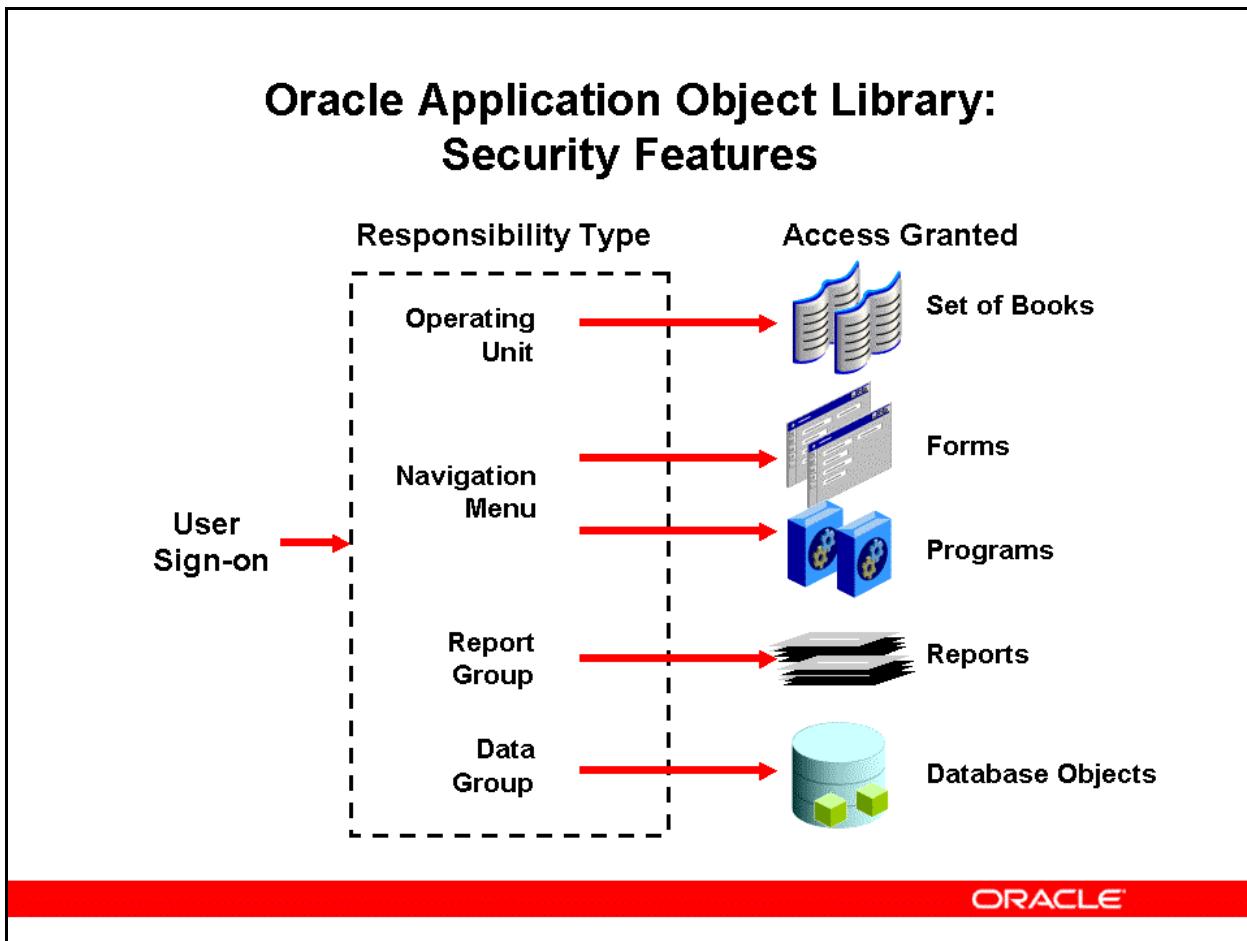
Oracle Application Object Library provides many features to simplify administration of Oracle E-Business Suite, enabling the system administrator to carry out routine tasks quickly and easily.

These features include the ability to:

- **Set up new users** - Register new Oracle E-Business Suite users and give them access to only those forms, functions, and reports they need to do their jobs.
- **Manage and control security** - Decide which users have access to each product, and within a product, which forms, functions, and reports a user can access.
- **Audit user activity** - Monitor what users are doing and when. Choose who to audit and what type of data to audit.
- **Set user and system profiles** - A profile is a set of changeable options that affects the way Oracle E-Business Suite looks and behaves. A system administrator can set profile values at the site, application, responsibility, and user levels.

- **Manage concurrent processing** - A system administrator can monitor and control concurrent processing using various interfaces, including forms and Oracle Applications Manager (OAM).

## Oracle Application Object Library: Security Features



### Application Object Library Security

Application Object Library controls access to the data in Oracle E-Business Suite via user sign-ons and responsibilities. Each user must have a user name and password to gain access to Oracle E-Business Suite.

A *responsibility* is a level of authority in Oracle E-Business Suite that lets Oracle E-Business Suite users access only those functions and data appropriate to their role in the organization. Responsibilities allow access to a specific product, operating unit, set of books and a restricted list of windows, functions, reports, and groups of products, or data groups.

The forms available from the navigation menus vary by responsibility. For example, the Purchasing User navigation menu does not include all the forms that are available to the Purchasing Super User navigation menu.

When you install Oracle E-Business Suite, a standard user called SYSADMIN is automatically created. Several default responsibilities are also created. Since the SYSADMIN sign-on is automatically assigned the System Administration responsibility, you can use SYSADMIN to create new user sign-ons and assign them to responsibilities. You can also create any custom responsibilities you need.

## Oracle Applications Utilities (AU)

### Oracle Applications Utilities (AU)

AU is used to maintain an Oracle E-Business Suite system:

- AU hosts certain product files in a central location
  - For example, Forms source files (.fmb)
- This allows generating on-site classes of files such as Forms and reports
- Generating forms or reports may require access to shared PL/SQL libraries
  - These are also copied to AU\_TOP

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### Oracle Applications Utilities (AU)

The Applications Utilities (AU) component is used to maintain the Oracle E-Business Suite system.

AU hosts a collection of files copied from other products. This allows generating on-site classes of files such as Forms and reports, or running reports invoked by the reports server from a standard, shared location. Generating forms or reports may require access to shared PL/SQL libraries, so these files are copied to AU\_TOP as well.

## Oracle Application Framework (OAF)

### Oracle Application Framework (OAF)

OAF is an active data dictionary that is used to:

- Define components for HTML-based applications
- Generate runtime characteristics of applications
- Develop inquiry applications for the HTML-based applications without programming
- Help to support multiple languages

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### Oracle Application Framework (OAF)

OA Framework is a Java and XML-based development method used in Oracle E-Business Suite to develop HTML-based applications. OA Framework pages are based around the Model-View-Controller (MVC) design strategy that mixes declarative (XML-based) and programmatic (Java-based) components to create a complete web-based application.

OA Framework pages are developed using a version of Oracle's JDeveloper 10g tool specifically tailored for use with Oracle E-Business Suite. While the Java-based components of OA Framework pages are stored in the file system, the declarative XML-based UI is stored in the Metadata Store (MDS). By storing the XML data centrally (in MDS) and hierarchically (in XML), OA Framework allows page attributes to be modified and changed easily, via Personalizations.

## Oracle Workflow (WF)

### Oracle Workflow (WF)

Oracle Workflow provides an infrastructure for communication of data between products, to:

- Manage enterprise business processes
- Support standard and personalized business rules
- Streamline and automate transaction flows
- Manage exceptions without manual intervention
- Deliver notification emails to any Oracle E-Business Suite or Internet user

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### Oracle Workflow

Oracle Workflow provides an infrastructure for the enterprise-wide communication of data related to defined business events, providing the capabilities needed to:

- Manage enterprise business processes that may span trading partners
- Support standard and personalized business rules
- Streamline and automate transaction flows
- Manage exceptions without manual intervention

Oracle Workflow lets you model and maintain your business processes using a graphical workflow builder. You can model and automate sophisticated business processes, defining processes that can loop, branch into parallel flows and rendezvous, decompose into sub-flows, branch on task results, time out, and more.

Acting as a system integration hub, Oracle Workflow can apply business rules to control objects and route them between applications and systems. It extends the reach of business process automation throughout an enterprise and beyond, to include any email user, web user, or system, enabling people to receive, analyze, and respond to *notifications* needing their attention. Users can respond to a notification via any standard email system or standard Web browser.

## Oracle Alert (ALR)

### Oracle Alert (ALR)

Oracle Alert allows you to:

- Email notifications to users when an event occurs
- Notify users about specified database exceptions
- Perform routine tasks automatically according to a schedule that you define

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### Oracle Alert (ALR)

Oracle Alert (ALR) allows you to email system notifications to users when an exception or event occurs. Some products are delivered with predefined alerts, which can be used to notify users about specified database exceptions as they occur, and perform routine tasks automatically according to a schedule you define.

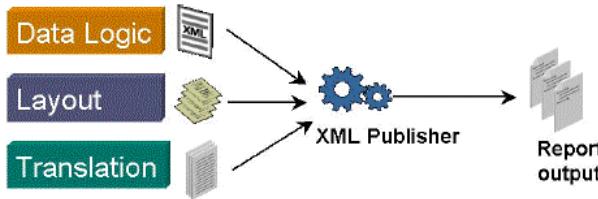
For example, you can configure Oracle Alert to send an email to key database administrators when a tablespace in the Oracle E-Business Suite database does not have adequate free space.

## Oracle XML Publisher (XDO)

### Oracle XML Publisher (XDO)

XML Publisher is a Java-based publishing tool that:

- Takes as input XML data from a source such as Oracle Reports, Java, or PL/SQL
- Applies a formatting template created with a desktop application such as Adobe Acrobat or Microsoft Word
- Produces output in PDF or other formats
- Is integrated with the Oracle E-Business Suite technology stack



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### Oracle XML Publisher (XDO)

Oracle XML Publisher is a Java-based product based on the Worldwide Web Consortium (W3C) Extensible Stylesheet Language (XSL). It utilizes the XSL-FO standard to transform XML data into a formatting object (FO).

Oracle XML Publisher uses *data definitions* and *templates* to produce output reports in the desired format. A data definition is a data source (or a combination of data sources) that either is XML or can produce XML. Examples of definitions include output from concurrent programs and Web services. A template is a report definition, which sets out how a report should look.

Oracle XML Publisher:

- Provides a template-based, easy-to-use publishing solution for end-users
- Allows users to employ familiar desktop tools to create and maintain reports in their preferred format, and then use XML Publisher to convert them to the XSL-FO format
- Offers a variety of options for published documents, such as multiple output formats, multiple languages, and multiple delivery options

## Oracle Applications Manager (OAM)

### Oracle Applications Manager (OAM)

**OAM is a key system administration tool:**

**System Administration and OAM**

Oracle Applications Manager (OAM) is a sophisticated tool that supports managing and monitoring an Oracle E-Business Suite system from an HTML-based central control console.

Among other tasks, Oracle Applications Manager can help you to:

- Configure and administer your system
- Diagnose and correct problems
- Manage patches
- Monitor and tune performance
- Monitor system security

OAM is built into Oracle E-Business Suite and available as standard. You can also license the optional Application Management Pack for Oracle E-Business Suite. For further details, see *My Oracle Support Knowledge Document Note 394448.1, Getting Started with the Oracle Application Management Pack for Oracle E-Business Suite*.

## Summary of Technology Stack Changes Between Releases 11i and 12.1

### New versions of database tier technology:

- Oracle Database 9*i* → Oracle Database 11g Release 1

### New versions of application tier technology:

- Oracle Application Server: 1.0 → 10.1
- Oracle HTTP Server/Apache: 1.3.19 → 10.1.3 (in OracleAS 10.1.3 Oracle Home)
- Oracle Developer: 6*i* → 10g (in OracleAS 10.1.2 Oracle Home)
- Oracle JDeveloper: 9*i* → 10g

### New application tier technology component:

- Servlet Container: JServ → OC4J

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### Recap of Technology Stack Changes

This slide summarizes the main changes to the Oracle E-Business Suite technology stack between Releases 11*i* (11.5.10) and 12.1.

## Module Summary

### Module Summary

In this module, you should have learned how to do the following:

- Explain how Oracle E-Business Suite utilizes the technology stack components
- Identify the components that make up the desktop, application and database tiers
- Describe the Oracle E-Business Suite Technology layer products

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## Module Discussion

### Module Discussion

- Describe the basic architecture of Oracle E-Business Suite
- List the servers and services used in the application tier and describe the purpose of each
- Discuss the roles of the components of the Oracle E-Business Suite technology layer

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# **Environment Files, Control Scripts, and Languages**

## **Chapter 6**



## Environment Files, Control Scripts, and Languages

# Environment Files, Control Scripts, and Languages

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- Describe the Oracle E-Business Suite main environment file and its key parameters
- Identify other important environment files
- Start and stop server processes
- Explain how languages are supported by Oracle E-Business Suite

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## Topic Overview

### Topic Overview

This module discusses the following topics:

- The main Oracle E-Business Suite environment file, <CONTEXT\_NAME>.env, and its key parameters
- Other Oracle E-Business Suite environment files, including:
  - adovars.env
  - adconfig.txt
  - fndenv.env
  - devenv.env
- Application tier server process scripts
- Character sets
- Additional languages
- Translated language items

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### Overview

A number of environment files are used to control the setup and configuration of an Oracle E-Business Suite system. This module explains the role of these environment files, and describes the type of information they contain.

The module also describes the language-related components of Oracle E-Business Suite. It explains how character sets are used to support languages, and how language components are stored within the file system.

## Introduction to Environment Files

### Introduction to Environment Files

Rapid Install creates a number of environment files:

Filename	Location	Environment
<CONTEXT_NAME>.env <CONTEXT_NAME>.cmd	11g Release 1 Database ORACLE_HOME	Oracle Database
<CONTEXT_NAME>.env <CONTEXT_NAME>.cmd	\$INST_TOP/ora/10.1.2	Technology Stack (Tools)
<CONTEXT_NAME>.env <CONTEXT_NAME>.cmd	\$INST_TOP/ora/10.1.3	Technology Stack (Java)
<CONTEXT_NAME>.env <CONTEXT_NAME>.cmd	\$APPL_TOP	Oracle E-Business Suite
APPS<CONTEXT_NAME>.env APPS<CONTEXT_NAME>.cmd	\$APPL_TOP	Consolidated Environment File

### Introduction to Environment Files

Rapid Install creates individual environment setup files for the Oracle Database, tools technology stack, Java technology stack, and Oracle E-Business Suite itself.

The main environment setup files are called <CONTEXT\_NAME>.env on UNIX, or <CONTEXT\_NAME>.cmd on Windows. <CONTEXT\_NAME> is the Applications context name, which by default is <SID>\_<hostname>.

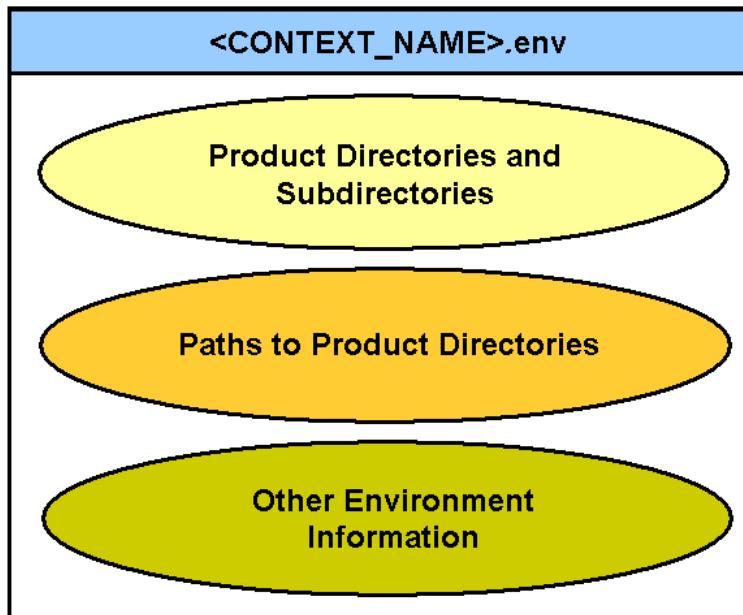
In addition to these individual environment files, a *consolidated environment file* in the APPL\_TOP directory, APPS<CONTEXT\_NAME>.env (APPS<CONTEXT\_NAME>.cmd on Windows) sets up the Oracle E-Business Suite and Oracle technology stack environments.

This consolidated environment file is implemented differently on UNIX and Windows:

- On UNIX, you run the consolidated environment file APPS<CONTEXT\_NAME>.env as a normal UNIX script.
- On Windows, you run the %APPL\_TOP%\envshell<CONTEXT\_NAME>.cmd command file to create a command window which runs the consolidated environment file, APPS<CONTEXT\_NAME>.cmd. All subsequent operations on the APPL\_TOP (for example, running adadmin or adpatch) must be carried out from this window. Details of the environment file are stored in the Windows Registry.

## <CONTEXT\_NAME>.env Environment File

### <CONTEXT\_NAME>.env Environment File



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## <CONTEXT\_NAME>.env Environment File

Many of the parameters in this file have their values specified during the install process. Where applicable, parameter values can be changed later via Oracle Applications Manager.

## Key Parameters in <CONTEXT\_NAME>.env

### Key Parameters in <CONTEXT\_NAME>.env

- **APPLFENV** – The name of this environment file, <CONTEXT\_NAME>.env
- **PLATFORM** – The operating system in use
- **APPL\_TOP** – The top-level directory for this Oracle E-Business Suite installation
- **ADMIN\_SCRIPTS\_HOME** – Directory under \$INST\_TOP that identifies the location of control scripts
- **FNDNAM** – The name of the schema to which the System Administration responsibility connects
- **GWYUID** – The user name and password that give access to the initial sign-on

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## Key Parameters in <CONTEXT\_NAME>.env

- **APPLFENV** – The name of this environment file, <CONTEXT\_NAME>.env. If you rename the environment file, change this parameter.
- **PLATFORM** – The execution platform. The value should match the value in the APPL\_TOP/admin/adpltfrm.txt.
- **APPL\_TOP** – The top-level directory for this Oracle E-Business Suite installation.
- **ADMIN\_SCRIPTS\_HOME** – Directory under \$INST\_TOP that Identifies the location of scripts such as adautocfg.sh, adpreclone.sh, adstrtal.sh, and adstpall.sh.
- **FNDNAM** – The name of the ORACLE schema to which the System Administration responsibility connects. This is set to APPS and should not be changed.
- **GWYUID** – The public username and password that grants access to the Oracle E-Business Suite initial sign-on form. The default is APPLSYSPUB/PUB and should not be changed.

## Key Parameters in <CONTEXT\_NAME>.env

### Key Parameters in <CONTEXT\_NAME>.env

- **FND\_TOP** – Path to the Oracle Application Object Library directory
- **AU\_TOP** – Path to the Applications Utilities directory
- **<PROD>\_TOP** – Path to a product's top directory
- **PATH** – Sets the directory search path
- **APPLDCP** – Specifies whether Parallel Concurrent Processing is being used

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## Key Parameters in <CONTEXT\_NAME>.env

- **FND\_TOP** – The path to the Application Object Library directory. For example, apps/apps\_st/appl/fnd/12.0.0.
- **AU\_TOP** – The path to the Applications Utilities directory. For example, apps/apps\_st/appl/au/12.0.0.
- **<PROD>\_TOP** – The path to a product's top-level directory. There is one entry for each Oracle E-Business Suite product.
- **PATH** – Sets the directory search path. Primarily for use with FND\_TOP and AD\_TOP.
- **APPLDCP** – Specifies whether Parallel Concurrent Processing is being used. Should be set to OFF if this feature is not being used.

## Key Parameters in <CONTEXT\_NAME>.env

### Key Parameters in <CONTEXT\_NAME>.env

- APPCPNAM – Indicates whether the format of the concurrent manager log and output files follow 8.3 file name conventions
- APPLCSF – Identifies the top-level directory for concurrent manager log and output files if they are consolidated into one directory for all products
- APPLLOG – The subdirectory for concurrent manager log files
- APPLOUT – The subdirectory for concurrent manager output files

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## Key Parameters in <CONTEXT\_NAME>.env

- APPCPNAM – Indicates whether the format of the concurrent manager log and output files follow 8.3 filename conventions (maximum of 8 characters to the left of the dot and 3 to the right, for example, alogfile.log). If this parameter is set to ‘REQID’, concurrent processing uses file names that meet 8.3 naming requirements.
- APPLCSF – Identifies the top-level directory for concurrent manager log and output files if they are consolidated into a single directory across all products. For example, /inst/apps/<context>/logs/appl/conc.
- APPLLOG – The subdirectory for concurrent manager log files. The default is *log*.
- APPLOUT – The subdirectory for concurrent manager output files. The default is *out*.

## Key Parameters in <CONTEXT\_NAME>.env

### Key Parameters in <CONTEXT\_NAME>.env

- **APPLTMP** – Identifies the directory for Oracle E-Business Suite temporary files
- **APPLPTMP** – Identifies the directory for temporary PL/SQL output files
- **INST\_TOP** – Identifies the top-level directory for this instance
- **NLS\_LANG** – The language, territory, and character set installed in the database

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## Key Parameters in <CONTEXT\_NAME>.env

- **APPLTMP** – Identifies the directory for Oracle E-Business Suite temporary files. The default is \$INST\_TOP/appltmp on UNIX and %INST\_TOP%\appltmp on Windows.
- **APPLPTMP** – Identifies the directory for temporary PL/SQL output files. The default is /tmp on UNIX and C:\TEMP on Windows.
- **INST\_TOP** – Identifies the top-level directory for this instance. For example, inst/apps/<context>. New with Release 12.
- **NLS\_LANG** – The language, territory, and character set installed in the database. The default for a fresh install is "AMERICAN\_AMERICA.US7ASCII".

## Key Parameters in <CONTEXT\_NAME>.env

### **Key Parameters in <CONTEXT\_NAME>.env**

- **NLS\_DATE\_FORMAT** – The National Language Support date format
- **NLS\_NUMERIC\_CHARACTERS** – The National Language Support numeric separators

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## **Key Parameters in <CONTEXT\_NAME>.env**

- **NLS\_DATE\_FORMAT** – The National Language Support date format. The default is "DD-MON-RR", e.g. 31-MAR-10.
- **NLS\_NUMERIC\_CHARACTERS** – The National Language Support numeric separators. The default is ".", (period and comma).

## Temporary Files

### Temporary Files

- Most temporary files are written to the location specified by the APPLTMP environment setting
- Temporary PL/SQL output files used in concurrent processing are written to a directory on the database server node specified by APPLPTMP
- As some Oracle E-Business Suite utilities always use the operating system's default temporary directory, this must have adequate free space

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### Temporary Files

Most temporary files are written to the location specified by the APPLTMP environment setting, which is set by Rapid Install.

Oracle E-Business Suite also produces temporary PL/SQL output files as part of concurrent processing operations. These files are written to a location on the database server node specified by the APPLPTMP environment setting. The APPLPTMP directory must be the same directory as specified by the UTL\_FILE\_DIR parameter in the database initialization file. Rapid Install sets both APPLPTMP and the UTL\_FILE\_DIR parameter to the same default directory. On a multi-node system, the directory defined by APPLPTMP does not need to exist on the application tier servers.

## The adovars.env File

### The adovars.env File

Located in APPL\_TOP/admin, and called from <CONTEXT\_NAME>.env, adovars.env specifies:

- **JAVA\_TOP** – Top-level Java directory
- **OA\_JRE\_TOP** – Location where JRE is installed
- **OAH\_TOP** – Location of HTML files
- **OAD\_TOP** – Location of context-sensitive documentation files
- **LD\_LIBRARY\_PATH** – Directories to be scanned for dynamic library files needed at runtime
- **CLASSPATH** – Directories and zip files to be scanned for Java class files needed at runtime

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### The adovars.env File

The adovars.env file is located in \$APPL\_TOP/admin and called from <CONTEXT\_NAME>.env. Via environment variables, it specifies the locations of various types of file. For example:

- **JAVA\_TOP** – The top-level directory to which all Java files are copied.
- **OA\_JRE\_TOP** – The location where JRE is installed.
- **OAH\_TOP** – The location to which HTML files are copied.
- **OAD\_TOP** – The locations to which context-sensitive documentation files are copied.
- **LD\_LIBRARY\_PATH** – Used on many UNIX platforms to list the directories scanned for dynamic library files needed at runtime.
- **CLASSPATH** – Lists the directories and zip files scanned for Java class files needed at runtime.

## The adconfig.txt File

### The adconfig.txt File

- Stores Oracle E-Business Suite configuration information
- Located in <APPL\_TOP>/admin
- Created when Oracle E-Business Suite is installed
- Used by AD utility programs

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## The adconfig.txt File

AD utility programs perform a variety of database and file management tasks, for which they require access to specific configuration details. This information, specified when Oracle E-Business Suite is installed, is stored in the *adconfig.txt* file in the <APPL\_TOP>/admin directory.

## The fndenv.env File

### The fndenv.env File

- Located in the FND\_TOP directory
- Sets additional environment variables used by Oracle Application Object Library
- The default values within this file should not be modified

The red bar spans the width of the slide content area.

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### The fndenv.env File

The fnddev.env file, located in the FND\_TOP directory, sets additional environment variables used by Oracle Application Object Library. For example, it sets APPLBIN to the name of the bin subdirectory where product executable programs and shell scripts are stored.

This file should not be modified: the default values are applicable for all customers.

## The devenv.env File

### The devenv.env File

- Used to identify and describe third-party and custom applications linked with Oracle E-Business Suite
- Automatically called by fndenv.env

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### The devenv.env File

The devenv.env file sets variables that let you link third-party software and your own custom applications with Oracle E-Business Suite. This script is located in FND\_TOP, and is automatically called by fndenv.env so that you can compile and link custom Oracle Forms user exits and concurrent programs with Oracle E-Business Suite.

See the *Oracle E-Business Suite Developer's Guide* for detailed information on customizing the devenv.env file.

## Application Tier Server Control Scripts

### Application Tier Server Control Scripts

The application tier server process control scripts are:

- Used to start and stop server processes on the applications tier
- For example:
  - adautocfg.sh (Run AutoConfig)
  - adcctl.sh (Start or stop concurrent managers)
  - adapcctl.sh (Start or stop HTTP server)
- Located in the \$ADMIN\_SCRIPTS\_HOME directory
- Created by Rapid Install during the installation
- Recreated by AutoConfig as necessary

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### Application Tier Server Control Scripts

AutoConfig utilizes a number of application tier control scripts, located in \$ADMIN\_SCRIPTS\_HOME (\$INST\_TOP/admin/scripts).

## Application Tier Server Control Scripts

### Application Tier Server Control Scripts

An application tier server process is started or stopped with a command of the following form:

```
<process script name> [stop | start]
```

Shell scripts (.sh) are used on UNIX, and command files (.cmd) are used on Windows

For example, to start the Applications listener on UNIX:

```
$ adalnctl.sh start
```

To stop the Applications listener on Windows:

```
C:\> adalnctl.cmd stop
```

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### Oracle E-Business Suite Tier Server Control Scripts

There is an alternative method of controlling server processes on Windows:

1. Go to Start > Administrative Tools > Services
2. Select the relevant service from the Services window.
3. Click Start or Stop, as required.

## Application Tier Server Control Scripts

### Application Tier Server Control Scripts

The principal application tier server process control scripts are used to start and stop all relevant server processes:

Script or Command File	Function
<code>adstrtal.sh &lt;APPSuser/APPSpwd&gt;</code> <code>adstrtal.cmd &lt;APPSuser/APPSpwd&gt;</code>	Starts all application tier server processes
<code>adstpall.sh &lt;APPSuser/APPSpwd&gt;</code> <code>adstpall.cmd &lt;APPSuser/APPSpwd&gt;</code>	Stops all application tier server processes

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### Application Tier Server Control Scripts

The adstrtal.sh and adstpall.sh scripts (command files on Windows) are the most convenient way to start and stop all application tier processes.

## Application Tier Server Control Scripts

### Application Tier Server Control Scripts

Additional application tier server process control scripts are used to start and stop specific server processes:

Script	Description
<code>adfrmctl.sh/adfrmctl.cmd</code>	Starts and stops Forms OC4J instance (servlet mode)
<code>adfrmsrvctl.sh/adfrmsrvctl.cmd</code>	Starts and stops the Forms services (socket mode)
<code>adalnctl.sh/adalnctl.cmd</code>	Starts and stops Applications listener

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### Application Tier Server Control Scripts

Different Forms control scripts (command files on Windows) are used, depending on whether servlet or socket mode is in use.

## Application Tier Server Control Scripts

### Application Tier Server Control Scripts

Additional application tier control scripts are used to start and stop specific server processes:

Script	Description
<code>adcmctl.sh/adcmctl.cmd</code>	Starts and stops concurrent managers
<code>adapcctl.sh/adapcctl.cmd</code>	Starts and stops the HTTP server

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### Application Tier Server Control Scripts

`adcmctl.sh` and `adcmctl.cmd` require the APPS username and password.

## Modifying Environment Files

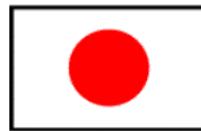
### Modifying Environment Files

- Oracle E-Business Suite Release 12 automatically uses (and requires) the AutoConfig utility to manage configuration and environment files
- All files maintained by AutoConfig have a header stating ***This file is automatically generated by AutoConfig. It will be read and overwritten.***
  - You should therefore not edit any of these files manually
- Where a modification is required, you should make the change using the Oracle Applications Manager interface to AutoConfig
  - You then run AutoConfig to recreate the configuration and environment files

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## Oracle E-Business Suite Languages

### Oracle E-Business Suite Languages



Language

US English

Directory Code

US

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### Oracle E-Business Suite Languages

Oracle E-Business Suite can run in many other languages as well as American English: over thirty other languages are supported by Release 12. In addition, multiple languages can be supported simultaneously. These capabilities are provided by the following features:

- *National Language Support* (NLS): the capability to run an Oracle E-Business Suite instance in any supported language, including specific regional number and date formats.
- *Multiple Language Support* (MLS): the capability to support multiple languages in the same Oracle E-Business Suite instance. Most products in Release 12 are MLS-enabled.

The language directory code is used to name the directory containing files specific to a language. For example, American English language-specific files are located in the ‘us’ subdirectory.

## Oracle E-Business Suite Languages

### Oracle E-Business Suite Languages

Language	Directory Code
Arabic	AR
Czech	CS
German	D
Danish	DK
Spanish	E
Greek	EL
Latin American Spanish	ESA
French	F
Canadian French	FRC
Croatian	HR
Hungarian	HU

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## Oracle E-Business Suite Languages

### Oracle E-Business Suite Languages

Language	Directory Code
Italian	I
Hebrew	IW
Japanese	JA
Korean	KO
Lithuanian	LT
Norwegian	N
Dutch	NL
Polish	PL
Portuguese	PT
Brazilian Portuguese	PTB
Romanian	RO

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## Oracle E-Business Suite Languages

### Oracle E-Business Suite Languages

Language	Directory Code
Russian	RU
Swedish	S
Finnish	SF
Slovak	SK
Slovenian	SL
Thai	TH
Turkish	TR
Ukrainian	UK
Vietnamese	VN
Simplified Chinese	ZHS
Traditional Chinese	ZHT

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## Character Sets: Introduction

### Character Sets: Introduction

Character sets are encoded binary values that represent letters, numerals, and punctuation marks, and include the following common examples:

Character Set	Description
US7ASCII	US 7-bit ASCII
WE8ISO8859P1	Western European 8-bit
EE8ISO8859P2	Eastern European 8-bit
AR8ISO8859P6	Arabic 8-bit
JA16EUC	Japanese 16-bit
ZHT32EUC	Traditional Chinese 32-bit
UTF8 and AL32UTF8	Unicode multi-byte

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### Character Sets: Introduction

Character sets are sets of encoded binary values that represents letters, numerals, and punctuation marks. A character set, sometimes called a codeset, supports one or more languages. For example, the WE8ISO8859P1 character set can be used by English and many other languages that use a Latin-based alphabet and Arabic numerals. Computer displays and printers convert these encoded values to characters they can display or print.

The Unicode (UTF8) character set supports all characters in common use in all of the world's modern languages. In Oracle

E-Business Suite, support for Unicode removes the limitation on the number of supported languages that can be run in a single database. Oracle E-Business Suite Release 12.1 supports the AL32UTF8 character set, which extends the capabilities of UTF8 by providing support for the supplementary characters used by some languages.

## Character Sets: Database Tier

### Character Sets: Database Tier

- By default, Rapid Install creates a new database with the US7ASCII character set, or a Vision database with the UTF8 character set
- You can if desired choose another database character set when running Rapid Install
- Multibyte character sets may require more storage space than single-byte character sets



### Character Sets: Database Tier

By default, Rapid Install creates a production database with the US7ASCII character set, and a Vision demo database with the UTF8 character set. The US7ASCII character set only supports American English. However, you can choose any other supported character set during the installation. Other character sets vary in the number of languages they support.

This has several implications. For example, if you need to support the French language and also want to use the euro symbol, you might choose WE8ISO8859P15 as the database character set when running Rapid Install. WE8ISO8859P15 is a superset of US7ASCII, supports both English and French, and contains the euro symbol. If you need to support English, French, Japanese, and Arabic, you must choose UTF8 or AL32UTF8, as these Unicode character sets are the only ones that support all four languages.

Unicode character sets such as UTF8 and AL32UTF8 have the advantage of being variable length, depending on the data. For example, if you use Unicode to store both English and Japanese data, only the Japanese data would require multiple bytes. If you use a fixed length character set like JA16EUC, both the English and Japanese data would require multiple bytes.

When compared to a single-byte character set such as WE8ISO8859P15, a multibyte character set such as UTF8 or AL32UTF8 may require more space for language setup and transaction data. This is because each character used may require more than one byte of storage space.

## Character Sets: Application Tier

### Character Sets: Application Tier

- By default, the application tier file system is created with the US7ASCII character set for a production instance, or UTF8 for a Vision demo instance
- Rapid Install recommends the application tier character set based on the languages licensed
- Character sets on all tiers must be compatible with each other, to prevent data loss
- All application tier servers must have the same set of languages installed
- If you use UTF8 or AL32UTF8 on any tier, you must use it on all tiers

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### Character Sets: Application Tier

By default, Rapid Install creates the application tier file system for a production instance with the US7ASCII character set, and the file system for a Vision demo instance with the UTF8 character set. However, you can choose any other supported character set during the installation. Rapid Install recommends the application tier character set based on the languages licensed.

Character sets on all tiers must be compatible with each other. In particular, the Web server must use a character set that is supported by the browser on the desktop tier. This is the only compatibility requirement between the desktop tier and application tier. All other application tier servers can be configured with any character set that is compatible with the database server character set. If one character set does not contain all characters in the others, replacement characters will be used, and data lost as a result. All application tier servers must also have the same set of languages installed.

As UTF8 and AL32UTF8 are both supersets of all other supported character sets, there are no other fully compatible character sets. Hence if you use UTF8 or AL32UTF8 on any tier, you must use it on all tiers.

## Character Sets: Desktop Tier

### Character Sets: Desktop Tier

- Language support (including character sets and fonts) must be available on the desktop client
- The desktop browser must support character set and language-specific capabilities
- The character set of the browser is set by Oracle E-Business Suite for each session

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### Character Sets: Desktop Tier

Language support, which includes support for data input methods, character sets, and fonts, must be available on the desktop client. The character set of the browser is set by Oracle E-Business Suite for each session, and must not be changed in that session.

The desktop browser must support character set and language-specific capabilities. For instance, Hebrew and Arabic require bidirectional support for right-to-left display, and Arabic also requires a browser capable of special character shaping.

If the UTF8 (or AL32UTF8) character set is installed on the application tier, the desktop client operating system must support Unicode.

## Globalization and Country-Specific Functionalities

### Globalization and Country-Specific Functionalities

- Globalization is the process of designing and deploying software that supports the complex requirements of a global enterprise
- One way globalization is achieved is via national and regional extensions known as country-specific functionalities
- Each country-specific functionality meets the statutory, legal, and cultural practices of a given locale

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### Globalization and Country-Specific Functionalities

Globalization is the process of designing and deploying software that meets the needs of a global enterprise. One requirement for successful globalization is to meet the statutory, legal, and cultural practices of a given locality. In Oracle E-Business Suite, this is achieved through national and regional extensions called country-specific functionalities. As country-specific functionalities are all compatible with each other, installation of all required country-specific functionalities results in a globalized implementation.

All country-specific functionalities are installed when you run the Rapid Install. You simply license those you wish to use. The functionality of each country-specific functionality is described in a special User's Guide for each country.

## Dates and Numbers

### Dates and Numbers

You can enter and view dates using:

- Any valid format, such as 03-31-10, 31-03-10, or 2010-03-31
- Any valid separator, such as 03-31-10 (shown in the format example above), 31/03/10, or 2010.03.31

With numbers, there are two alternatives:

- The period as the decimal symbol, and the comma as the digit grouping symbol
  - For example: 1.02 and 100,000.02
- The comma as the decimal symbol, and the period as the digit grouping symbol
  - For example: 1,02 and 100.000,02

Different users can specify their own preferred display formats

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### Dates and Numbers

You can enter and view dates using any valid format, such as 03-31-10 (US), 31-03-10 (British), or 2010-03-31 (ISO). The desired separator, such as “-” or “/”, may also be specified. Any format for which SQL provides a mask is valid. The only exception is Oracle Reports, which always uses the format DD-MON-RRRR; for example, 31-MAR-2010.

Regardless of the various formats that may be used to enter dates and numbers, the actual values are stored in the database in uniform canonical formats. This allows date and number values to be entered in one format and viewed in an alternative format by another user.

## National Language Support (NLS)

### National Language Support (NLS)

- NLS allows data to be stored, processed and retrieved in the most appropriate language
- The profile options for language and territory are configured at the site level when Rapid Install is run
- User runtime NLS settings are stored as profile option values in the database
- Date and numeric formats are based on the territory profile chosen during installation

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### National Language Support (NLS)

Oracle's National Language Support (NLS) allows data to be stored, processed, and retrieved in the most appropriate language for the users. It ensures that database utilities and error messages, sort order, date, time, monetary, numeric, and calendar conventions reflect the language and locale.

The profile options for language and territory are configured at the site level when you run Rapid Install. The base language is used for the default language setting. The default user territory you choose is used for the territory profile option. The site-level profile option values provide the default NLS settings for all end users. Users inherit these values the first time they log on to Oracle E-Business Suite using the E-Business Suite home page.

A user can continue to use the default values, or change any of the NLS settings to alternative values. Updated values are stored in the database at user level, and all future sessions are started with them.

Date and numeric formats are based on the territory profile setting selected during installation with Rapid Install. Although the system administrator can change date and numeric formats after Rapid Install completes, we recommend accepting the defaults provided by the territory setting.

## NLS and the Application Tier

### NLS and the Application Tier

- All application tier server processes can start with any NLS configuration
  - A user's NLS preferences such as language, territory, and number format are passed to the application tier server with each user request
  - An application tier server session is then started with those NLS settings
- However, application tier processes must be started with the same character set as the database server

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### NLS and the Application Tier

A user's NLS preferences (such as language, territory, date format, and number format) are passed with each user request to an application tier server, where a session is started with the corresponding NLS settings.

## Translation Patches

### Translation Patches

A translation patch is a special patch that contains only components that require translation

- Such a patch is applied separately from the corresponding base patch
- The AutoPatch utility determines whether a translation patch is needed
- In many cases, translation patches are released simultaneously with the base patch

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### Translation Patches

A translation patch contains only components that require translation, and is applied separately from the base patch. The AutoPatch utility uses the system configuration details to determine whether you need to apply a translation patch.

In many cases, translation patches are released simultaneously with the base patch. Otherwise, they are available shortly thereafter.

## Translated Language Items

### Translated Language Items

Translated Oracle E-Business Suite components include:

- Messages
- Navigation items
- Seed data (list of values entries)
- Forms (.fmb files)
- Reports (.rdf files)
- Online help files
- User guides and other external product documents
- Certain loader files used to add language seed data to the database

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## Module Summary

### Module Summary

In this module, you should have learned how to:

- Describe the Oracle E-Business Suite main environment file and its key parameters
- Identify the location and use of other environment files
- Explain the functional differences between single-byte and multibyte character sets

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## Module Discussion

### Module Discussion

- Name two parameters in the <CONTEXT\_NAME>.env file, and explain the purpose of each
- How you would modify a value in one of the Oracle E-Business Suite environment files?
- Outline the specific Oracle E-Business Suite features that support global organizations

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# **Oracle E-Business Suite File System**

**Chapter 7**



## Oracle E-Business Suite File System

### Oracle E-Business Suite File System

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- Describe the Oracle E-Business Suite file system
- Describe the product directory structure
- Identify the role of the following directories:
  - APPL\_TOP
  - COMMON\_TOP
  - INST\_TOP
- List the directories that were introduced with Release 12

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## Module Overview

### Module Overview

This module includes the following topics:

- Introduction to INST\_TOP
- Database and application tier file systems
- APPL\_TOP directory structure
- Globalization products
- Distributing files across disks
- Structure of product directories
- Contents of product directories
- Key APPL\_TOP subdirectories

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### Overview

This module describes the file system used to store the files belonging to Oracle E-Business Suite. The module details the structure and introduces the contents of the key directories.

## Module Overview

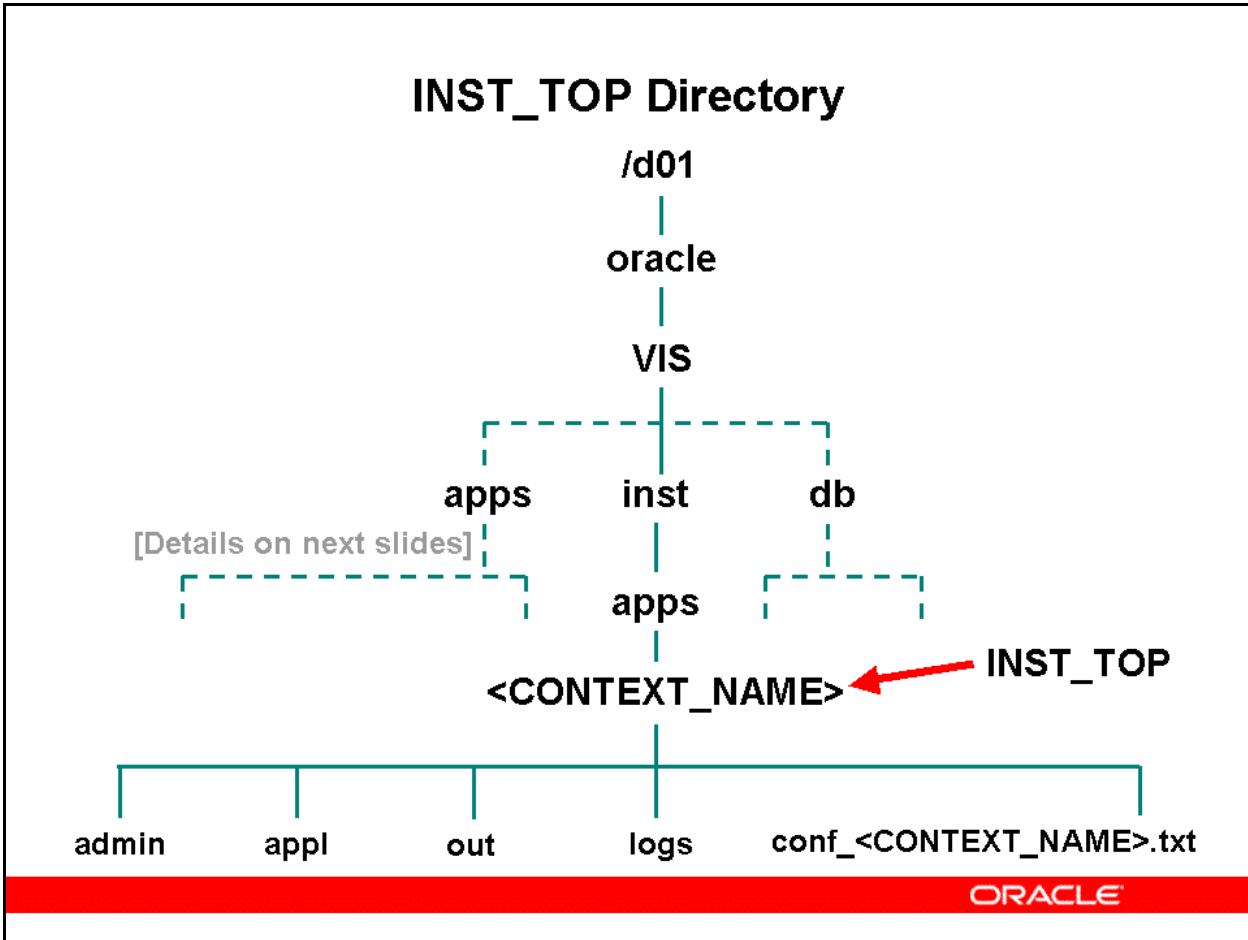
### Module Overview

This module includes the following topics:

- The Applications context file
- COMMON\_TOP directory
- Java files
- Oracle E-Business Suite technology stack directories
- Oracle E-Business Suite database files directory
- Oracle database server ORACLE\_HOME

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## INST\_TOP Directory



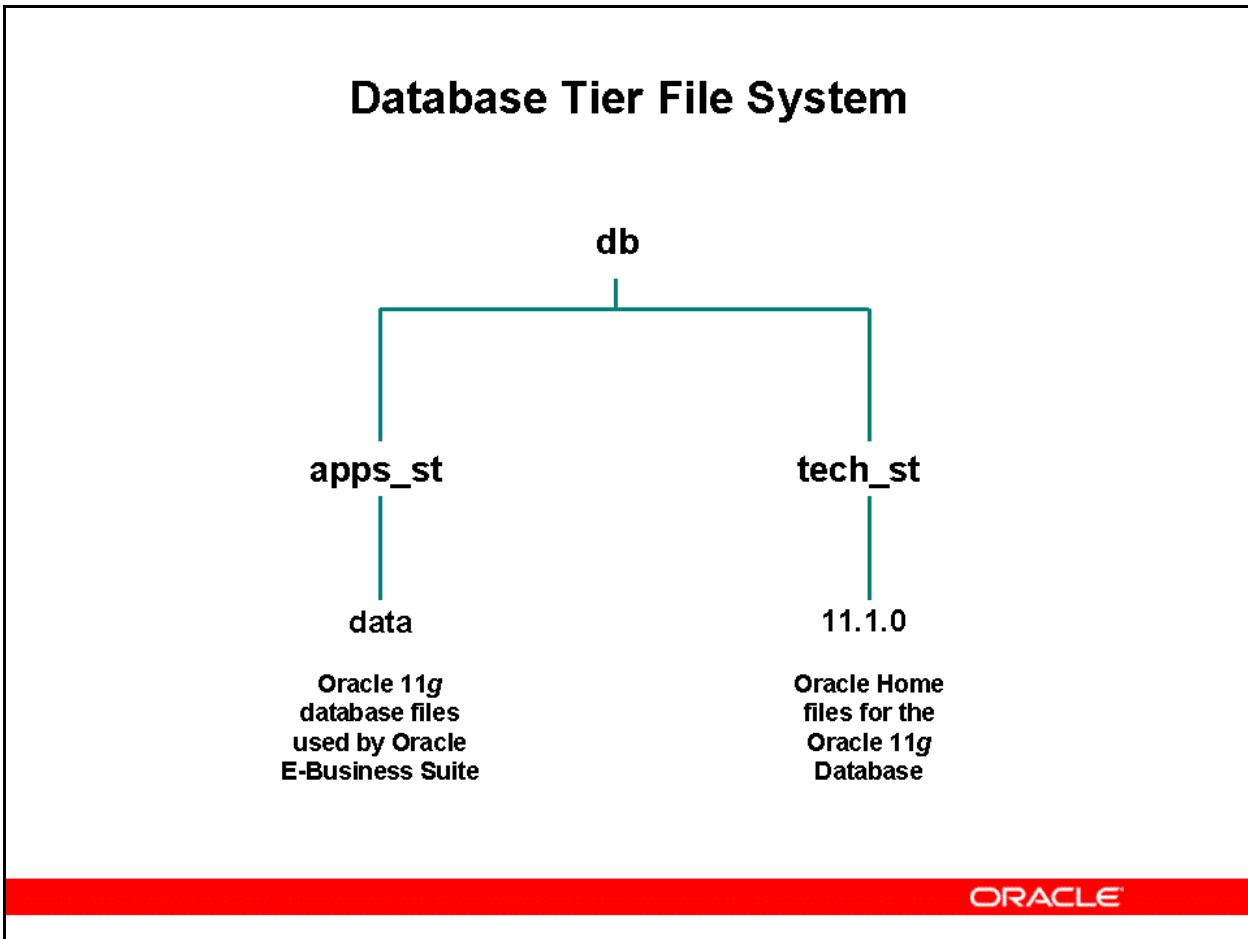
### INST\_TOP Directory

Oracle E-Business Suite Release 12 introduced the concept of a top-level directory for an Oracle E-Business Suite instance. This directory is referred to as the *Instance Home*, and denoted by the environment variable \$INST\_TOP. For example, /d01/oracle/VIS/inst/apps/<context\_name>.

From Release 12, \$INST\_TOP/logs/appl/conc/log is the default location for concurrent manager log files, and \$INST\_TOP/logs/appl/conc/out is the default location for concurrent manager out files. This is a change from Release 11*i*, where \$COMMON\_TOP/admin was the default location for the concurrent manager log and out directories.

Using an Instance Home provides the ability to share Oracle E-Business Suite and technology stack code among multiple instances. Other benefits include support for read-only file systems and centralization of log files.

## Database Tier File System

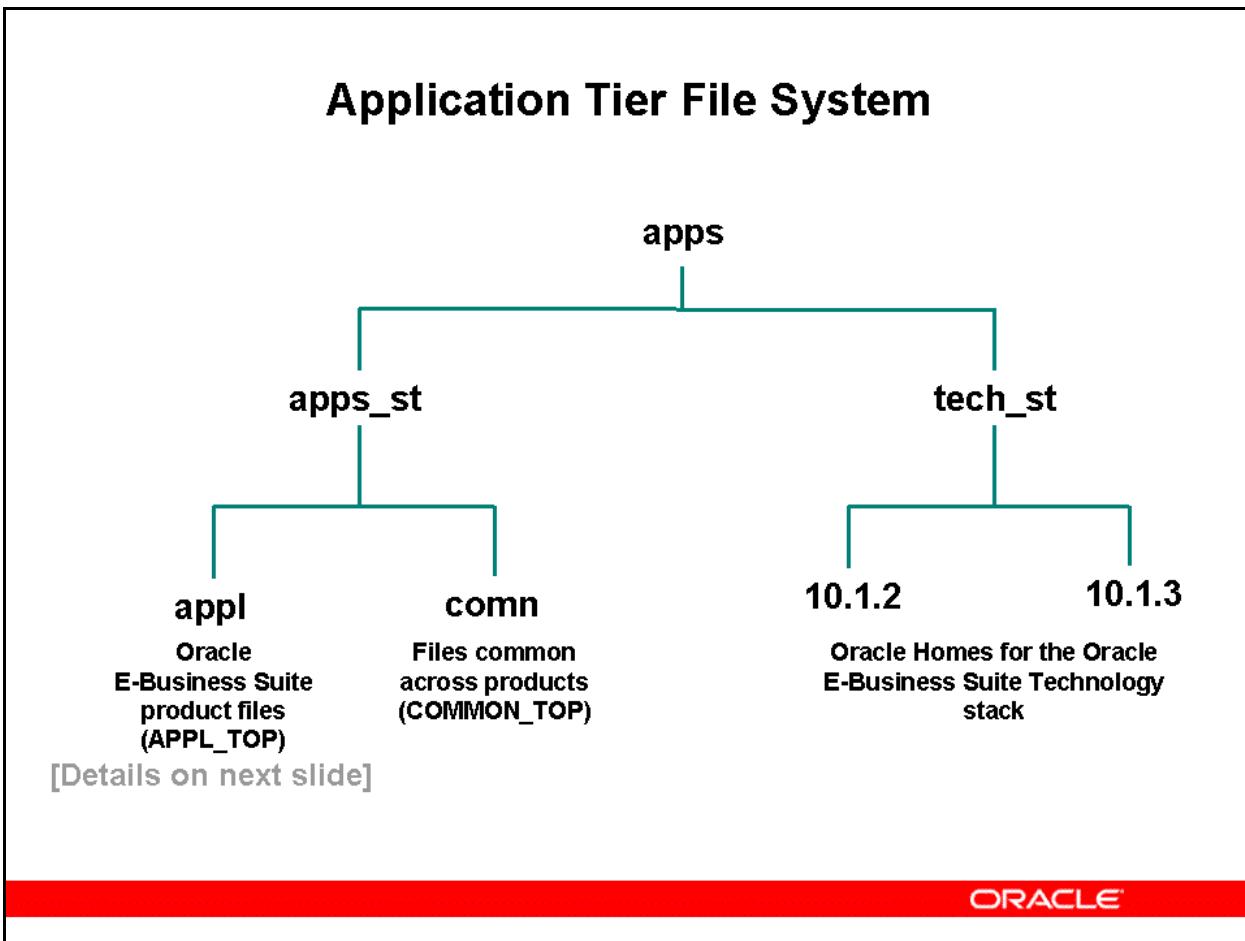


### Database Tier File System

Oracle E-Business Suite uses components from many different Oracle products. The product files are stored under several top level directories, including:

- The **db/apps\_st/data** directory is located on the database node machine, and contains the system tablespaces, redo log files, data tablespaces, index tablespaces, and database files.
- The **db/tech\_st/11.1.0** directory is located on the database node machine, and contains the ORACLE\_HOME for the Oracle 11g Release 1 database.

## Application Tier File System

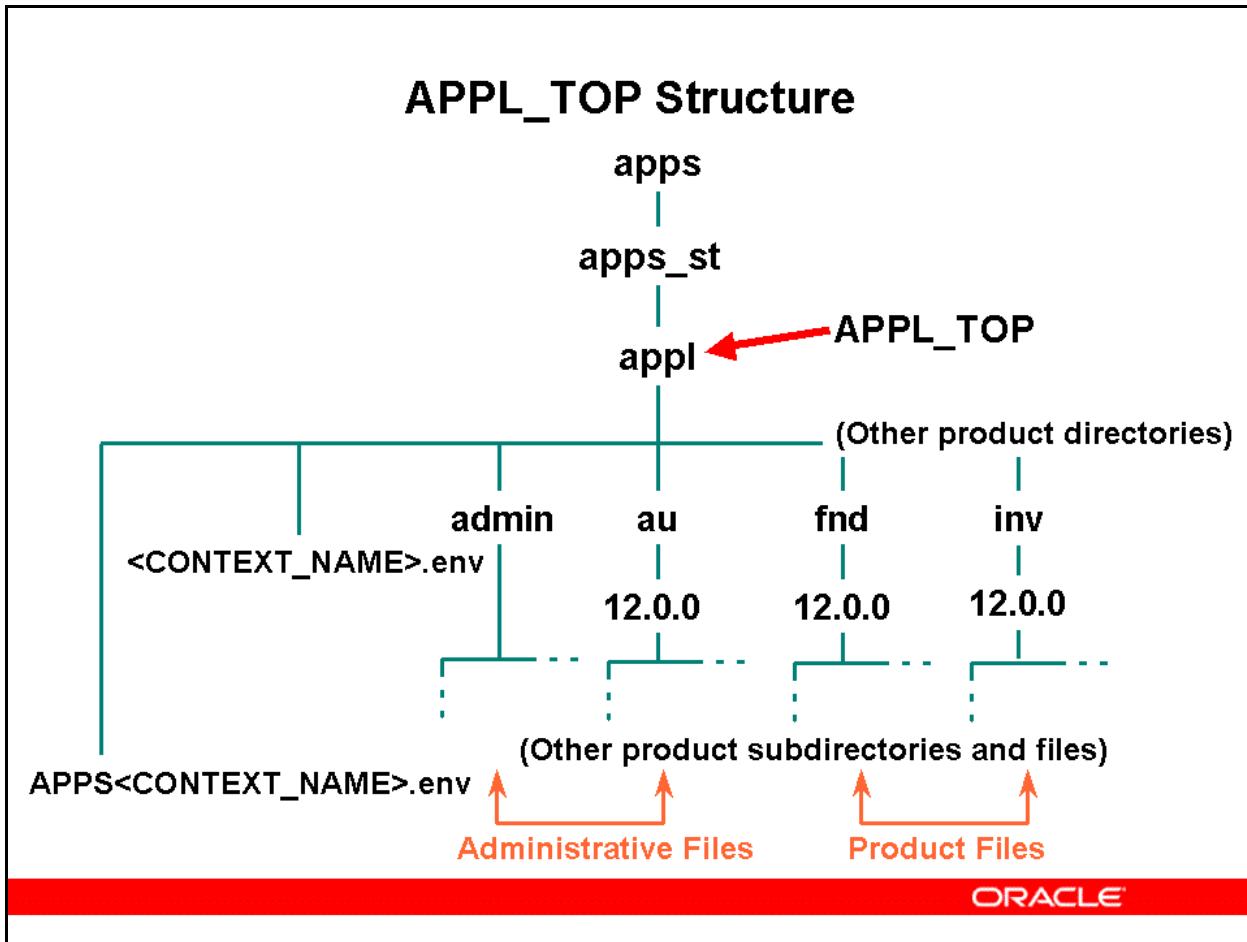


### Application Tier File System

Oracle E-Business Suite uses components from many different Oracle products. The product files are stored under several top level directories, including:

- The **apps/apps\_st/appl** (APPL\_TOP) directory contains the product directories and files for Oracle E-Business Suite.
- The **apps/apps\_st/comm** (COMMON\_TOP) directory contains directories and files used across products.
- The **apps/tech\_st/10.1.2** directory contains the ORACLE\_HOME used for the Oracle E-Business Suite technology stack tools components.
- The **apps/tech\_st/10.1.3** directory contains the ORACLE\_HOME used for the Oracle E-Business Suite technology stack Java components.

## APPL\_TOP Structure



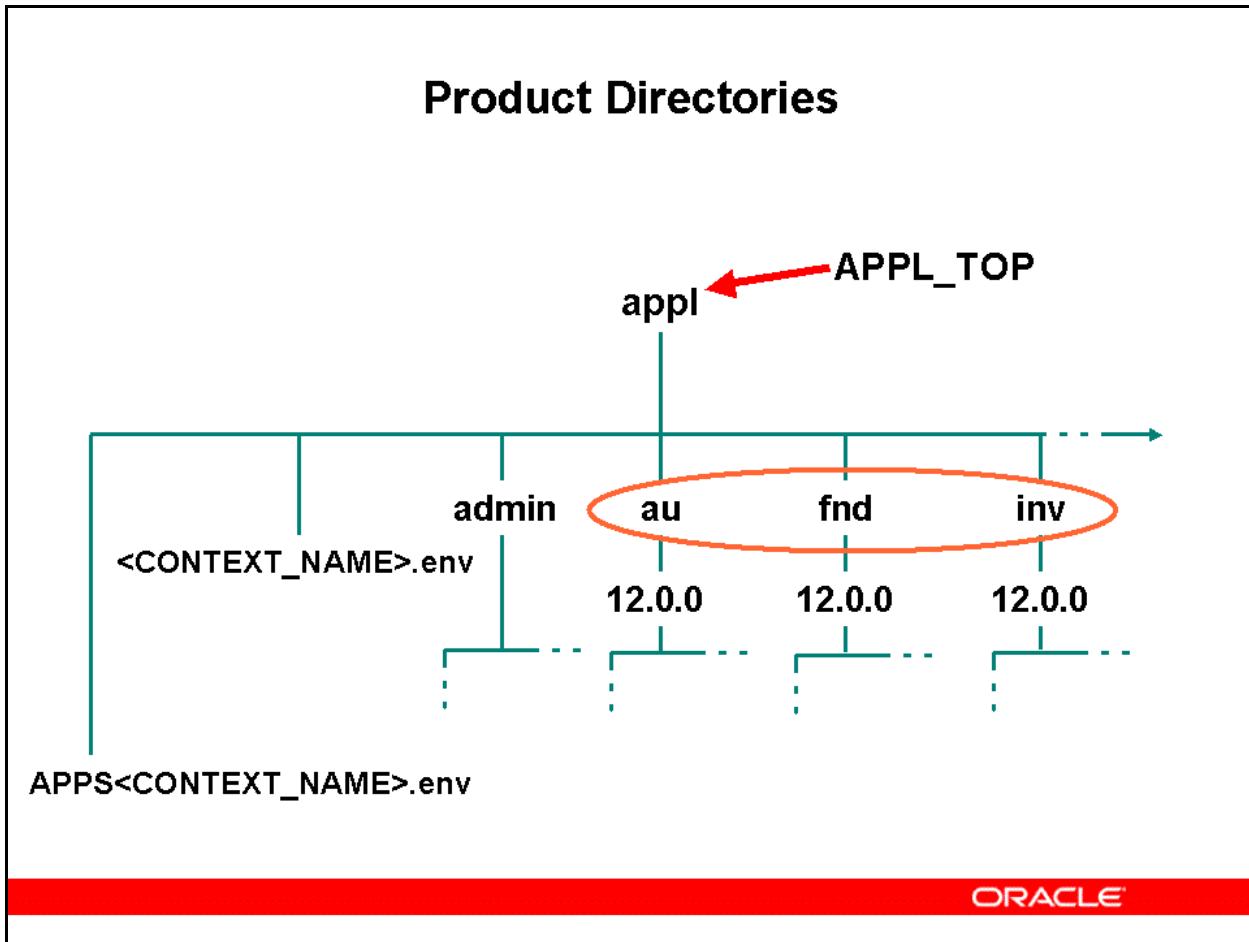
## APPL\_TOP Structure

The Oracle E-Business Suite top-level directory path is defined by the APPL\_TOP environment variable. The value of APPL\_TOP is used in subsequent directory definitions. It can also be used to refer to a particular Oracle E-Business Suite file system.

The Oracle E-Business Suite file system, under APPL\_TOP, contains several different types of files and directories, which can be categorized as follows:

- Oracle E-Business Suite environment files. The default name of the main Oracle E-Business Suite environment file is `<CONTEXT_NAME>.env`, where the default value of `<CONTEXT_NAME>` is `<SID>_<hostname>`. For convenience, there is also a consolidated environment file called `APPS<CONTEXT_NAME>.env`.
- A directory for each product, licensed or not, that has been installed under the APPL\_TOP directory.
- Additional directories for administration and maintenance of all products. Examples include the `admin` and `au` directories.

## Product Directories



### Product Directories

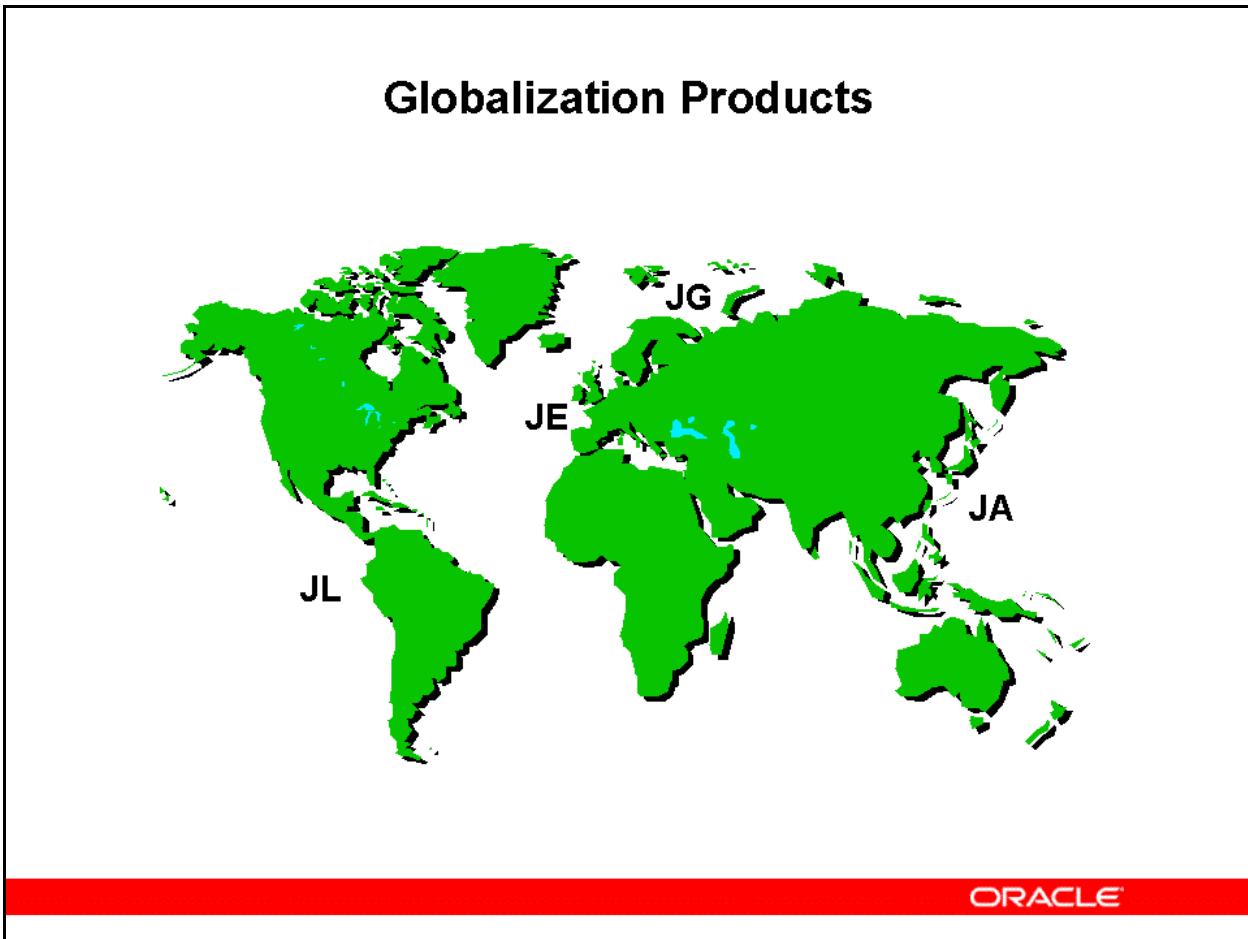
Each product has its own subdirectory under APPL\_TOP, and the Oracle E-Business Suite base release is typically reflected in the subdirectory name. For Release 12, the base release is 12.0.0.

The directory path for a particular product is defined by the value of the environment variable <PROD>\_TOP, where < PROD> is the product schema name. For example, the slide shows several product directories below the APPL\_TOP (appl). The full paths to these product directories could be as follows:

- APPL\_TOP=/d01/oracle/VIS/apps/apps\_st/appl
- AU\_TOP= /d01/oracle/VIS/apps/apps\_st/appl/au/12.0.0
- FND\_TOP = /d01/oracle/VIS/apps/apps\_st/appl/fnd/12.0.0
- INV\_TOP= /d01/oracle/VIS/apps/apps\_st/appl/inv/12.0.0

All Oracle E-Business Suite products, regardless of license status, are installed in the database and the file system. Files for unlicensed products must not be removed. Also, multiple releases and product versions must not be installed under a single APPL\_TOP directory.

## Globalization Products



### Globalization Products

*Globalizations* are Oracle E-Business Suite components that provide additional functionalities for a particular country or region. For example, the payment processing features of Oracle Payables may need to be extended to provide a feature needed for banks in a certain country. There may be similar requirements to meet regulations imposed by different governments.

All Globalizations (known as Localizations in some earlier releases of Oracle E-Business Suite) are installed in both the file system and the database.

A Globalization product may require additional:

- Forms
- Reports
- Seed data in the base product tables
- Database tables or other database objects

Globalization products cannot be licensed directly: they are associated with country-specific functionalities, and licensed automatically when a country-specific functionality is licensed.

## Applications Context File

### Applications Context File

Located in \$INST\_TOP/appl/admin, the Applications context file is an XML file that is:

- Used by AutoConfig to configure the application tier
- By default named <SID>\_<hostname>.xml
- A central repository for details of the application tier, including:
  - Port numbers for Forms and Web services
  - Product-specific port numbers
  - Information about application tier services
- Context file variables are set during installation, and may be modified with Oracle Applications Manager
  - They should not be modified by editing files manually

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### Applications Context File

The Applications context file, \$INST\_TOP/appl/admin/<context\_name>.xml, is a repository for environment-specific details used by AutoConfig to configure the application tier.

Information from this file is used to generate configuration files and update relevant database profiles.

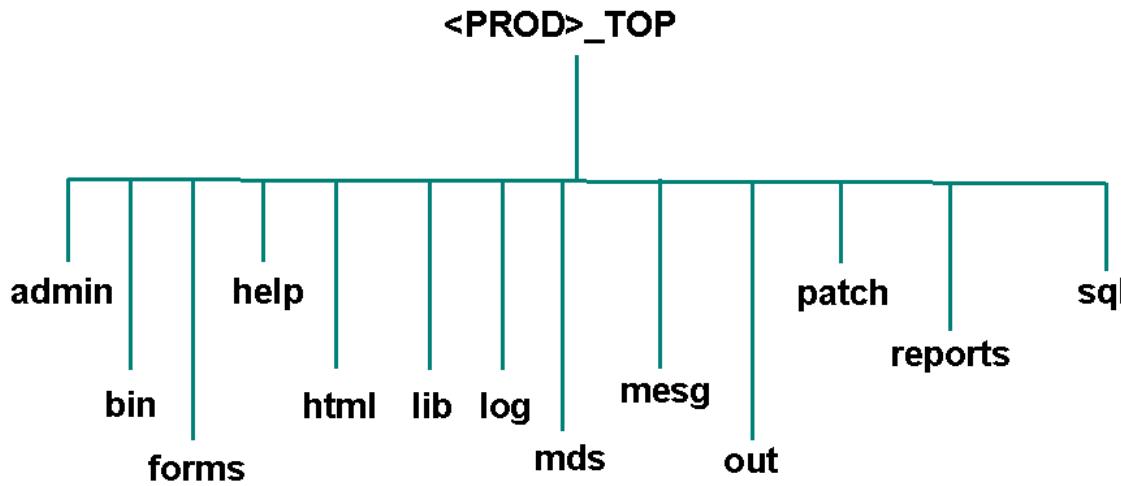
The information stored includes:

- Name and location of the database
- Port numbers for Forms and Web services
- Product-specific port numbers
- Information about application tier services controlled by AutoConfig

The values of the *context variables* that make up the context file are in part determined by the choices you make when you run Rapid Install. For example, when you specify that a particular application tier machine is to be used for concurrent processing, the variable *s\_batch\_status* will be set to *enabled* in the Applications context file.

## Product Directories: Overview

### Product Directories: Overview



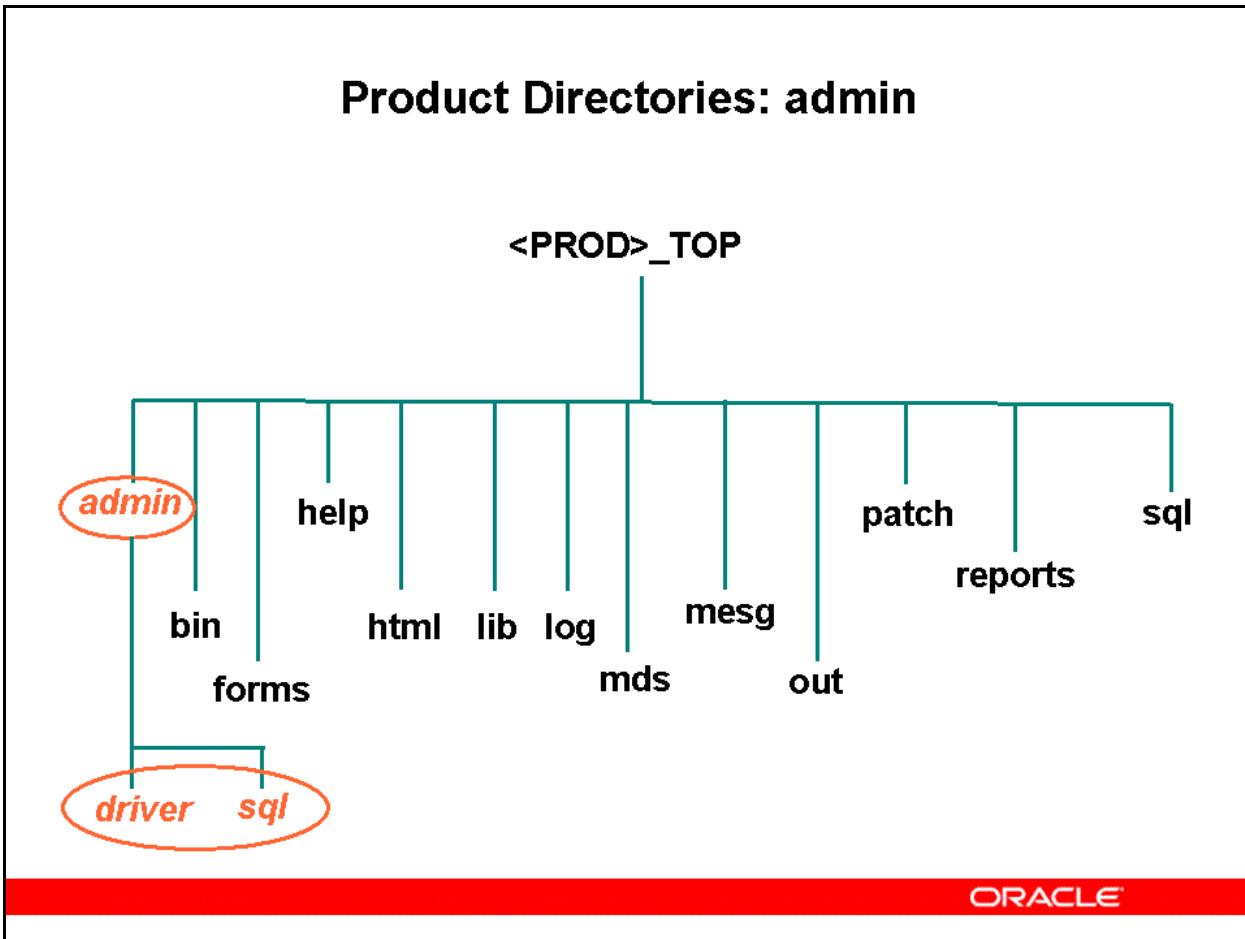
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### Product Directories: Overview

Each Oracle E-Business Suite product directory contains numerous subdirectories, which are used to group the various types of file used by the product.

Not all products have all the subdirectories shown on the slide. There may also be differences depending on installation choices.

## Product Directories: admin



## Product Directories: admin

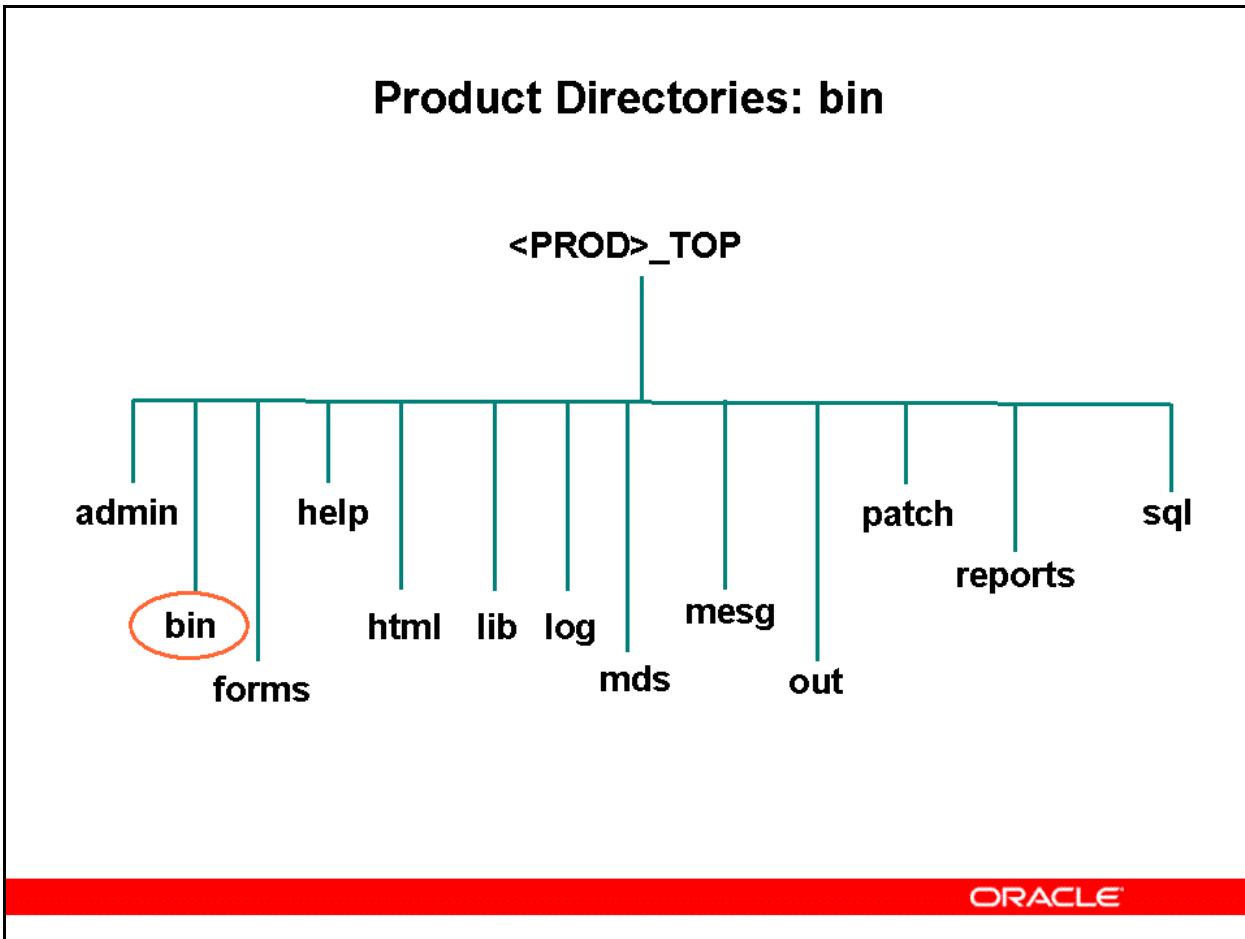
The admin subdirectory contains files used by to upgrade products to the current release, and has several subdirectories of its own:

**driver** - Contains the upgrade driver files (.drv). Examples include:

- glfile.drv - Lists the GL files needed to run the product.
- glcommon.drv – Common file driver called by other products that need to use GL code.

**sql** - Contains SQL scripts and PL/SQL scripts used to upgrade data and PL/SQL package creation scripts.

## Product Directories: bin



## Product Directories: bin

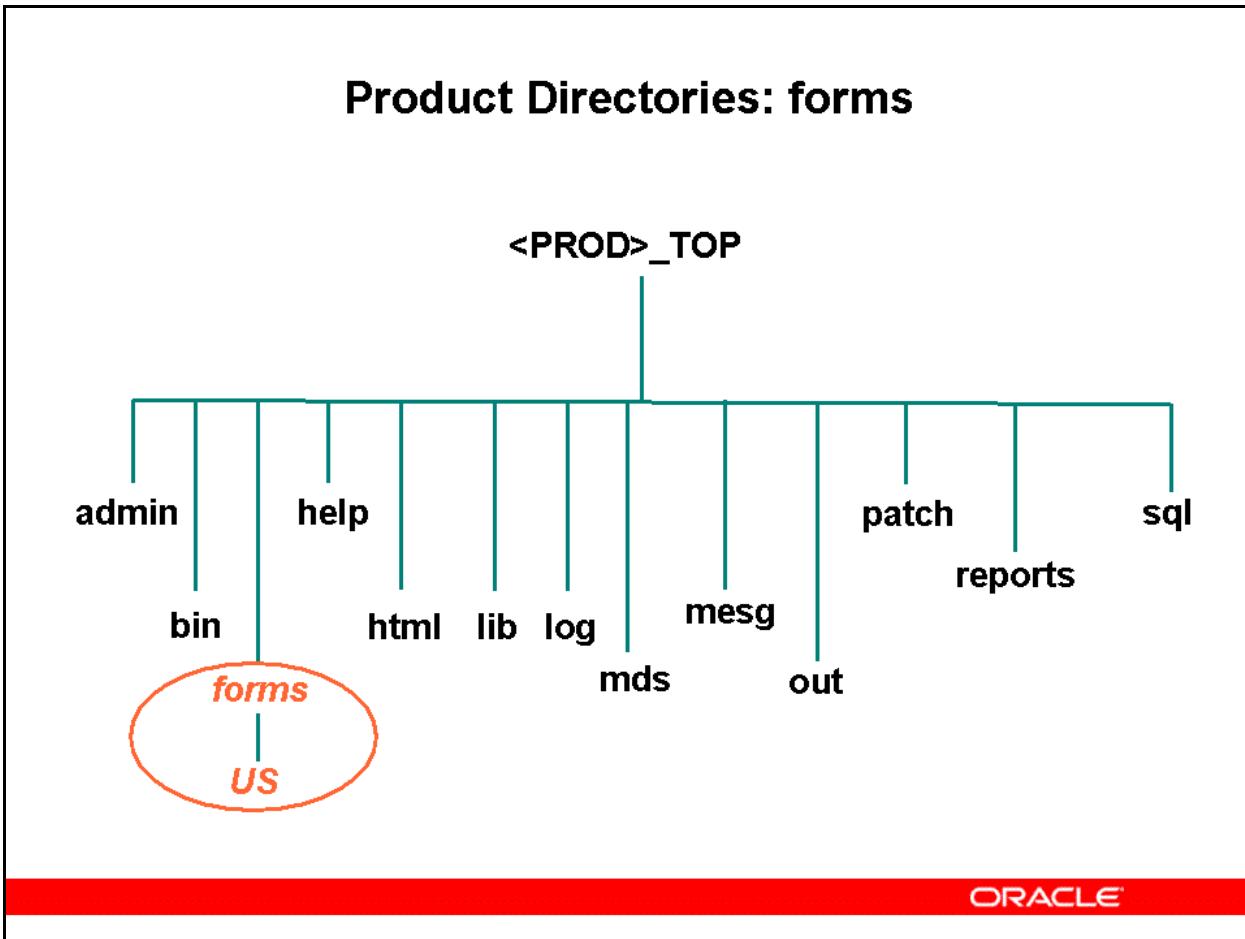
C language programs and operating system shell scripts for each product are stored in the corresponding bin subdirectory. Some of the programs are concurrent programs and others are command-line utilities. Of particular importance to Oracle E-Business Suite are the \$FND\_TOP/bin and \$AD\_TOP/bin subdirectories.

Some of the key programs in these subdirectories include:

- **FNDLIBR** - The concurrent manager (in FND\_TOP/bin)
- **startmgr** - A UNIX shell script to start the concurrent manager (in FND\_TOP/bin)
- **fdfcmp** - The flexfield compiler (in FND\_TOP/bin)
- **FNDMDGEN** - A message file generator (in FND\_TOP/bin)
- **adadmin** - The AD Administration utility (in AD\_TOP/bin)
- **adpatch** - The AutoPatch utility (in AD\_TOP/bin)

The FND\_TOP/bin and AD\_TOP/bin directories are included in the PATH variable. This allows you to run FND and AD executables from any location.

## Product Directories: forms



## Product Directories: forms

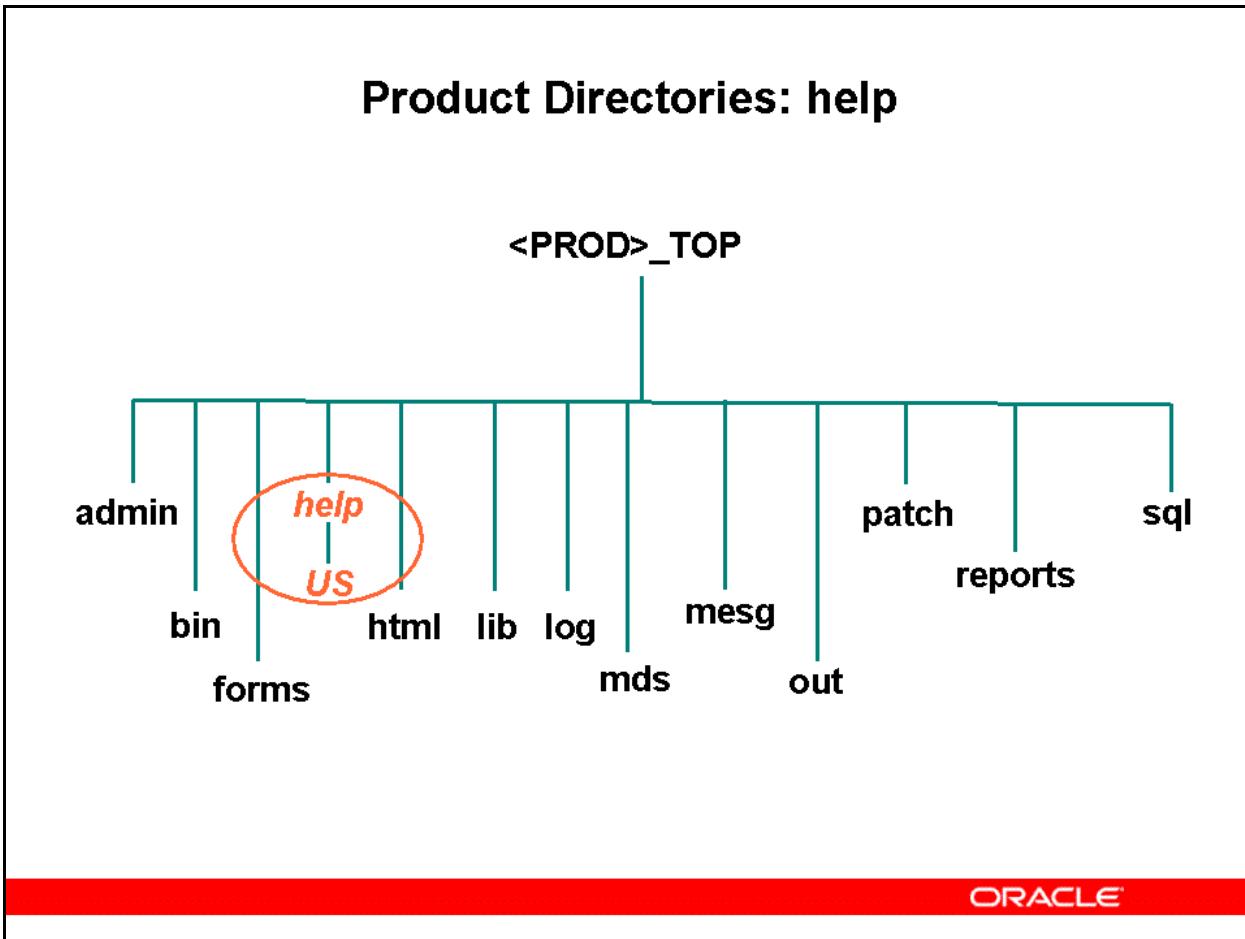
Oracle Forms files include portable source files (.fmb files), and generated runtime files (.fmx files).

These two types of file are stored in different locations:

- Forms runtime files are stored in the forms subdirectory.
- Forms source files are stored in AU\_TOP/forms, to enable runtime files to be generated when necessary.

The forms directory contains a subdirectory for each installed language. These subdirectories are named according to the language, such as US for American English forms, D for German forms, and F for French forms.

## Product Directories: help

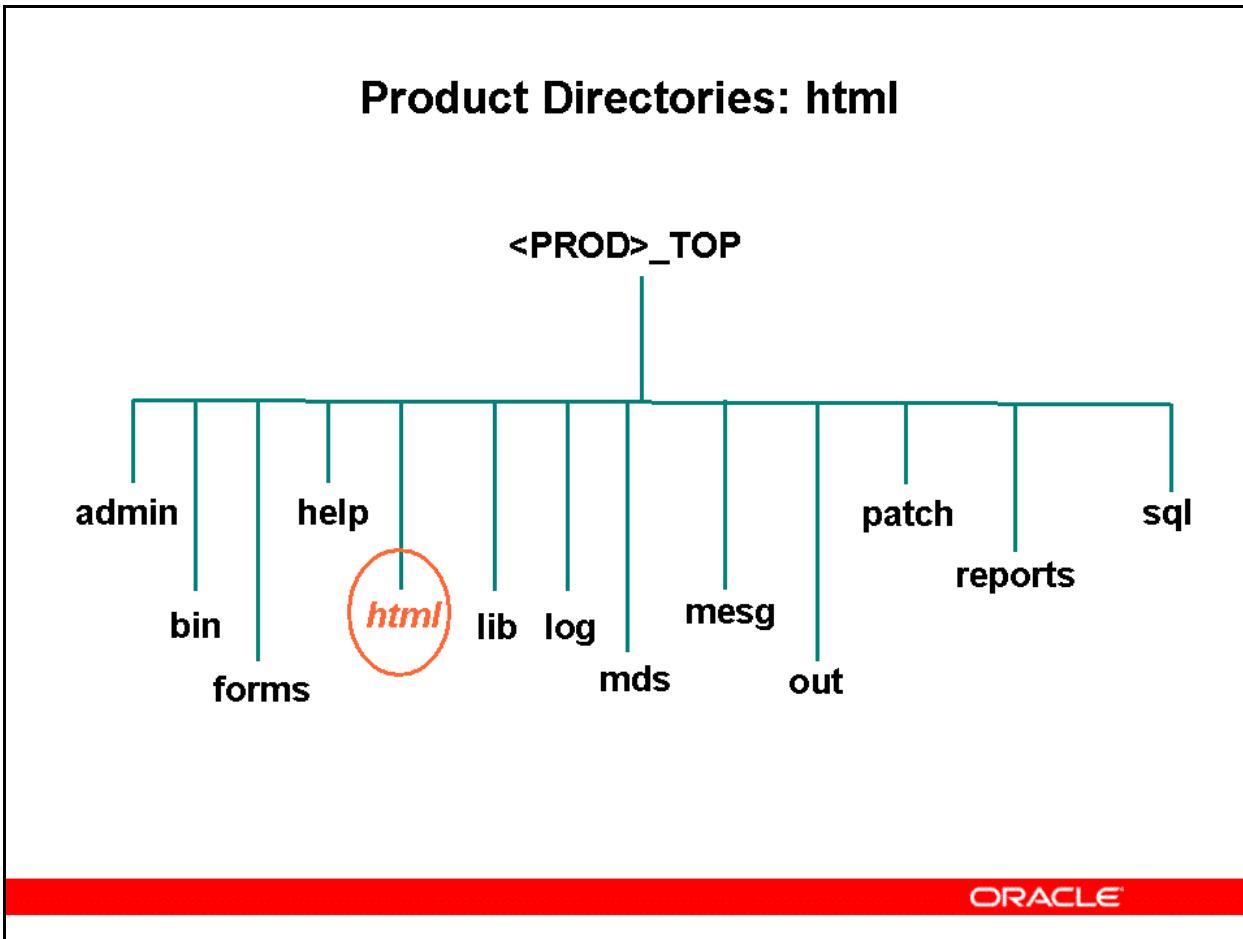


## Product Directories: help

The help directory contains online help source files, which are imported into the database to optimize performance. Under the help directory, a language directory stores the help files for each language.

Note that while a fresh installation of Oracle E-Business Suite has online help installed automatically, an upgrade requires the help files to be installed as part of the post-upgrade tasks.

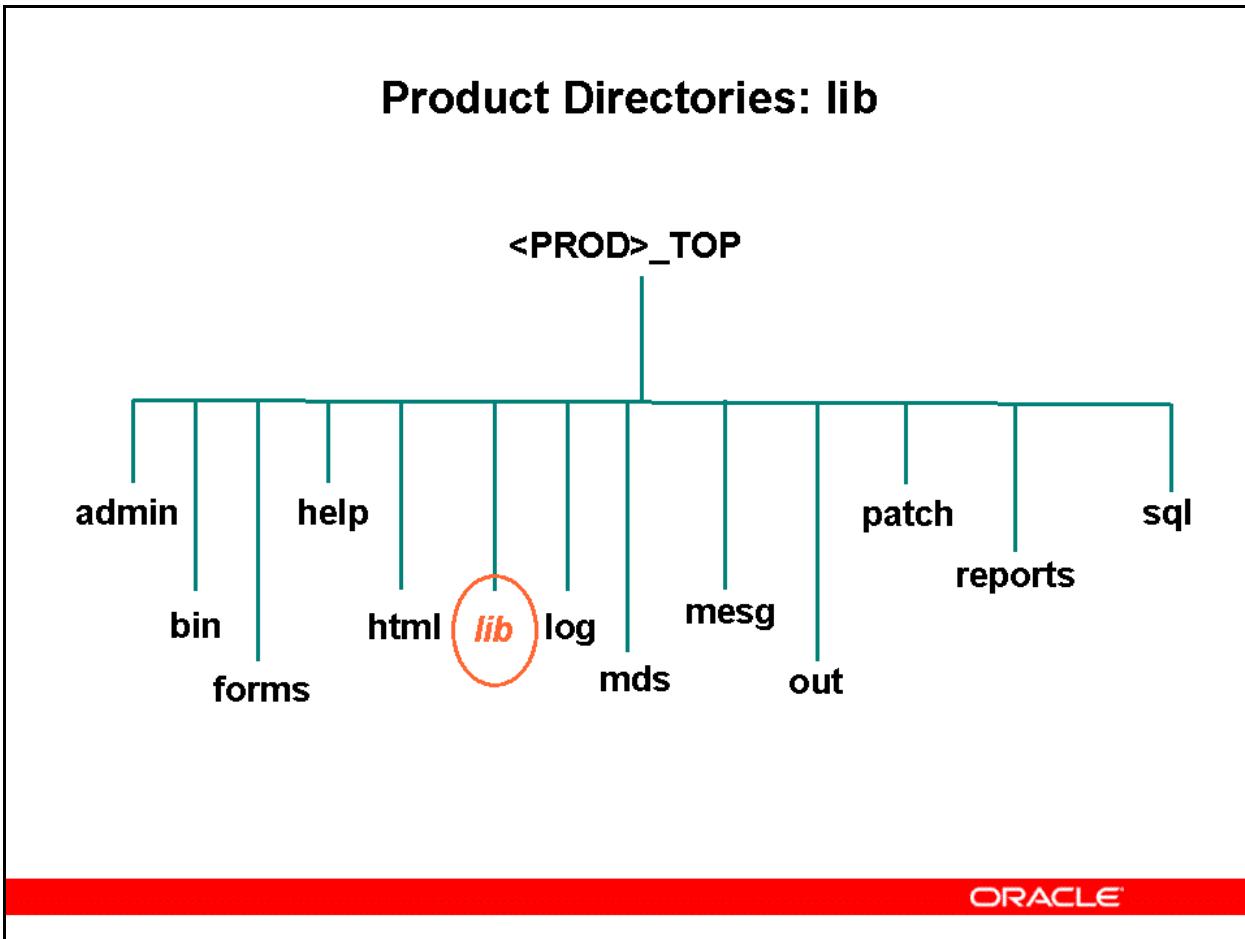
## Product Directories: html



## Product Directories: html

The html subdirectory contains HTML, JavaScript (.js), and JavaServer Page (.jsp) files used by a product. The JavaScript and JavaServer Page files are kept in the main html directory.

## Product Directories: lib



## Product Directories: lib

The lib subdirectory contains files used to the relink Oracle E-Business Suite programs:

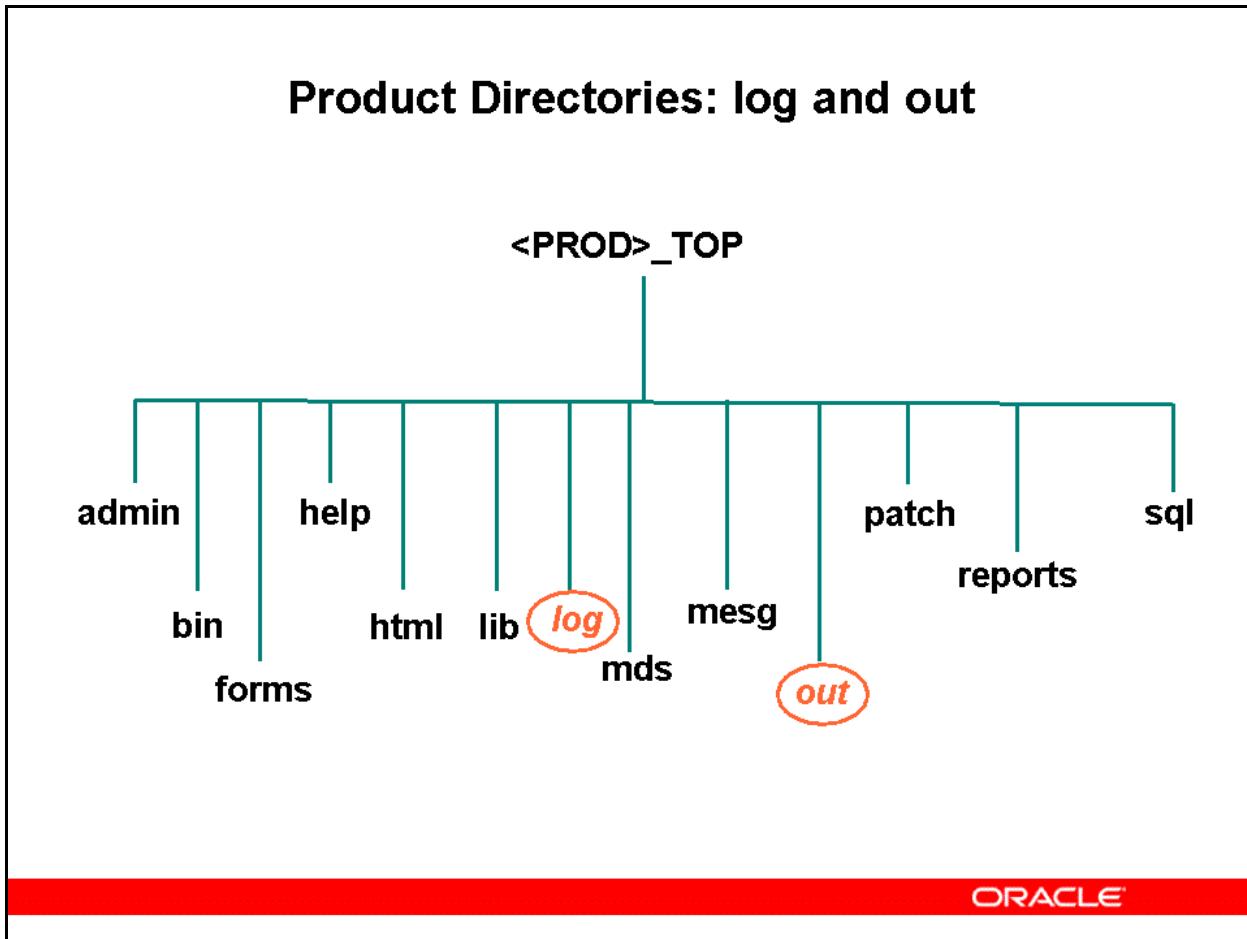
- **Object files** (.o files in UNIX and .obj files in Windows) - Consist of compiled C code; there is one for each C program unit that can be relinked.
- **Library file** (.a file in UNIX and .lib file in Windows) - Collections of objects common to a product's constituent C programs.
- **Make file** (.mk file) - Specifies the exact compilation and linking steps needed to create each C executable in a product's bin directory.

For example, the GL\_TOP/lib directory contains:

- glpmai.o (object module for the GLPPOS program)
- glcmai.o (object module for the GLCCON program)
- Numerous other .o files
- libgl.a (GL library file)
- gl.mk (make file for all GL programs)

Oracle E-Business Suite programs must be relinked using the AD Administration utility *only*. The only exceptions are the AD programs themselves, which are relinked using the AD Relink utility.

## Product Directories: log and out



### Product Directories: log and out

When the concurrent managers run Oracle E-Business Suite reports or data update programs, they write output files as well as diagnostic log files and temporary files to directories defined during the installation process. The log directory holds concurrent log files from each concurrent request and the out directory holds the concurrent report output files.

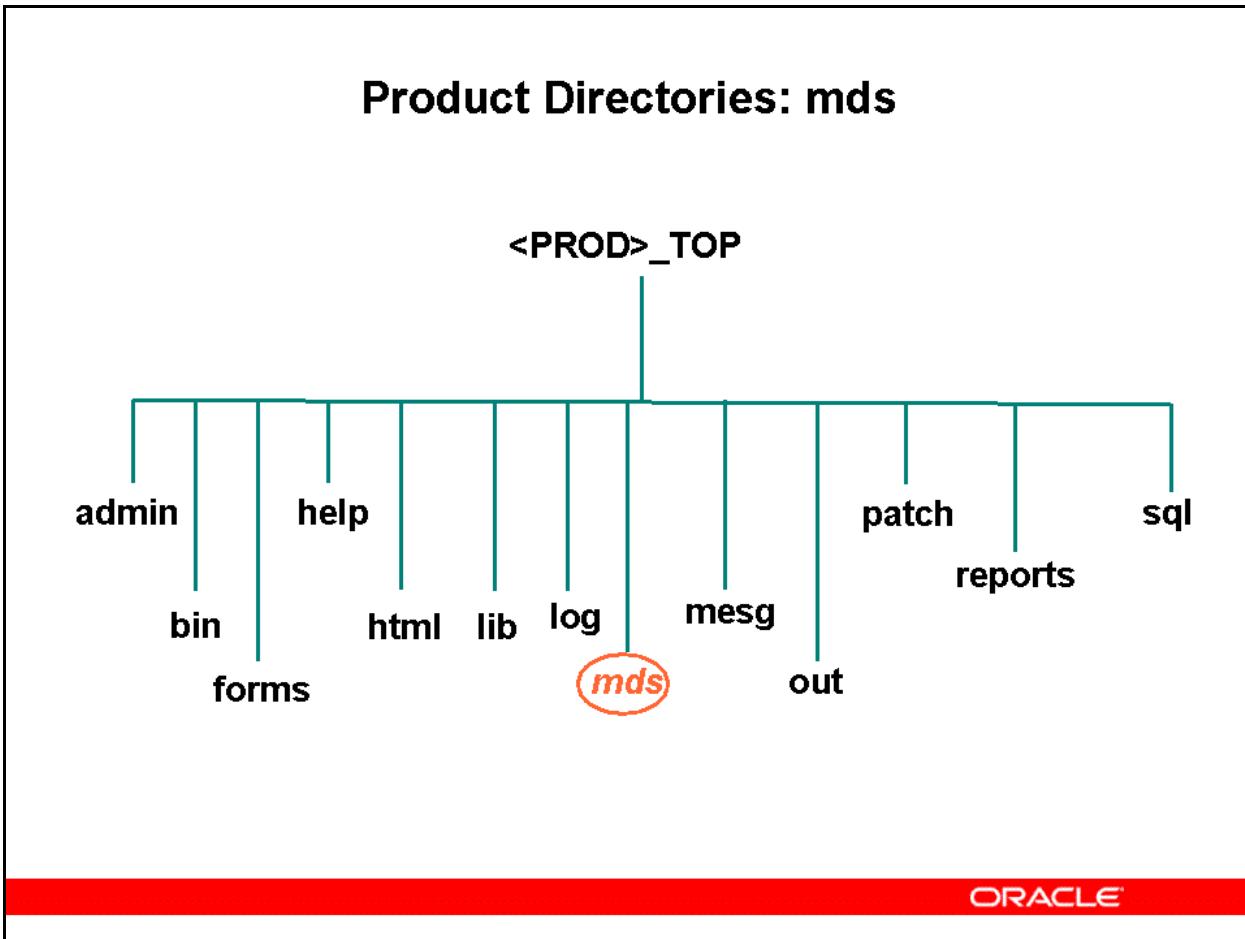
There are two alternatives for storing log and output files:

- In each product's log and out subdirectories (as shown in the slide).
- In common log and out directories for all products, under a location pointed to by the APPLCSF parameter in the <CONTEXT\_NAME>.env environment file.

The log and out directories should be monitored for space usage, and the files archived or purged periodically. This is particularly true if you are using a common location, as space may be exhausted more rapidly. In addition, there may be significant contention when writing to a common location on a busy system.

Log files may contain passwords or other sensitive data, so should be secured as appropriate.

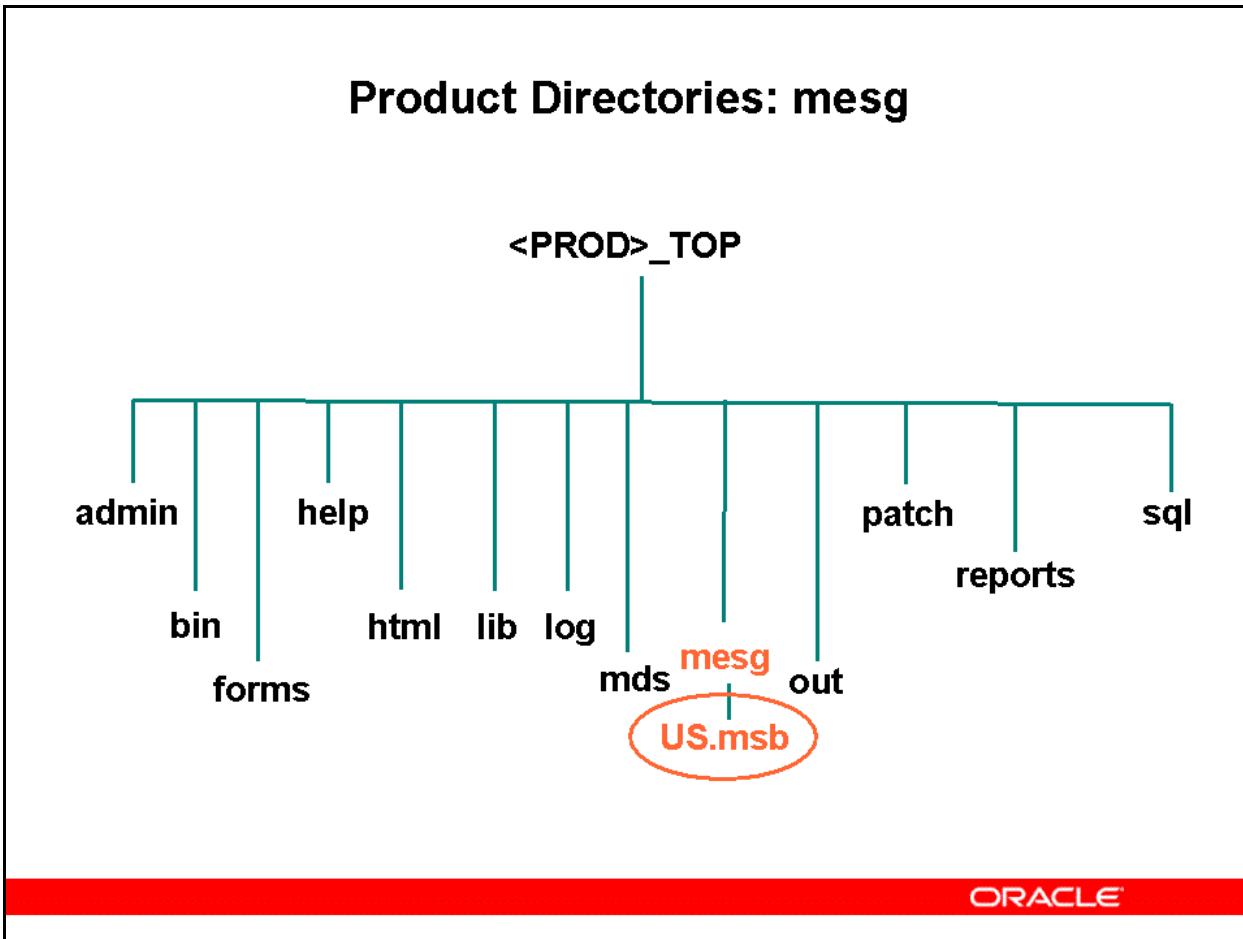
## Product Directories: mds



## Product Directories: mds

This directory contains files and scripts used by Metadata Services (MDS), replacing the AK metadata repository used in some earlier releases of Oracle E-Business Suite.

## Product Directories: mesg



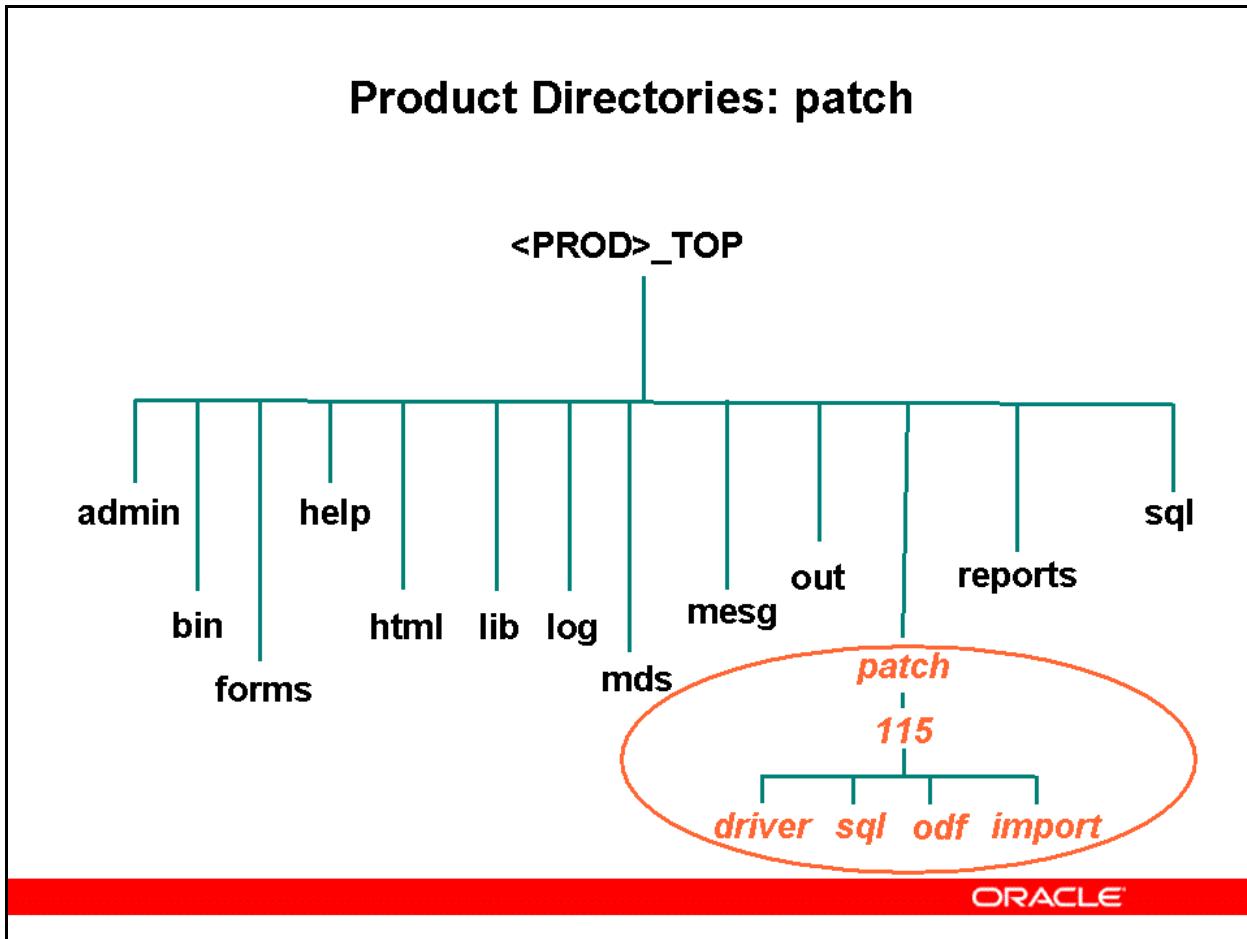
## Product Directories: mesg

Oracle E-Business Suite stores message files in the mesg directory. Message files are used to display messages in forms and reports. Message files are translated and are named according to the language they represent. For example:

- **US.msb** - The American English message file.
- **JA.msb** - The Japanese message file.

You should have a message file for each language installed in your Oracle E-Business Suite system.

## Product Directories: patch



### Product Directories: patch

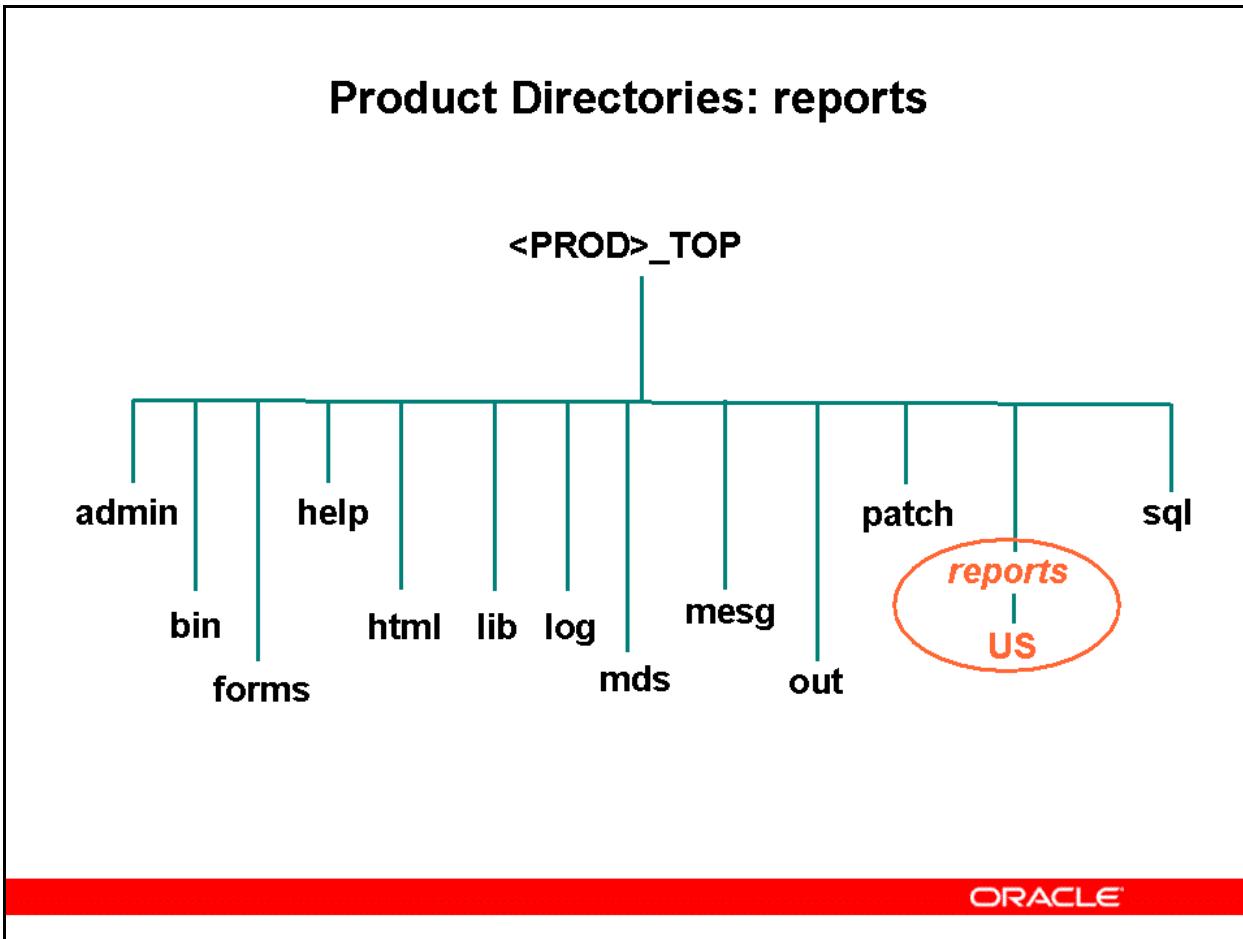
The patch directory contains files AutoPatch uses to update the database.

Patch files are located according to function, in the following subdirectories:

- **driver** - Contains driver files (.drv). These are only used by older patches.
- **sql** - Contains SQL (.sql) and PL/SQL (.pls) scripts.
- **odf** - Contains object description files (.odf).
- **import** - Contains files used to update seed data.

The patch directory should not be used as a staging area to unzip patches.

## Product Directories: reports

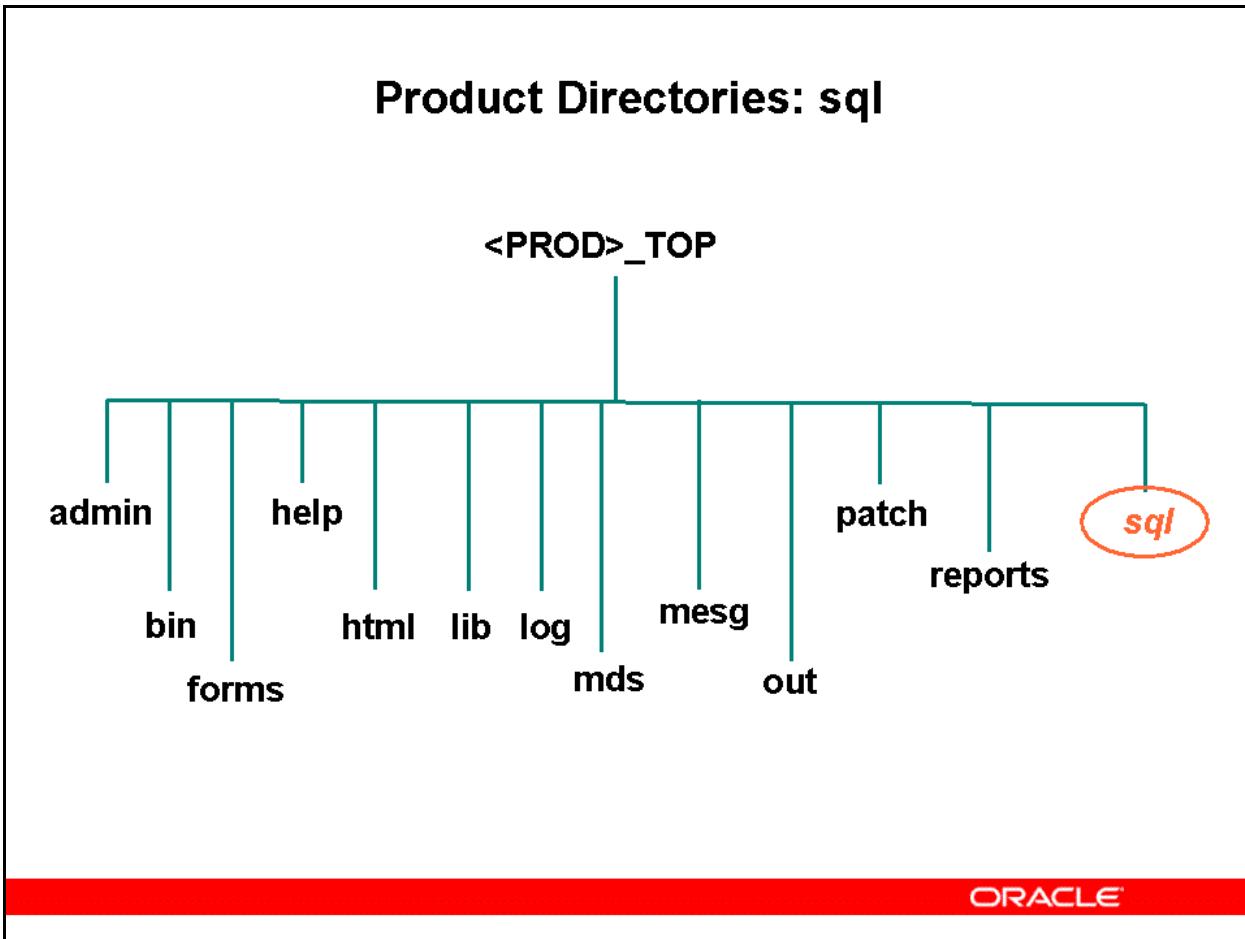


## Product Directories: reports

This directory contains the Oracle Reports files for a particular product. There is a portable binary (.rdf) file for each report.

- The AD Administration utility is used to generate reports.
- Generation of reports ensures that the PL/SQL is optimally compiled for the platform.
- Reports are stored in a language-specific directory under the reports subdirectory.

## Product Directories: sql

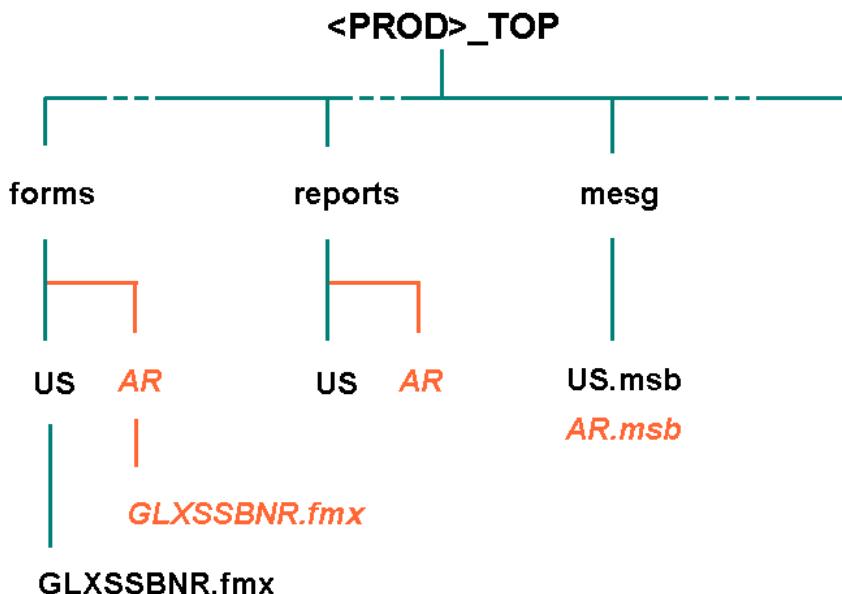


## Product Directories: sql

The sql subdirectory contains SQL scripts used by Oracle E-Business Suite products at runtime.

## Additional Language Subdirectories

### Additional Language Subdirectories



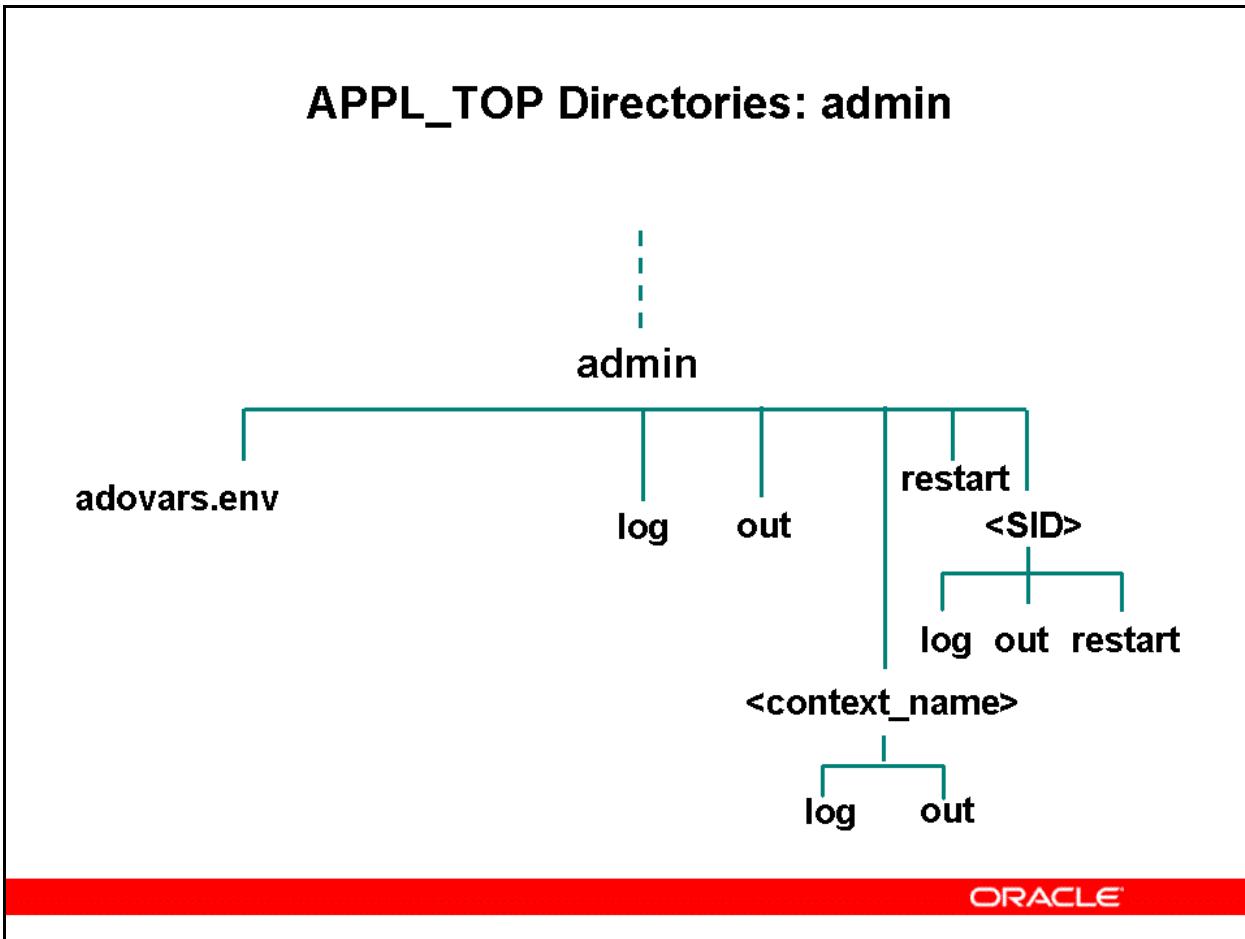
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### Additional Language Subdirectories

Translated forms files, reports files, and installation scripts are all stored in their own language-specific directories. These directories are identified by a language directory code. For example, all forms files located under the US directory are in American English, while all forms files located under the AR directory are in Arabic.

Message files are not stored in language-specific directories. Instead, message files are named according to the language of the messages they contain. For example, AR.msb is a file containing messages translated to Arabic.

## APPL\_TOP Directories: admin



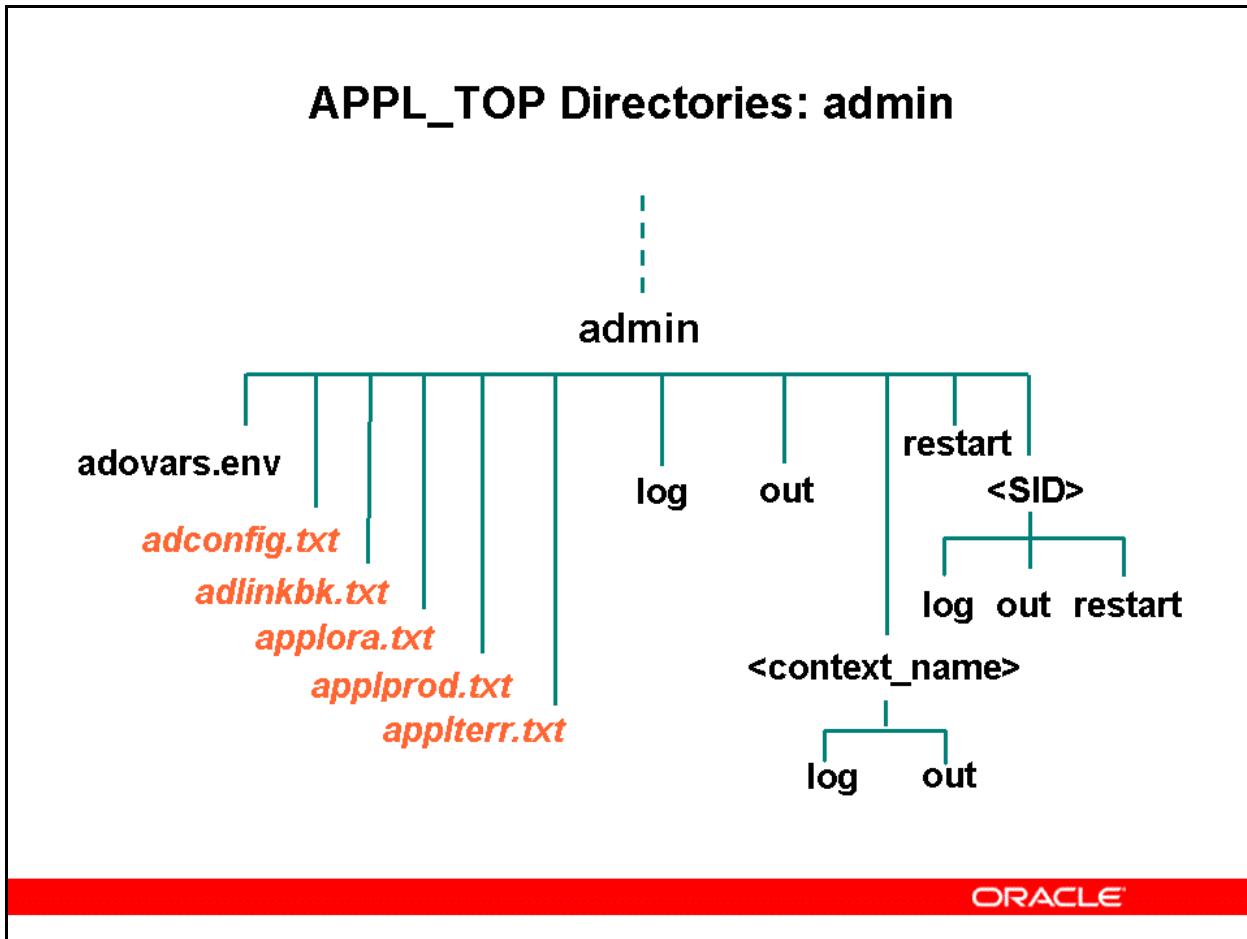
## APPL\_TOP Directories: admin

This directory contains files and scripts used by the AD utilities during the upgrade and maintenance processes.

These files include:

- The *adovars.env* environment file, which defines certain file and directory locations
- SQL scripts run during the upgrade
- log* and *out* directories used by some AD utilities
- A *restart* directory where AD programs create restart files

## APPL\_TOP Directories: admin

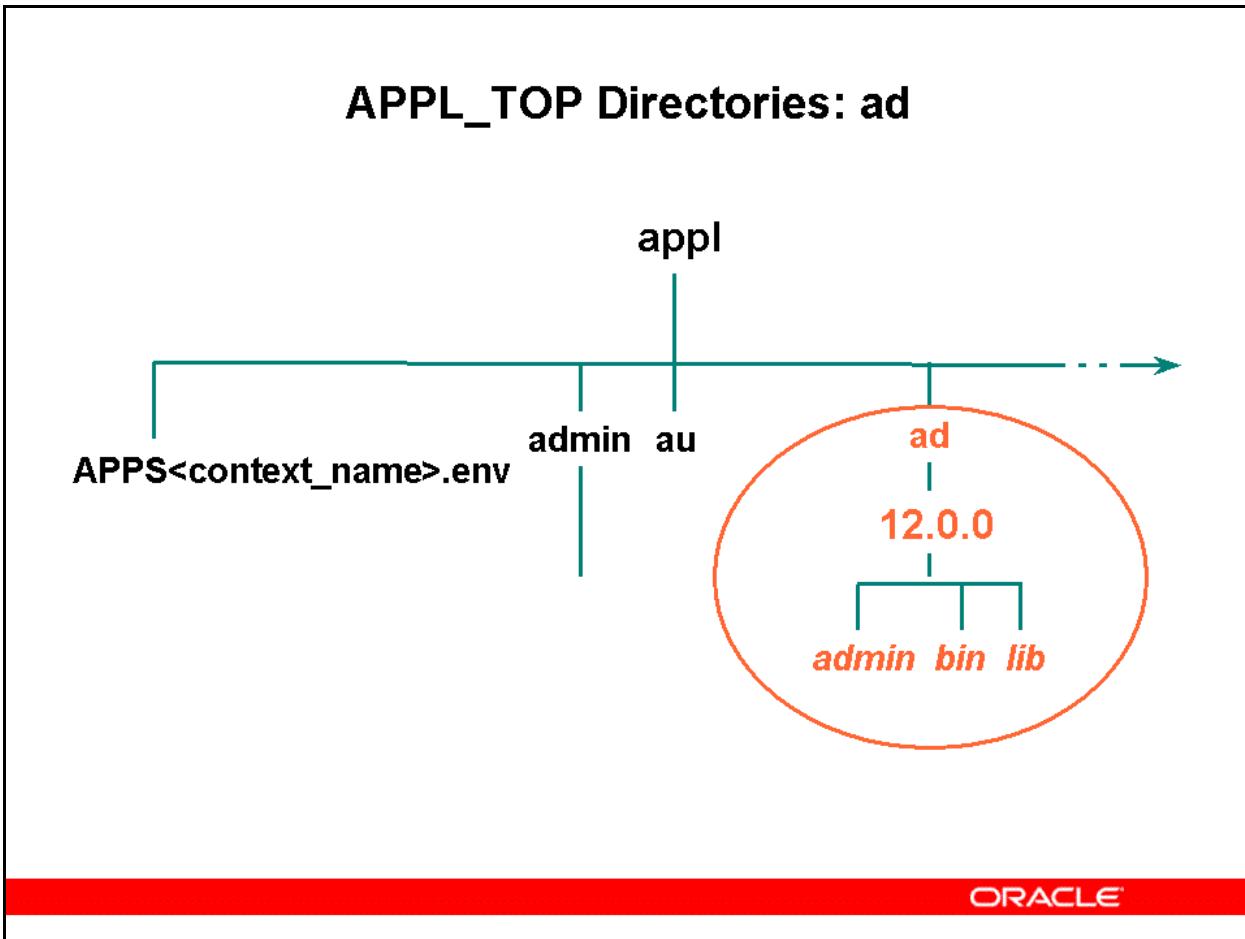


## APPL\_TOP Directories: admin

Many text files are stored under the admin directory. Used by the AD utilities, these files include:

- adconfig.txt - Contains system configuration variable values
- adlinkbk.txt - Lists files the AD Relink utility should back up rather than delete
- applora.txt - Contains minimum or required settings for database initialization parameters
- applprod.txt - Lists products available in this release
- applterr.txt - Contains territory descriptions for globalizations
- appl<LANG>.txt - Contains language translations of product names, for example applDK.txt

## APPL\_TOP Directories: ad



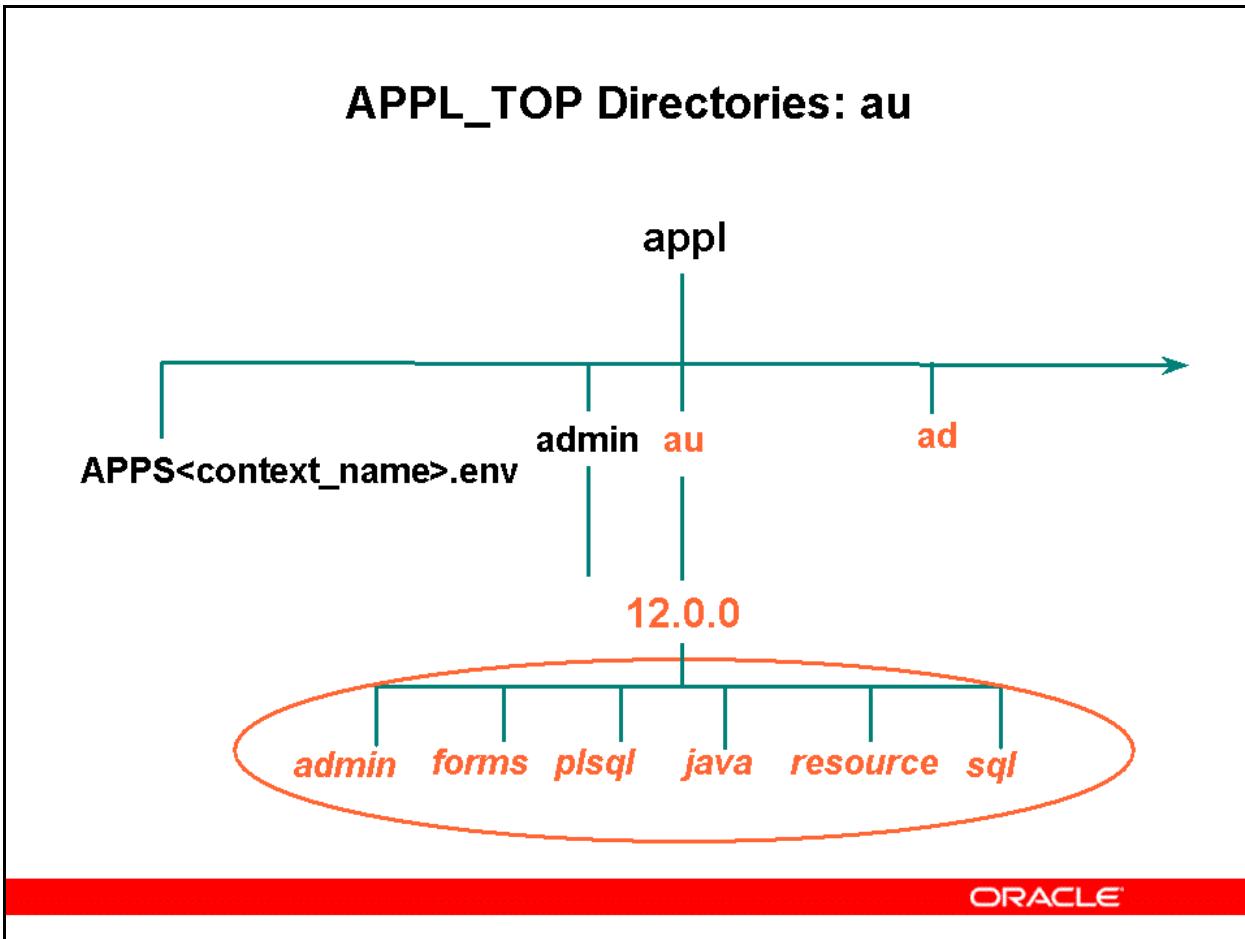
### **APPL\_TOP Directories: ad**

Applications DBA (AD) is a set of tools used for installing, upgrading, and administering the Oracle E-Business Suite system.

Utilities found in the AD directory include:

- AD Administration (`adadmin`)
- AutoPatch (`adpatch`)
- AutoConfig engine (`adconfig.sh`, called by `$ADMIN_SCRIPTS_HOME/adautocfg.sh`)

## APPL\_TOP Directories: au



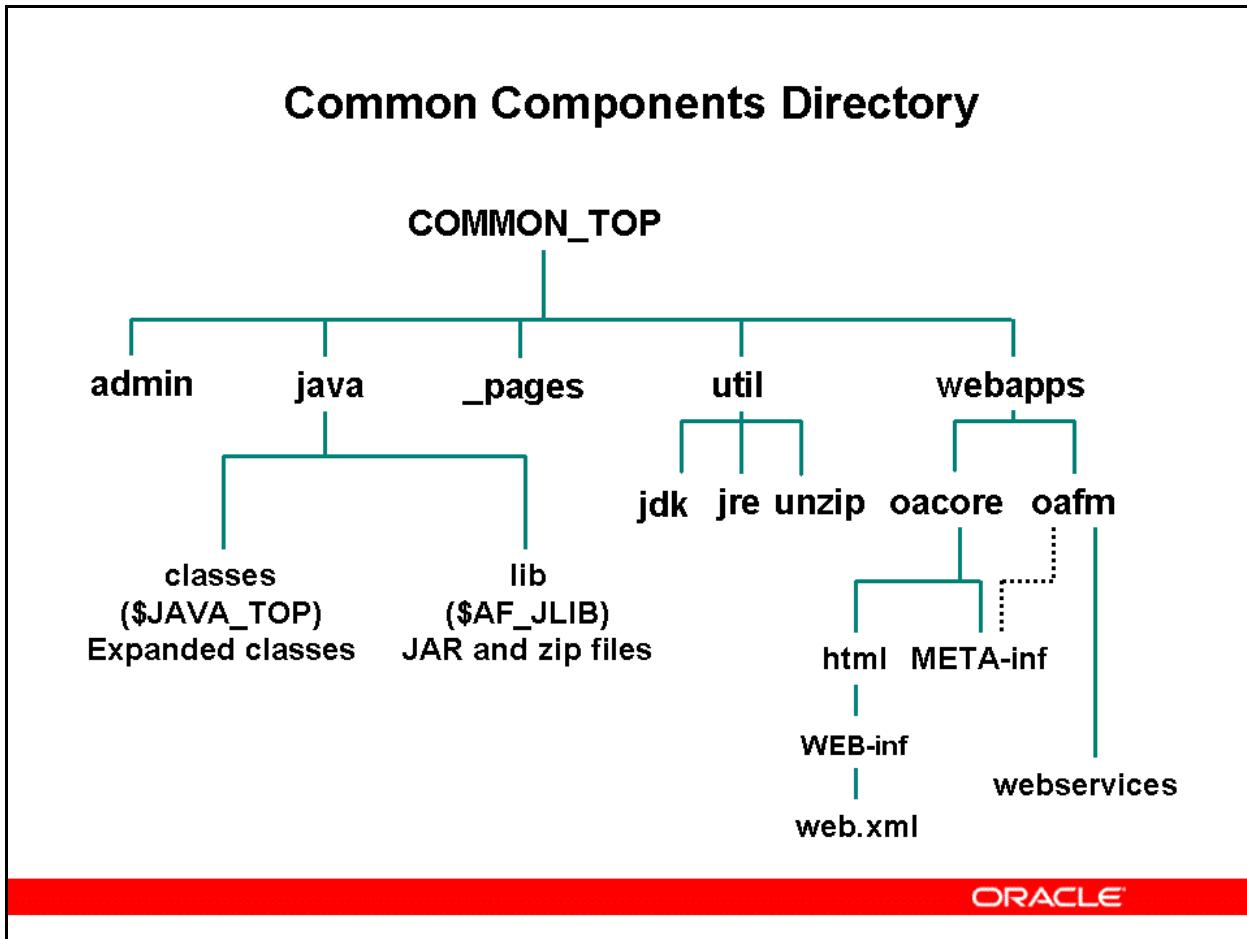
## APPL\_TOP Directories: au

Applications Utilities (AU) are product files that are consolidated in a single location for optimal processing.

These files include:

- PL/SQL libraries used by Oracle Reports, in the *plssql* subdirectory
- PL/SQL libraries used by Oracle Forms, in the *resource* subdirectory
- Oracle Forms source files, in the *forms* subdirectory
- A copy of all Java files in the *java* subdirectory

## Common Components Directory



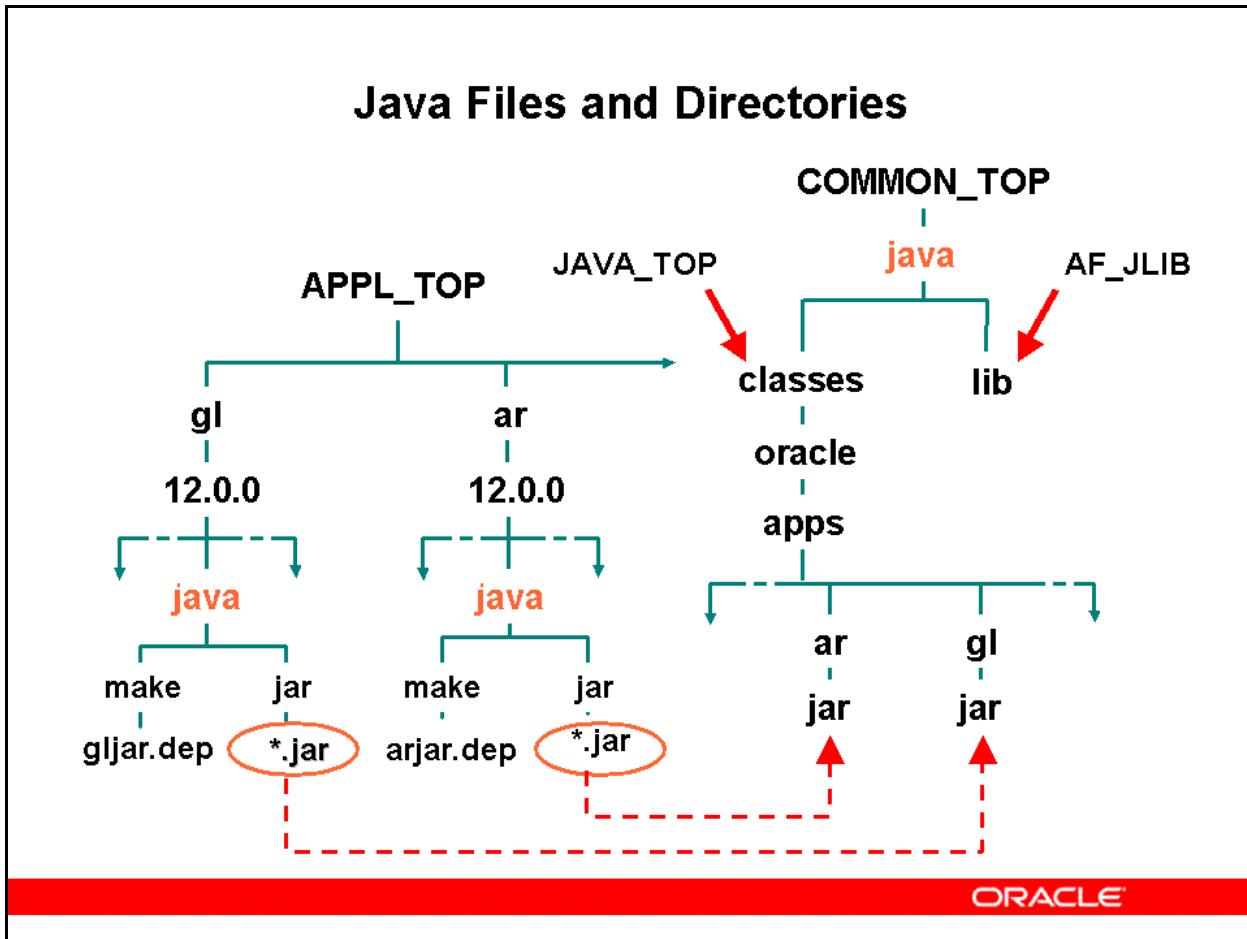
### Common Components Directory

The **COMMON\_TOP** directory contains files used by many different Oracle E-Business Suite products, and which may also be used with third-party products.

Oracle E-Business Suite Release 12.0 introduced some significant changes to the locations in which the various types of Java files are stored. Rapid Install installs all Oracle E-Business Suite class files in the **\$COMMON\_TOP/java/classes** directory, pointed to by the **\$JAVA\_TOP** environment variable. Zip and jar files are installed in the **\$COMMON\_TOP/lib** directory, pointed to by the **\$AF\_JLIB** environment variable (introduced with Release 12.0). The top-level Java directory, **\$COMMON\_TOP/java**, is pointed to by the **\$JAVA\_BASE** environment variable.

The **OA\_HTML** environment variable points to the **\$COMMON\_TOP/webapps/oacore/html** subdirectory. The HTML-based sign-on screen and files are installed here.

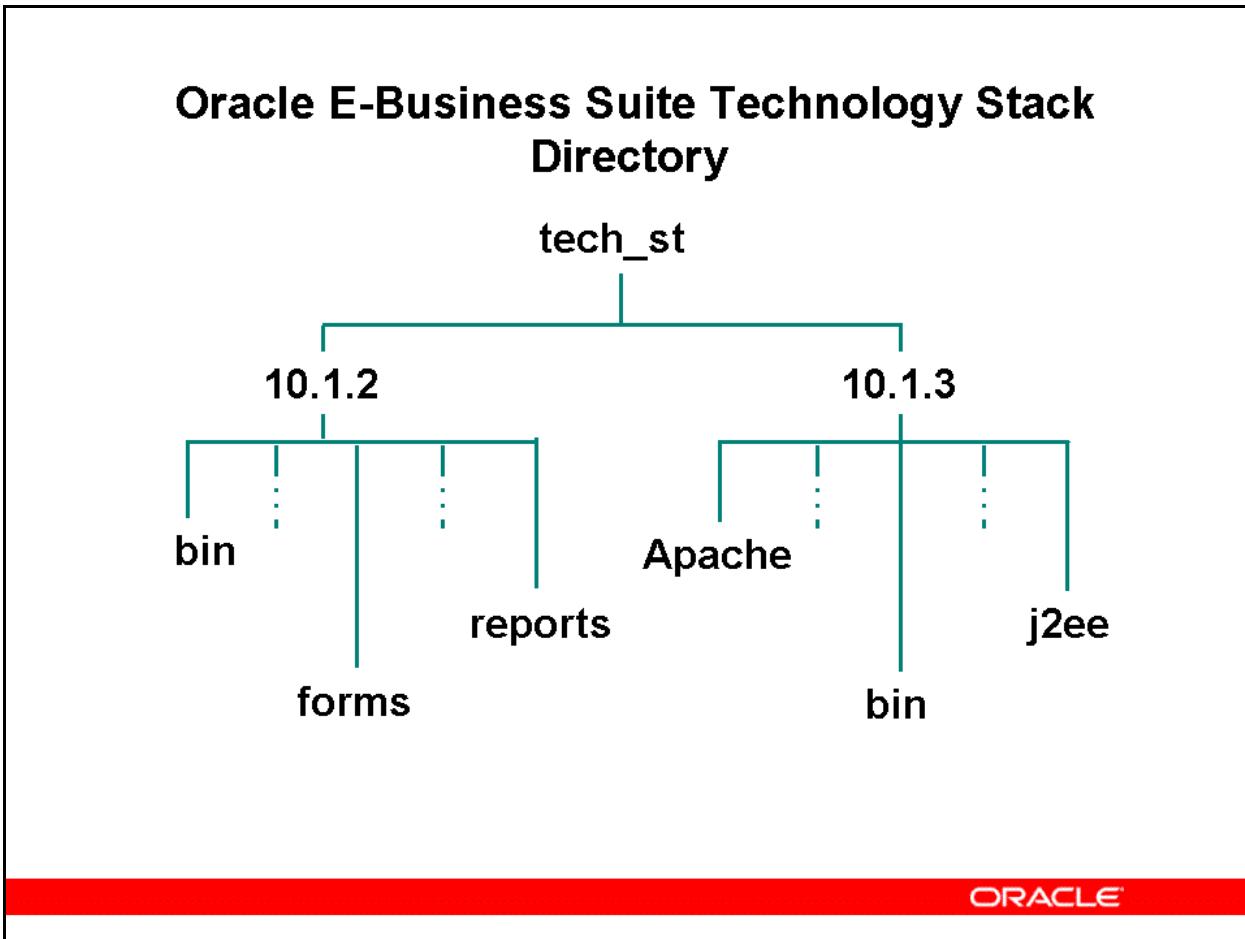
## Java Files and Directories



### Java Files and Directories

To facilitate access by the various products that utilize them, Oracle E-Business Suite Java files are installed in the \$COMMON\_TOP/java/classes directory (\$JAVA\_TOP). Rapid Install installs the Java files in the form of Java Archive (JAR) files. Java zip files are stored in the COMMON\_TOP/java/lib (\$AF\_JLIB) directory.

## Oracle E-Business Suite Technology Stack Directory



## Oracle E-Business Suite Technology Stack Directory

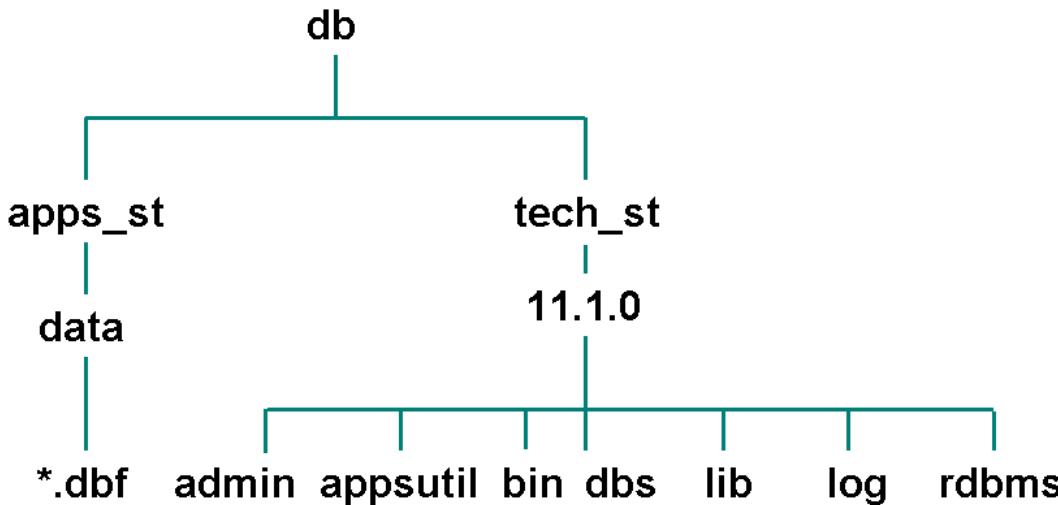
To enable Oracle E-Business Suite to take advantage of the latest Oracle technologies, Release 12 utilizes two Oracle Application Server (OracleAS) ORACLE\_HOMEs under the Oracle E-Business Suite technology stack directory (for example, /d01/oracle/VIS/apps/tech\_st).

Features of this strategy include:

- The OracleAS 10.1.2 ORACLE\_HOME replaces the 8.0.6 ORACLE\_HOME provided by Oracle9i Application Server 1.0.2.2.2 in Release 11i.
- The OracleAS 10.1.3 ORACLE\_HOME replaces the 8.1.7-based ORACLE\_HOME provided by Oracle9i Application Server 1.0.2.2.2 in Release 11i.
- All major services are started out of the OracleAS 10.1.3 ORACLE\_HOME.
- The Oracle E-Business Suite modules (packaged in the file formsapp.ear) are deployed into the OC4J-Forms instance running out of the OracleAS 10.1.3 ORACLE\_HOME, while the frmweb executable is invoked out of the OracleAS 10.1.2 ORACLE\_HOME.
- Oracle Containers for Java (OC4J), the successor to JServ, is included in OracleAS 10.1.3.

## Database Directories

### Database Directories



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### Database Directories

The database server has its own directory structure and ORACLE\_HOME.

The 11.1.0 ORACLE\_HOME (Oracle E-Business Suite database home) is located under the db/tech\_st directory: for example, /d01/oracle/VIS/db/tech\_st/11.1.0. It contains the files needed to run and maintain the Oracle E-Business Suite database. For example, the database and listener control scripts are located in the \$ORACLE\_HOME/appsutil/scripts/<CONTEXT\_NAME> directory (not all directories are shown on the slide).

The directory with the Oracle E-Business Suite data files and control files is also located under the db directory: for example, /d01/oracle/VIS/db/apps\_st/data.

## Module Summary

### Module Summary

In this module, you should have learned how to do the following:

- Describe the Oracle E-Business Suite file system
- Describe the product subdirectory structure
- Explain the roles of the following directories:
  - APPL\_TOP
  - COMMON\_TOP
  - INST\_TOP

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## Module Discussion

### Module Discussion

- What is the main advantage of using an INST\_TOP directory?
- What kinds of file does the APPL\_TOP directory contain?
- Identify the locations and describe the contents of the Oracle E-Business Suite database directories
- What is the Applications context file used for?
- How are Java files made readily accessible to Oracle E-Business Suite products?

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# **Oracle E-Business Suite Database**

## **Chapter 8**



## Oracle E-Business Suite Database

### Oracle E-Business Suite Database

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- Describe the objects and schemas that exist in the Oracle E-Business Suite database
- Describe the purpose of the APPS schema
- Identify the Oracle database features utilized by Oracle E-Business Suite
- Start and stop the database server and listener

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## Module Overview

### Module Overview

This module consists of the following topics:

- Oracle E-Business Suite database objects
- The APPS schema
- Oracle E-Business Suite product schemas
- Multiple Organization Architecture
- Reporting Currencies
- Database tier server process scripts

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### Overview

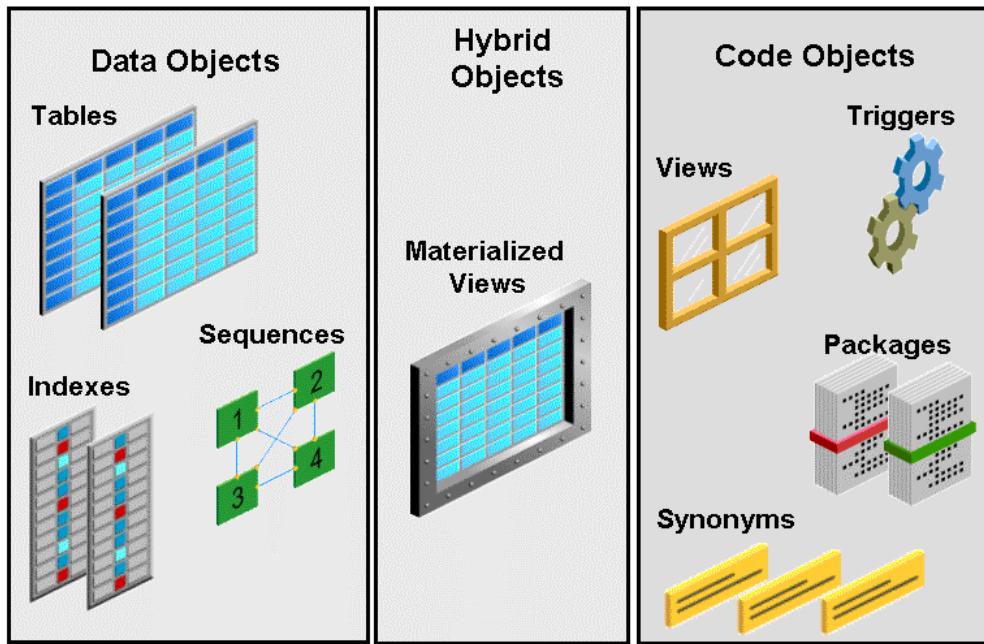
Within its multi-tier architecture, Oracle E-Business Suite stores business data in Oracle database tables. Additional database objects such as indexes and views are used when processing these tables. Oracle E-Business Suite code modules, in the form of stored procedures, are also contained within the database.

This module discusses:

- The database objects used by Oracle E-Business Suite
- How Oracle E-Business Suite uses database schemas to control access
- The APPS schema
- Oracle E-Business Suite product schemas
- Multiple Organization Architecture
- Multiple Reporting Currencies
- Database tier server process scripts

## Oracle E-Business Suite Database Objects

### Oracle E-Business Suite Database Objects



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### Oracle E-Business Suite Database Objects

Oracle E-Business Suite stores data and some code in the Oracle database. Each Oracle E-Business Suite product has its own set of database objects, and may share these objects with other products.

Database objects can be divided into the following categories:

- **Data objects** - Used for storing and accessing business data. These objects include tables, indexes, sequences, and index-organized tables.
- **Code objects** - Used to process the data. These objects include triggers, PL/SQL packages, Java stored procedures, synonyms, and views.
- **Hybrid objects** - Used to both store and process data. Materialized views are an example of hybrid objects.

## Multiple Languages in the Database

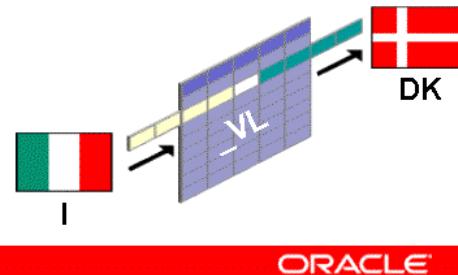
### Multiple Languages in the Database

An Oracle E-Business Suite database uses `_TL` tables to store translated information for multiple languages:

- For example, `FND_APPLICATION_TL` stores translated information about all the applications registered with Oracle Application Object Library

There are also `_VL` views, which retrieve data in the correct language.

- These use the `_TL` tables, in conjunction with the user's session language

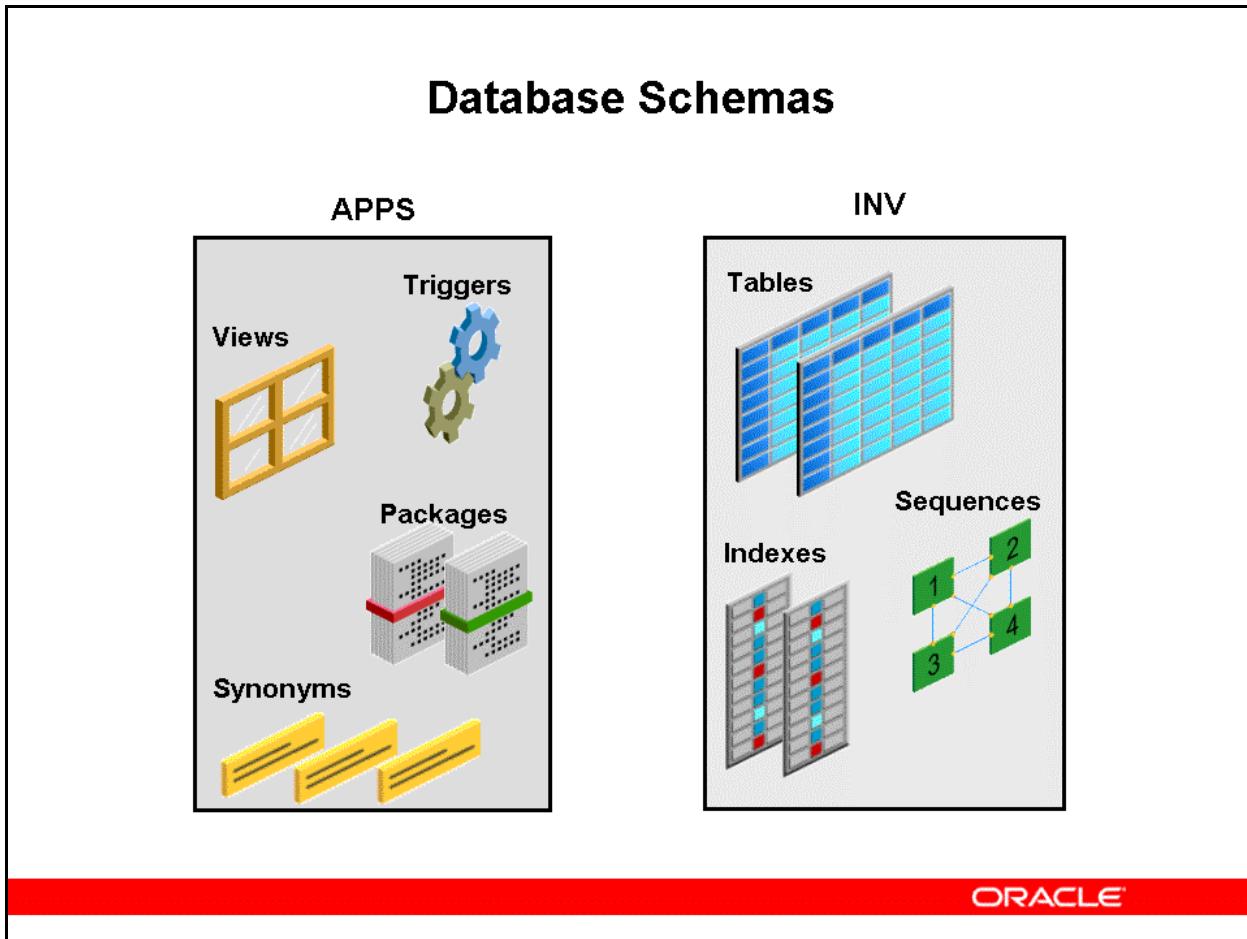


### Multiple Languages in the Database

Oracle E-Business Suite features that support multiple languages store translated data in *translation tables*. These tables are appended with “`_TL`”. For example, the `FND_APPLICATION_TL` table stores *translated information* about all the applications registered with Oracle Application Object Library. Compare this with the `FND_APPLICATION` table, which stores *base information* about all the applications registered with Oracle Application Object Library.

There are also views that are appended with “`_VL`” that use the `LANGUAGE` column of the `_TL` tables and the user's session language setting to retrieve data in the correct language.

## Database Schemas



### Database Schemas

A *schema* is a named collection of database objects. The schema is the owner of the objects it contains, and controls access to them. A schema can allow another schema to use its objects by granting the second schema the appropriate level of access.

The concept of a database schema is directly tied to the concept of a database user. That is, there is a one-to-one relationship between schemas and users in an Oracle E-Business Suite database. The database user and the schema have the same name.

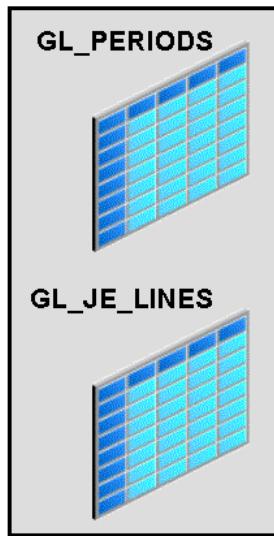
There are several important characteristics of schema usage by Oracle E-Business Suite:

- An Oracle E-Business Suite product's database objects are divided between the product schema and the APPS schema.
- A product's schema contains only its own data objects (tables, sequences, and indexes).
- All code objects (triggers, views, packages, and synonyms) for all products reside in the APPS schema.

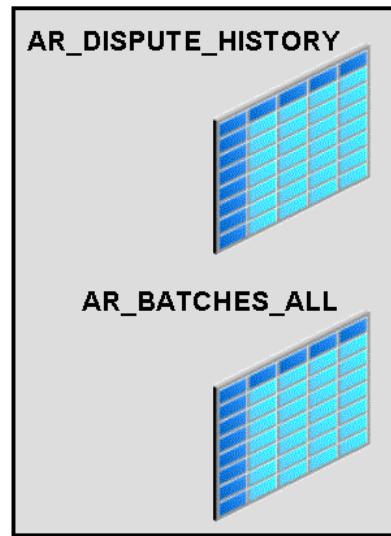
## Oracle E-Business Suite Product Schemas

### Oracle E-Business Suite Product Schemas

GL Schema



AR Schema



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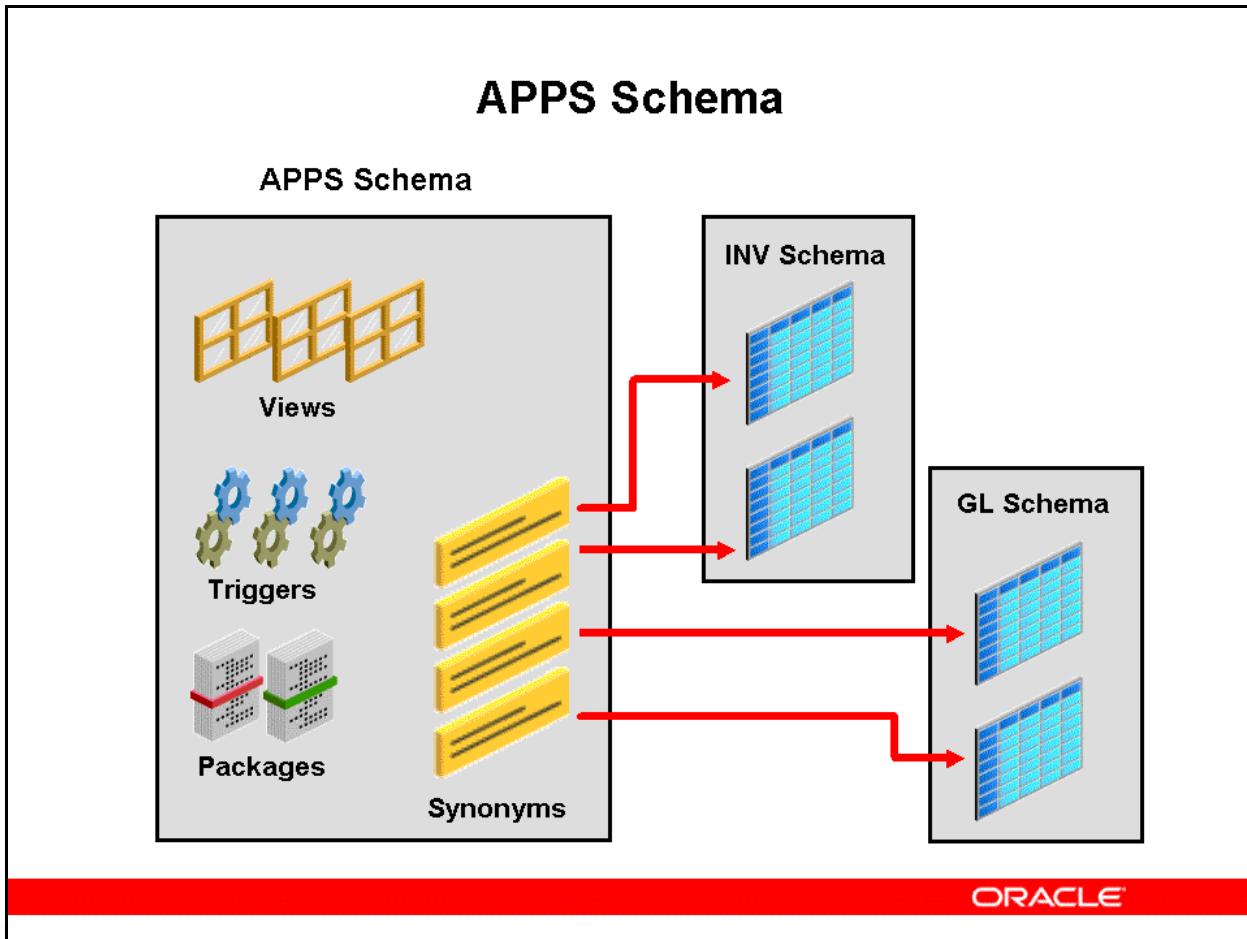
### Oracle E-Business Suite Product Schemas

In general, each product has a corresponding schema that is used to store that product's data objects. The default Oracle schema name and password for a product are usually the same as the product's abbreviation.

For example:

- Oracle General Ledger data objects are stored in the GL schema.
- Oracle Receivables data objects are stored in the AR schema.

## APPS Schema



### APPS Schema

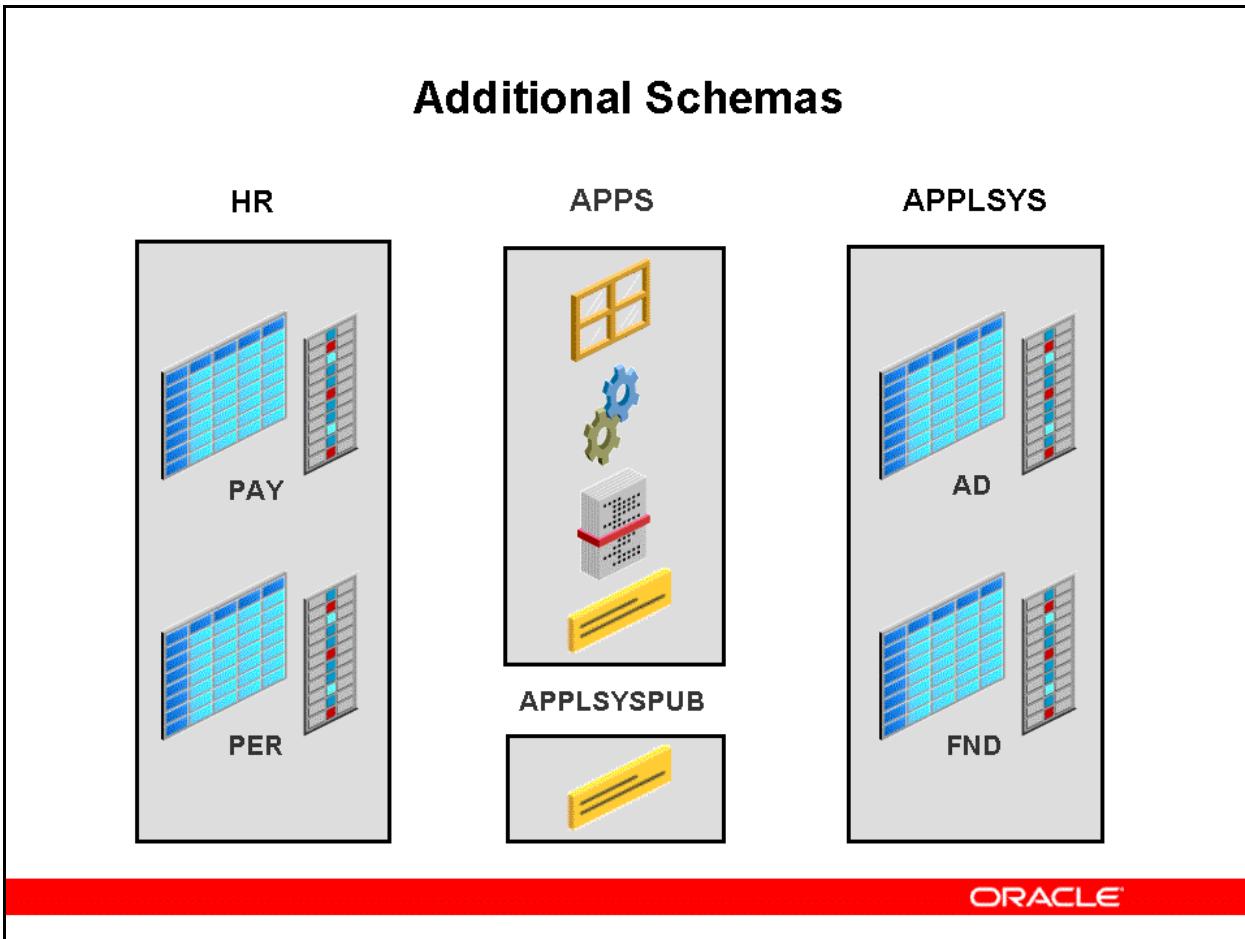
To achieve a high level of mutual integration, Oracle E-Business Suite products must be able to access objects as required. For example, a package or view owned by one product may need to access data or other packages or views owned by other products.

Maintaining individual access rights between all product schemas would be inefficient and inflexible. Instead, all code objects are kept in the central APPS schema, which facilitates access as follows:

- Each product's schema grants full privileges to the APPS schema.
- The APPS schema has synonyms to all base product tables and sequences.
- Therefore, APPS has universal access to Oracle E-Business Suite.

Runtime usage of Oracle E-Business Suite is through the APPS schema only. Users do not connect directly to product schemas such as INV.

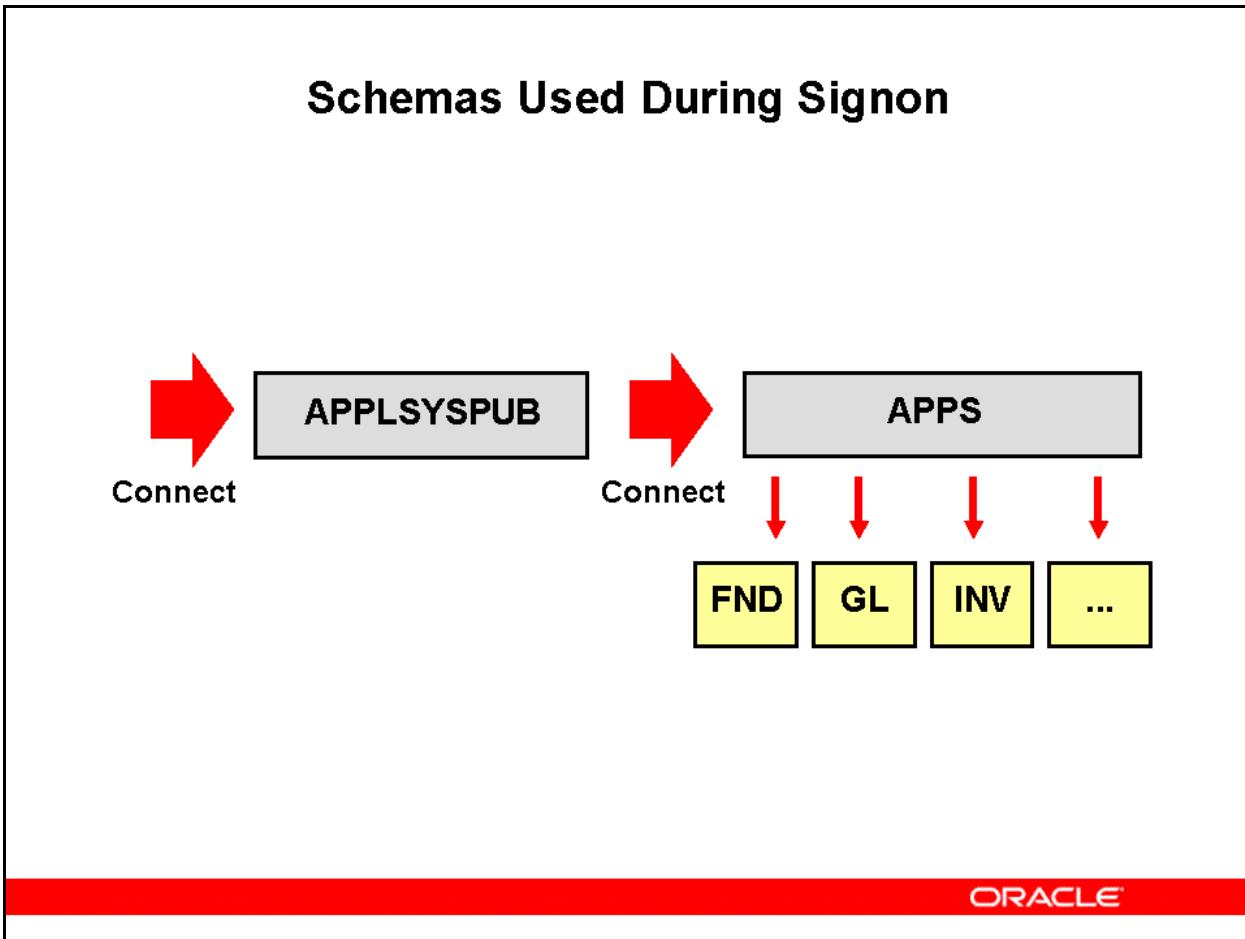
## Additional Schemas



### Additional Schemas

The data objects for some products are combined within a single schema. For example, data objects for the Human Resources products (Human Resources - PER, Payroll - PAY, and so on) are stored under a dedicated HR schema, whereas data objects for the Applications technology layer products (FND, AD, and so on) are all stored under the APPLSYS schema. There is also a public schema, APPLSYSPUB, which is used only during the signon process and has no data objects, only synonyms to APPS.

## Schemas Used During Signon



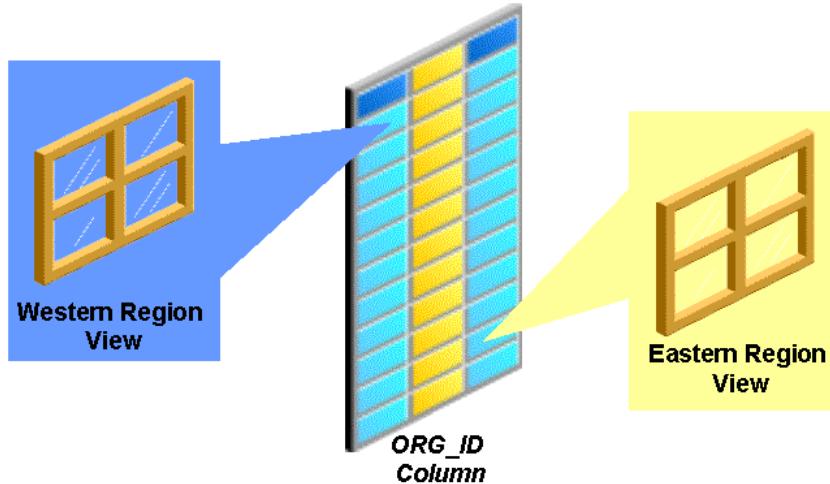
### Schemas Used During Signon

When you sign on to Oracle E-Business Suite, you initially connect to the public schema, APPLSYS PUB. Once your user name and password have been verified, Oracle E-Business Suite connects you to the APPS schema and allows you to choose a responsibility. You can then use the Forms interface or HTML interface to access data that resides in a product schema.

## Implementing Multiple Organizations

### Implementing Multiple Organizations

**SO\_HEADERS\_ALL Table**



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### Implementing Multiple Organizations

The Oracle Applications Multiple Organizations Architecture provides support for multiple organizations in a single installation of Oracle E-Business Suite. Multiple Organizations enables implementers to partition data by units such as operating units and inventory organizations.

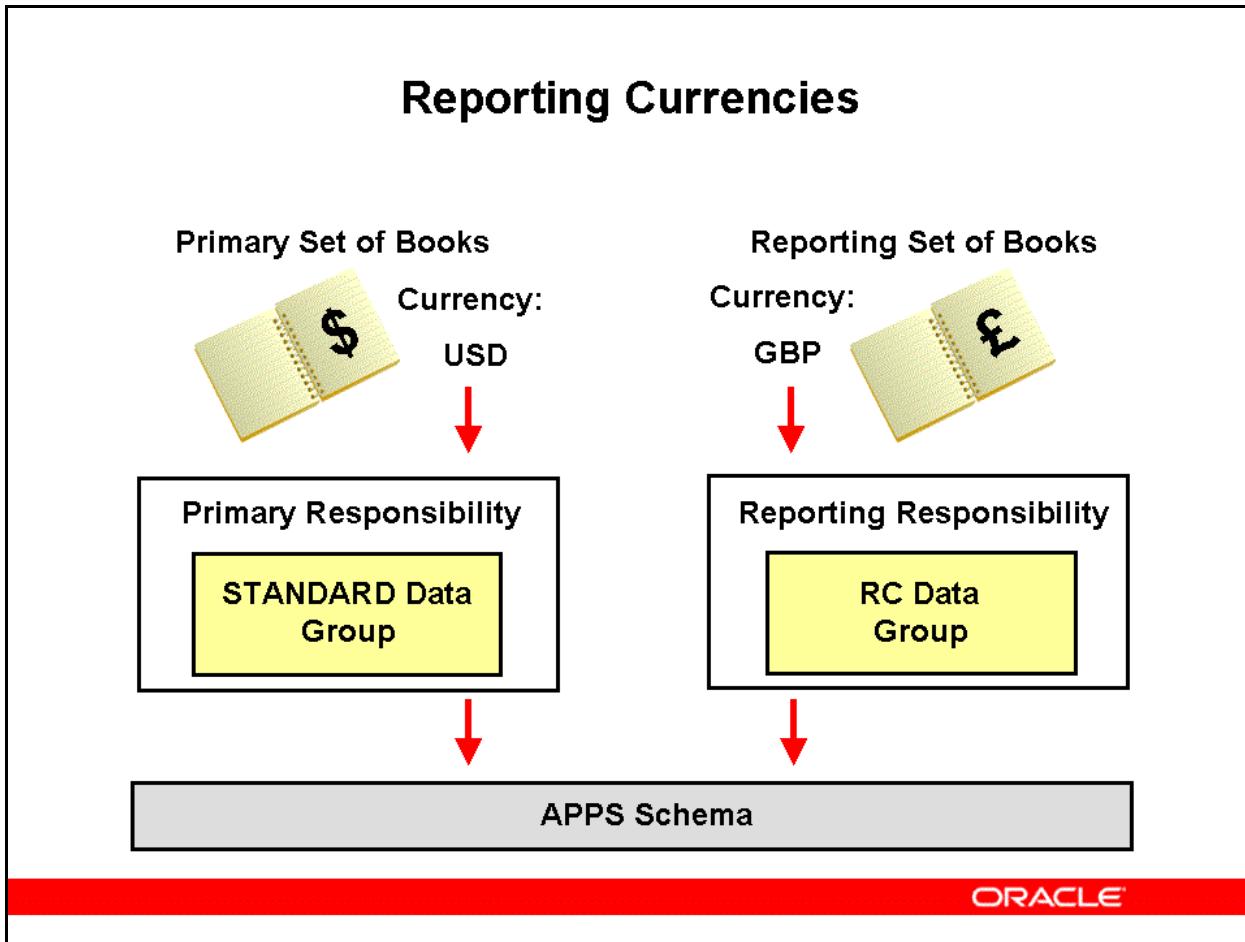
Database objects that utilize Multiple Organizations can easily be identified by their object name. Base tables which provide unsecured data access have a suffix of **\_ALL**, whereas synonyms for the same logical object, but without the suffix, provide secured data access. For example, **AP\_INVOICES\_ALL** and **AP\_INVOICES** are examples of a base table and secured synonym respectively.

Multiple Organizations is enabled by default in a fresh install of Release 12. You only need to run the seed data replication program if you define new operating units from the Define Organization form in Oracle HRMS.

If you are currently using Release 11i, you will need to enable the Multiple Organizations feature before upgrading to Release 12. This is done using the AD Administration 'Convert to Multi-Org' program to convert existing data and any replicated seed data.

For further details, see *Oracle E-Business Suite Multiple Organizations Implementation Guide* and *Oracle E-Business Suite Upgrade Guide, Release 11i to 12.1.1* (or other version, as applicable).

## Reporting Currencies



### Reporting Currencies

The Reporting Currencies feature permits an organization to report and maintain accounting records at the transaction level in more than one functional currency.

You do this by defining one or more reporting sets of books in addition to your primary set of books. In your reporting sets of books you maintain records in a functional currency other than your primary functional currency.

Your primary functional currency is the currency you use to record your business transactions and accounting data within Oracle E-Business Suite. The primary functional currency is defined within your primary set of books. A reporting functional currency is a functional currency as defined in a reporting set of books. You can use any defined functional currency to support financial reporting.

Reporting Currencies can be used even if the Multiple Organization Architecture is not implemented.

## Overview of Database Features

### Overview of Database Features

Database features used by Oracle E-Business Suite include:

- Monitoring features
  - Automatic Workload Repository
  - Automatic Database Diagnostic Monitor
  - Active Session History
- Performance features
  - Query Optimization
  - Database Resource Manager
  - Partitioned Tables
  - Temporary Tables
  - Locally Managed Tablespaces
  - Oracle Applications Tablespace Model



### Overview of Database Features

The Oracle database server documentation contains in-depth information on each of these features.

## Overview of Database Features

### Overview of Database Features

Database features used by Oracle E-Business Suite include:

- Scalability features
  - Oracle Real Application Clusters
  - Automatic Storage Management
- Business Intelligence features
  - Materialized Views



### Overview of Database Features

The Oracle Database documentation contains in-depth information on each of these features.

## Monitoring Features: Automatic Workload Repository

### Monitoring Features: Automatic Workload Repository

The Automatic Workload Repository (AWR):

- Is a repository of database performance statistics built into the Oracle 11g Release 1 database
- AWR automatically generates snapshots of performance data at regular intervals
- The statistics are collected for use in problem detection and tuning
- AWR can be accessed through Oracle Enterprise Manager Database Control

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### Monitoring Features: Automatic Workload Repository (AWR)

The Automatic Workload Repository is a repository of database performance statistics built in to the Oracle 11g Release 1 database. AWR automatically generates snapshots of performance data at regular intervals (typically, once an hour) and collects the statistics for use in problem detection and tuning. The gathered data can be displayed in both reports and views.

You can access AWR through Oracle Enterprise Manager Database Control, managing snapshots or modifying settings in order to create baselines that capture typical performance periods. The baselines can be used for comparisons with similar workload periods where performance problems have been reported.

## Monitoring Features: Automatic Database Diagnostic Monitor

### Monitoring Features: Automatic Database Diagnostic Monitor

The Automatic Database Diagnostic Monitor (ADDM):

- Is a tool that allows the Oracle database to diagnose its performance and identify solutions to problems
- ADDM analyzes AWR data on a regular basis
- It can be used to analyze performance issues after the event, saving time and resources in reproducing a problem
- Automatic database diagnostic monitoring is enabled by default
- The primary interface is Oracle Enterprise Manager Database Control

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### Monitoring Features: Automatic Database Diagnostic Monitor (ADDM)

The Automatic Database Diagnostic Monitor is a tool that allows the Oracle database diagnose its own performance, and determine how problems can be resolved.

ADDM analyzes Automatic Workload Repository data on a regular basis, locating the root causes of performance problems and providing recommendations for correcting them. Because AWR stores historical performance data, ADDM can be used to analyze performance issues after the event, saving time and resources in reproducing a problem (where this is even possible).

Automatic database diagnostic monitoring is enabled by default, and its primary interface is Oracle Enterprise Manager Database Control.

## Monitoring Features: Active Session History

### Monitoring Features: Active Session History

#### Active Session History (ASH):

- Is a means by which a detailed history of database activity is captured and stored
- The amount of data recorded is directly related to the work being performed
- ASH gathers data at the session level
- You can use ASH reports to highlight transient database performance problems
  - For example, short-duration problems lasting only a few minutes

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### Monitoring Features: Active Session History

Active Session History is a means by which a detailed history of database activity is captured and stored. Only active sessions are captured, so the amount of data recorded is directly related to the work being performed. The V\$ACTIVE\_SESSION\_HISTORY view records current sampled session activity.

Unlike the instance-level statistics gathered by AWR, ASH gathers data at the session level. You can run ASH reports to analyze transient performance problems with the database that may only occur during specific times. For example, ASH can often be used to identify short-duration problems (perhaps lasting only a few minutes) that would represent too small a proportion of an ADDM analysis period to be noticeable.

## Performance Features: Query Optimization

### Performance Features: Query Optimization

The cost-based query optimizer:

1. Creates a set of potential execution plans for the SQL statement based on:
  - Available access paths
  - Any hints specified
2. Estimates the cost of each plan, using:
  - Statistics for the data distribution
  - Storage characteristics of the tables, indexes, and partitions
3. Compares the costs of the execution plans and chooses the one with the lowest cost

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### Performance Features: Query Optimization

The Oracle optimizer evaluates many factors to calculate the most efficient way to execute a SQL statement. It is capable of using either a rule-based or cost-based approach for execution of the statement. Rule-based optimization was used in earlier Applications releases, but since the SQL used in Release 12 has been extensively tuned for cost-based optimization, Release 12 (like Release 11*i*) requires the optimizer to use cost-based optimization (CBO).

Using CBO, the optimizer considers the available access paths, factoring in statistical information for the tables and indexes that the SQL statement will access. CBO also considers hints, which are optimization suggestions placed in a comment block of an SQL statement.

For some operations, such as batch processing, Release 12 uses CBO to achieve the most efficient means of processing *all rows* that are accessed by the statement. For other operations, such as accessing forms or communication with the desktop client, Release 12 uses CBO to achieve the best response time for processing the *first rows* that are accessed by the statement.

Several other Oracle database performance enhancements used in Release 12, such as partitioned tables, also require use of the cost-based optimizer.

## Performance Features: Database Resource Manager

### Performance Features: Database Resource Manager

The Database Resource Manager:

- Allows the system administrator to distribute server CPU based on defined business rules
- This helps to ensure that the highest priority business activities always have sufficient CPU resources
- It also limits the impact of any inefficient ad hoc queries

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### Performance Features: Database Resource Manager

The Database Resource Manager gives the system administrator extensive control over processing resources on the database server node. The administrator can distribute server CPU based on business rules, ensuring that the highest priority activities always have sufficient CPU resources. The administrator could, for example, guarantee Order Entry users 40% of CPU resources during business hours, regardless of the load or number of users in other groups on the system.

System administrators can also use the Database Resource Manager to limit the impact of any inefficient ad hoc queries. For example, a limit of 5% of CPU resources could be placed on ad hoc queries against the database.

## Performance Features: Partitioning

### Performance Features: Partitioning

- Partitioning helps support very large tables and indexes by dividing them into smaller pieces called *partitions*
  - SQL statements can access the partitions rather than the original tables or indexes
- Partitioning can greatly enhance performance, particularly in operations copying or deleting large volumes of data
  - For example, a data warehouse application may benefit from partitioning by months of the year
- Custom partitioning of standard Release 12 tables is fully supported for objects that are not already partitioned



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### Performance Features: Partitioning

Partitioning helps support very large tables and indexes by dividing them into smaller, more manageable pieces called *partitions*. Once the desired partitions have been defined, SQL statements can access them instead of the original tables or indexes.

Partitioning can significantly enhance performance and manageability. For example, the speed of operations that involve copying or deleting data may be greatly improved by the use of partitioned tables. This can be particularly useful in data warehouse applications.

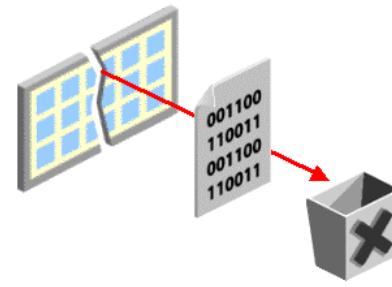
Custom partitioning of standard Oracle E-Business Suite tables in Release 12 is fully supported for objects that are not already partitioned.

Partitioning should always be planned carefully, and subsequently tested to confirm that the expected performance benefits have been achieved.

## Performance Features: Temporary Tables

### Performance Features: Temporary Tables

- Temporary tables hold data that exists only for the duration of a transaction or session
- Some Applications products, such as General Ledger, can explicitly utilize temporary tables
- SQL statements on temporary tables do not generate redo logs for the data changes
- Data from the temporary table is automatically dropped when the session terminates



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### Performance Features: Temporary Tables

Characteristics of temporary tables include:

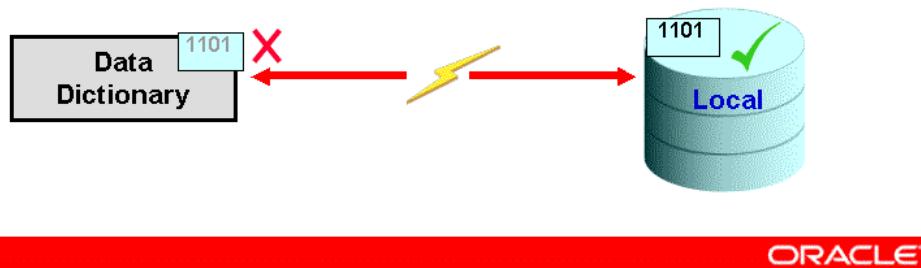
- Data in a temporary table is private to each user's session.
- Each session can only see and modify its own data.
- Locks are not acquired on the temporary table because each session has its own private data.

## Performance Features: Locally Managed Tablespaces

### Performance Features: Locally Managed Tablespaces

Locally Managed Tablespaces:

- Eliminate recursive operations that are sometimes required during dictionary-managed space allocation
  - This improves concurrency and speed of space operations
- Do not generate any undo or redo
- Reduce reliance on the data dictionary
  - Storage information is kept in file headers



### Performance Features: Locally Managed Tablespaces

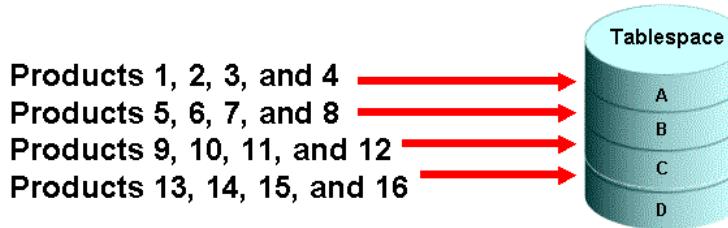
In the traditional model, each Oracle E-Business Suite product had its own table and index tablespaces. For optimum performance, these are created as locally managed tablespaces. Oracle E-Business Suite tablespaces have a standard naming convention, in which 'D' (for data) or 'X' (for index) is added to the product's short name or Oracle schema name. For example, the tablespaces APD and APX are the tablespaces for Oracle Payables tables and indexes, respectively. The OATM tablespace model also uses locally managed tablespaces.

## Performance Features: Oracle Applications Tablespace Model

### Performance Features: Oracle Applications Tablespace Model

As standard, Release 12.1 uses the Oracle Applications Tablespace Model, in which:

- A much smaller number of locally managed tablespaces accommodates all products
- Applications schema objects are allocated to tablespaces based on characteristics including size, lifespan, and type of data contained



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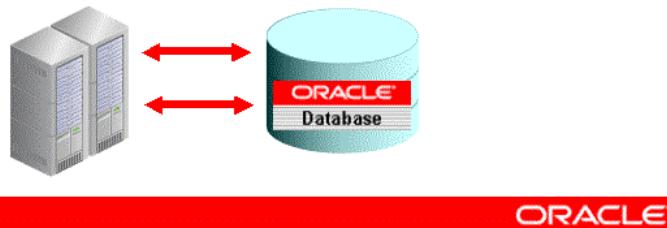
### Performance Features: Oracle Applications Tablespace Model

In the traditional model, each Oracle E-Business Suite product had its own table and index tablespaces. With an increasing number of products available, this would mean a need for several hundred product tablespaces.

The Oracle Applications Tablespace Model (OATM) accommodates the schema objects for all products in a much smaller number of locally managed tablespaces. OATM groups Oracle E-Business Suite schema objects based on characteristics such as size, lifespan, and the type of data they contain. For example, tables that contain seed data are allocated to a different tablespace from tables that contain transactional data.

## Scalability Features: Oracle Real Application Clusters

- ### Scalability Features: Oracle Real Application Clusters
- Oracle Real Application Clusters (Oracle RAC) utilizes two or more computers to create a powerful computing environment known as a cluster
  - Oracle RAC extends the capabilities of resources beyond their limits as individual components
  - A cluster provides increased performance for larger workloads and growing user populations
  - In an Oracle RAC environment, all active instances can concurrently execute transactions against a shared database



### Scalability Features: Oracle Real Application Clusters

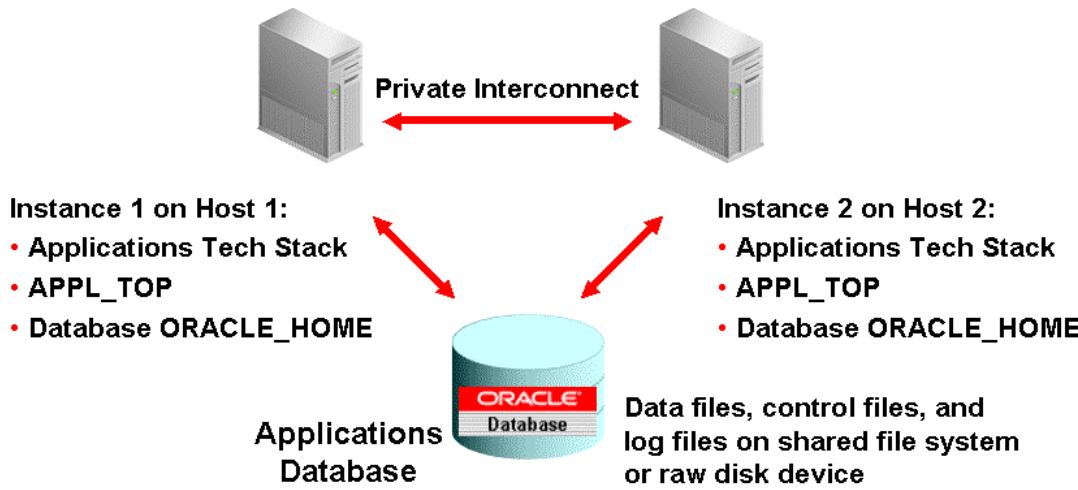
A large processing task, divided into subtasks and distributed among multiple nodes of a cluster of computers, is completed more quickly and efficiently than if the entire task was processed on one node. As nodes or disks are added to a cluster, Oracle RAC utilizes these resources beyond their limits as individual components, maximizing their usefulness in catering for larger workloads and growing user populations.

In Oracle RAC environments, all active instances can concurrently execute transactions against a shared database. Oracle RAC coordinates each instance's access to the shared data, providing data consistency and data integrity. From a developer's point of view, Oracle RAC enables applications to be scaled to meet increasing demand, without the need to modify the application code.

## Scalability Features: Oracle Real Application Clusters

### Scalability Features: Oracle Real Application Clusters

An Oracle Real Application Clusters installation coordinates each instance's access to the shared data to provide data consistency and integrity:



### Scalability Features: Oracle Real Application Clusters

All Oracle E-Business Suite products can be successfully deployed against an Oracle RAC-enabled database.

Using Parallel Concurrent Processing, concurrent managers on separate application tier machines can be configured to direct requests to different database servers in an Oracle RAC cluster.

## Business Intelligence Features: Materialized Views

### Business Intelligence Features: Materialized Views

Materialized views are schema objects that can be used to:

- Summarize, replicate, and distribute data
- Precompute and store aggregated data such as sums and averages
- Increase the speed of queries on large databases
- Improve performance of Applications products that perform many queries on summary data

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### Business Intelligence Features: Materialized Views

Materialized views are schema objects that can be used to summarize, precompute, replicate, and distribute data. When used to precompute and store aggregated data such as sums and averages, they can greatly increase the speed of queries on very large databases. Materialized views can therefore improve performance of Oracle E-Business Suite products, such as Daily Business Intelligence, that perform many queries on summary data. They are also potentially very useful in data warehouse environments.

Cost-based optimization, discussed earlier in this module, use materialized views to improve query performance, by automatically recognizing when one can be used to satisfy a request. In such a case, the optimizer transparently rewrites the request to use the materialized view instead of the underlying tables or views.

In distributed environments, materialized views can be used to replicate data at remote sites, providing local access to data that would otherwise have to be accessed from the main site via a network link.

## Database Tier Server Process Scripts

### Database Tier Server Process Scripts

The database tier server process scripts are:

- Created by Rapid Install during the installation
- Recreated when necessary by AutoConfig
- Located in:  
`<Database ORACLE_HOME>/appsutil/scripts/<CONTEXT_NAME>`
- Used to start and stop server processes on the database tier

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### Database Tier Server Process Scripts

The key directory on the database tier is `<Database ORACLE_HOME>/appsutil/scripts/<CONTEXT_NAME>`. This directory contains control scripts to start and stop the database and database listener processes, and to run AutoConfig.

## Database Tier Server Process Scripts

### Database Tier Server Process Scripts

Script or Command File	Function
addInctl.sh start <SID> addInctl.cmd start <SID>	Start database listener process
addBctl.sh start <option> addBctl.cmd start <option>	Start database process
addInctl.sh stop <SID> addInctl.cmd stop <SID>	Stop database listener process
addBctl.sh stop <option> addBctl.cmd stop <option>	Stop database process

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### Database Tier Server Process Scripts

UNIX uses shell scripts (.sh) to control database server process startup and shutdown. On Windows, command files (.cmd) are used.

## Database Tier Server Process Scripts

### Database Tier Server Process Scripts

To stop or start the database, enter the following:

```
<process script name> [stop | start] [option]
```

For example, to shut down the database:

UNIX:

```
$ addbctl.sh stop normal
```

Windows:

```
C:\> addbctl.cmd stop normal
```

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### Database Tier Server Process Scripts

On Windows, you can also start up or shut down database server processes as follows:

1. Go to Start > Administrative Tools > Services
2. Select a service from the Services window
3. Click Start or Stop, as required

## Module Summary

### Module Summary

In this module, you should have learned how to do the following:

- Describe the type of objects and schemas that exist in the Oracle E-Business Suite database
- Describe the purpose of the APPS schema
- Identify the Oracle database features utilized by Oracle E-Business Suite
- Start and stop the database server and listener

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## Module Discussion

### Module Discussion

- Name the two locations between which an Oracle E-Business Suite product's database objects are divided
- What is the main role of the APPLSYS schema?
- List three Oracle database server features used by Oracle E-Business Suite
- In which directory are the database tier control scripts located?

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# **Advanced Configuration Options**

## **Chapter 9**



## Advanced Configuration Options

### Advanced Configuration Options

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## Objectives

### Objectives

At the end of this module, you should be able to do the following:

- Describe use of a shared application tier file system in Oracle E-Business Suite
- Identify the main load balancing options and their key features
- List the major factors in efficient network design for Oracle E-Business Suite

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## Module Overview

### Module Overview

This module discusses the following topics:

- Shared Application Tier File System
- Load Balancing Options
- Network Features

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#### Overview

Once the basic install decisions have been made, there are several important areas where additional configuration may be needed for a particular site, to implement required features and ensure the desired performance is obtained.

This module discusses:

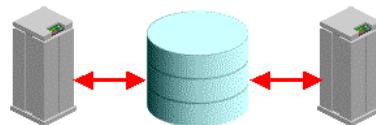
- Shared Application Tier File System
- Load Balancing Options
- Network Features

## Shared Application Tier File System: Introduction

### Shared Application Tier File System: Introduction

A shared application tier file system is a single Application tier file system that can be accessed simultaneously from more than one machine:

- The application tier file system disk is attached to a mount point of the same name on all machines



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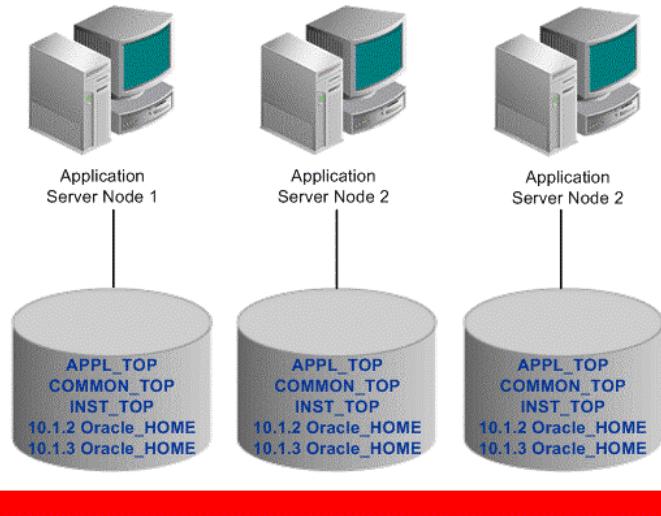
### Shared Application Tier File System - Introduction

Oracle E-Business Suite Release 12.1 extends and simplifies the existing capabilities of sharing the \$APPL\_TOP and application tier file system.

## Shared Application Tier File System: Not In Use

### Shared Application Tier File System: Not In Use

Without a shared application tier file system, each application tier node has its own file system, which must be managed independently:



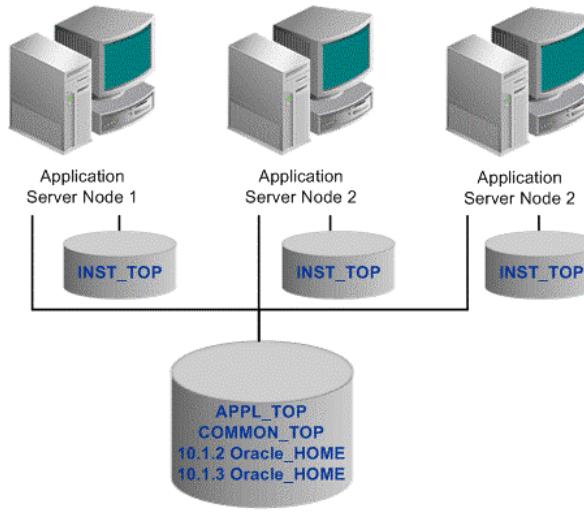
### Shared Application Tier File System: Not In Use

A traditional multi-node application tier installation requires the Oracle E-Business Suite file system to be installed on each application tier node.

## Shared Application Tier File System: In Use

### Shared Application Tier File System: In Use

With a shared application tier file system, all application tier nodes share a single file system, which simplifies maintenance:



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### Shared Application Tier File System: In Use

A shared application tier file system means that there is a single (the same) application tier file system capable of being accessed simultaneously by two or more machines. In a shared application tier file system environment, each node has its own environment file (APPS<CONTEXT\_NAME>.env) and Applications context file (<CONTEXT\_NAME>.xml).

A shared application tier file system environment requires the relevant shared disk volume to be attached to a mount point of the same name on all participating machines, so the path to the application tier file system will have the same value on all machines.

## Shared Application Tier File System: Features

### Shared Application Tier File System: Features

A shared application tier file system can be used for all nodes in an application tier:

- In Release 12.1, all application tier file systems contain the same installed files
- An application tier can be shared immediately
  - It is not necessary to start from scratch
- Specific sharing technologies are not certified
  - The shared file system must simply be accessible from all nodes
- The Release 12.1.1 Rapid Install can install a shared application tier file system

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### Shared Application Tier File System: Features

A single application tier file system can be used for multiple node types in an application tier. For sites that have an application tier file system already installed and performing all the required functions, that particular application tier file system can be shared immediately: it is not necessary to start from scratch and create a single application tier file system that can provide services for all the application tier nodes.

Sharing technologies are available from a number of vendors, and offer various levels of sophistication. Specific solutions are not certified against Oracle E-Business Suite. The only essential requirement is for the application tier file system to be accessible from all nodes.

The Release 12.1.1 Rapid Install offers a multi-node installation with a shared application tier file system as an option.

## Shared Application Tier File System: Benefits

### Shared Application Tier File System: Benefits

Using a shared application tier file system has several benefits:

- Machines can easily be added to an existing system in order to:
  - Maximize system availability
  - Cater for additional usage requirements
- Disk space requirements are greatly reduced
- Administrative tasks need only be carried out once, on any node

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## Shared Application Tier File System: Benefits

There are several benefits to using a shared application tier file system:

- **Extensible System Architecture** - The ease with which machines can be added to an existing system facilitates the deployment of a large number of application tier machines, to help maximize system availability and cater for additional usage requirements.
- **Reduced Disk Space Requirements** - Overall disk space requirements are greatly reduced, as there is only a single copy of the relevant Oracle E-Business Suite code.
- **Simpler Administration** - Since there is only one physical application tier file system file system, administrative tasks such as patch application need only be carried out once, on any node, and take effect immediately on all nodes.
- **Utilization of Distributed AD** - Distributed AD is a means of improving the efficiency of patch application and thereby reducing downtime. Distributed AD requires a shared application tier file system.

## Shared Application Tier File System: Availability

### Shared Application Tier File System: Availability

Using a shared application tier file system offers several advantages in the area of high availability:

- An Oracle E-Business Suite patch only needs to be applied once, minimizing downtime
- It is easier to add nodes, to cater for more users and provide greater resilience

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### Shared Application Tier File System: Availability

Since there is only one physical application tier file system file system, an Oracle E-Business Suite patch only needs to be applied once, and its effects are seen immediately on all the nodes. This will help minimize the duration of planned maintenance outages, and reduce the scope for errors.

Sharing an application tier file system makes it easier to add nodes to an existing installation, to cater for additional users, provide greater resilience, and maximize availability. This is particularly cost-effective with inexpensive Linux nodes.

## Load Balancing: Introduction

### Load Balancing: Introduction

The various Oracle E-Business Suite technology layers can be distributed across a larger or smaller number of machines, according to:

- Physical topology
- Required performance
- Desired expenditure

Other possible factors include:

- Growth in user base
- Fluctuations in demand
- Resilience in the event of hardware problems

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## Load Balancing: Introduction

Oracle E-Business Suite provides numerous options for building and tailoring an installation to meet specific business and technical requirements. At a hardware level, this includes the capability to utilize additional machines to distribute the various Oracle E-Business Suite technology layers according to:

- Physical topology
- Required performance
- Desired expenditure

Other possible factors include:

- Growth in user base
- Fluctuations in demand
- Resilience in the event of hardware problems

## Load Balancing: Strategic Effect

### Load Balancing: Strategic Effect

Load balancing involves the entire infrastructure of an Oracle E-Business Suite installation:

- A change that brings an improvement in one area can potentially have adverse effects elsewhere
- Careful decisions about load balancing can often result in a higher level of performance, without unwanted side-effects or expenditure on additional hardware

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### Load Balancing: Strategic Effect

This section describes how to make the decisions needed to balance the load on various components or layers, which is of particular importance for two reasons:

- Load balancing can involve the entire infrastructure of an Oracle E-Business Suite installation, with a change in one area potentially having significant effects elsewhere
- Making informed decisions about load balancing can often enable a higher level of performance to be obtained without expenditure on additional hardware

The emphasis here is on describing load balancing strategies and their key features, to allow an informed decision to be made regarding the applicability and usefulness of a particular area of load balancing in achieving the desired technical and business requirements.

## Load Balancing: Principal Areas

### Load Balancing: Principal Areas

Principal load balancing areas include:

- Domain Name Server
- HTTP Server
- Concurrent Processing Layer
- Database Layer

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## Load Balancing: Principal Areas

Principal load balancing areas include:

- Domain Name Server
- HTTP Server
- Concurrent Processing Layer
- Database Layer

## Load Balancing: Session Persistence

### Load Balancing: Session Persistence

The two main categories of load balancer are:

- **Session Persistent Load Balancers**, which always direct HTTP requests from a client to the same server
  - Client connections are session-persistent
  - This is also referred to as *stickiness*
- **Non-Session Persistent Load Balancers**, which do not necessarily direct HTTP client requests to the same server
  - Client connections are not session-persistent

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### Load Balancing: Session Persistence

The main categories of load balancer are:

**Session Persistent Load Balancers** - After a client's HTTP connection is established with a particular server, subsequent HTTP requests from that client are directed to the same server, for the duration of the session. This persistency is also referred to as *stickiness*.

**Non-Session Persistent Load Balancers** - These load balancers use a round-robin strategy for balancing incoming HTTP requests, and do not maintain session persistent client connections. After a client's initial HTTP connection is directed to a given server, subsequent HTTP requests from that client will not necessarily be directed to the same server.

## Load Balancing: SSL Accelerators

### Load Balancing: SSL Accelerators

Another type of load balancer uses Secure Sockets Layer (SSL) Accelerators, which:

- Reduces the SSL traffic and workload of the Web server
- Converts SSL HTTPS client browser requests to non-SSL HTTP requests
- Directs subsequent request to the HTTP server

A reverse of this process is used to send the response back to the browser



### Load Balancing: SSL Accelerators

Secure Sockets Layer (SSL) Accelerators - Secure Sockets Layer (SSL) accelerators can be used to reduce the SSL traffic and workload of the Web servers.

Usually, an SSL accelerator is the target for HTTPS browser requests, and thus the target for all client communication. It is responsible for converting HTTPS SSL requests to non-SSL HTTP requests, directing the subsequent request to the HTTP server (running in non-SSL mode). Before sending the response back to the client browser, the SSL accelerator converts the non-SSL requests back to SSL requests, in a reverse of the initial process.

## Load Balancing: Specific Options

### Load Balancing: Specific Options

Several different types of load balancing can be employed with Oracle E-Business Suite:

- They range from the relatively simple to the more sophisticated
- The load balancing solution should integrate with the existing infrastructure of a site

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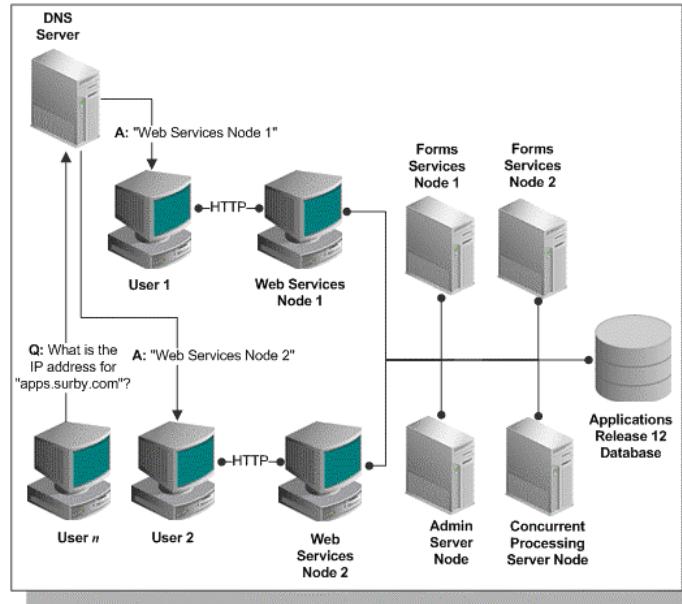
### Load Balancing: Specific Options

Several different types of load balancing can be employed with Oracle E-Business Suite. They range from the relatively simple to the more sophisticated, and should be chosen to integrate with the specific needs and existing infrastructure of a site.

## Load Balancing: DNS Layer

### Load Balancing: DNS Layer

**DNS Layer Load Balancing** distributes requests based on dynamic assignments of IP addresses to a *fully qualified domain name*:



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### Load Balancing: DNS Layer

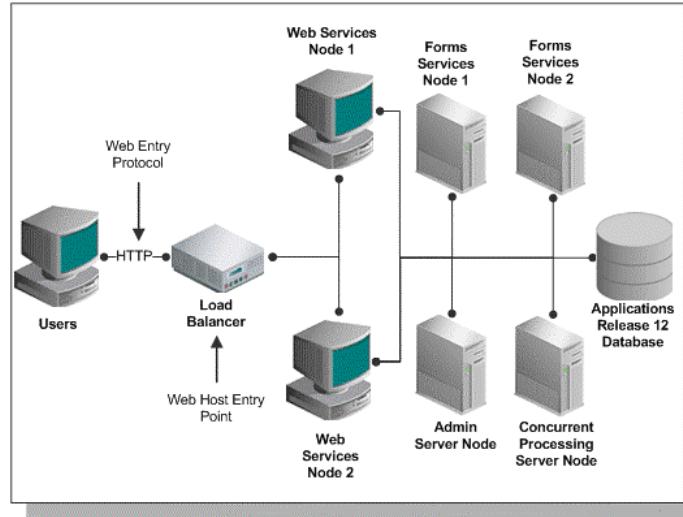
Domain Name Server (DNS) Layer Load Balancing distributes end-user requests across multiple server nodes, based on dynamic assignments of IP addresses to a *fully qualified domain name*.

The diagram shows an example of a configuration that uses DNS layer load balancing.

## Load Balancing: HTTP Layer

### Load Balancing: HTTP Layer

**HTTP Layer Load Balancing requires a hardware load balancer that accepts HTTP communication and forwards it to a group (farm) of server nodes:**



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### Load Balancing: HTTP Layer

This type of load balancing can be used if you have a hardware load balancer that accepts HTTP communication and forwards it to a group of server nodes, sometimes referred to as a *farm*.

The diagram shows an example of a configuration where an HTTP load balancer distributes the load across a farm consisting of two Web server nodes.

## Load Balancing: Concurrent Processing Layer

### Load Balancing: Concurrent Processing Layer

Parallel Concurrent Processing (PCP) enables you to:

- Run concurrent processes on multiple nodes to improve concurrent processing throughput
- Continue running concurrent processes on the remaining nodes when one or more nodes fail
- Administer concurrent managers running on multiple nodes from any node in the cluster

PCP is enabled by default, so is always available for use

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### Load Balancing: Concurrent Processing Layer

*Parallel Concurrent Processing (PCP)* allows concurrent processing activities to be distributed across multiple nodes in an Oracle Real Application Clusters (Oracle RAC) environment or similar cluster system. By distributing concurrent processing in this way, hardware resources can be fully utilized, maximizing throughput and providing resilience to node failure, while retaining a central point of control.

Parallel Concurrent Processing is enabled by default, so PCP is always available for use in environments where one or more concurrent processing nodes exist. PCP does not require an Oracle RAC environment. Conversely, you do not have to use PCP in an Oracle RAC environment, although it typically makes sense to do so.

## Load Balancing: Database Layer

### Load Balancing: Database Layer

Oracle Real Application Clusters (Oracle RAC) harnesses the processing power of multiple computers:

- All active instances can concurrently execute transactions against a shared database
- Oracle RAC coordinates each instance's access to the shared data, to provide data consistency and integrity
- All E-Business Suite modules can be successfully deployed against an Oracle RAC-enabled database

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### Load Balancing: Database Layer

Oracle Real Application Clusters (Oracle RAC) harnesses the processing power of multiple interconnected computers. In Oracle RAC environments, all active instances can concurrently execute transactions against a shared database. Oracle RAC coordinates each instance's access to the shared data, to provide data consistency and data integrity. From a developer's point of view, Oracle RAC enables applications to be scaled to meet increasing data processing demands, without the need to change the application code.

All E-Business Suite modules can be successfully deployed against a Oracle RAC-enabled database. Parallel Concurrent Processing (see previous slide) can be used to configure concurrent managers on separate application tier machines to direct requests to different database servers in an Oracle RAC cluster.

## Network Features: Overview

### Network Features: Overview

When deploying a global IT infrastructure, the choice of network topology can be critical. There are a number of significant strategic factors:

- Basic structure
- Latency
- Satellite Links
- Wireless LANs

Each of these will be discussed briefly on the following slides

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## Network Features: Overview

This discussion will pre-suppose the subject is a large, worldwide organization that uses a "hub and spoke" network topology, with high-capacity links to regional hubs, and medium-capacity connections from the regional hubs to local offices.

## Network Features: Strategies

### Network Features: Strategies

A large organization will typically use a hub and spoke network topology:

- High-capacity links serve regional hubs, with medium-capacity connections to local offices
- The routes and hops need to be as short and efficient as practicable



Example Network Topology

- Regional hub
- Local office
- High-capacity link
- Medium-capacity link

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## Network Architecture: Strategies

A large, worldwide organization will typically benefit from the use of a “hub and spoke” network topology, with high-capacity links to regional hubs, and medium-capacity connections from the regional hubs to local offices. The locations of the regional hubs should be based on organizational need, carrier availability, pricing, and network latency, and the routes and hops between them should be as short and efficient as practicable.

Overall network design should always be based around the needs of the majority of users; satellite users, for example, will normally be a small minority.

## Network Features: Latency

### Network Features: Latency

Latency is the time for a packet to travel from its source to its destination, and can be significant:

- Oracle E-Business Suite works well with average latencies up to 300ms
  - Performance is generally acceptable with latencies up to 500ms
- Where latency is marginal, forms may be slower to load (for example, on startup)
  - In such circumstances, HTML-based applications may give better performance than Forms-based applications

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## Network Features: Latency

Latency is the time for a packet to travel from its source to its destination, and is a key determinant of network efficiency. In general, Oracle E-Business Suite works very well with average latencies up to 300ms, and is usually found to give acceptable performance with latencies up to 500ms.

When forms are being loaded (for example, on startup), there may be performance issues if latency is marginal. A consequence of this is that the newer HTML-based applications (which do not use Forms) are likely to give better performance than the traditional Forms-based applications.

## Network Features: Satellite Links

### Network Features: Satellite Links

Satellite links can be used as a network link for Oracle E-Business Suite:

- They are considered to be just another network type
- They may be the only choice for users in remote locations
- They should only be employed where use of terrestrial services is not feasible
- The network stack may need to be tuned

The goal is to achieve reliable operation, while maintaining an acceptable response time

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### Network Features: Satellite Links

Satellite links can be used with the Oracle E-Business Suite. They are considered to be just another network type, and may be the only choice for users in remote locations. In general, however, they should be employed only where use of terrestrial services is not feasible.

If satellite links are to be used, the network stack should be examined and tuned by a network specialist, to ensure device timeout settings, for example, are configured optimally. The goal is to achieve reliable operation, while maintaining an acceptable response time.

## Network Features: Wireless LANs

### Network Features: Wireless LANs

As well as security aspects, deployment of wireless technology must take into account technical considerations, including:

- Overall stability of the connection
- Momentary loss of service may occur as a result of:
  - Not having the latest firmware revision
  - Interference from devices using a similar wavelength, such as cordless phones
- Use of Forms Listener Servlet (the default), with its capability to attempt reconnection

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### Network Features: Wireless LANs

Wireless technology is becoming of increasing interest and use to many organizations. However, its deployment must be planned carefully. As well as the security aspects of wireless use, there are several technical considerations. For the Oracle E-Business Suite, the most important issue is the stability of the connection. It is not uncommon to experience dropouts (momentary loss of service) while using a wireless LAN. These may occur as a result of not having the latest firmware revision, or interference from devices that use a similar wavelength, such as cordless phones.

Use of the Forms Listener Servlet architecture (the default from Release 12.0) may be of benefit in a wireless LAN environment, as it is designed to attempt reconnection (via a configuration parameter) in the event of a network interruption.

## Network Features: Wireless LANs

### Network Features: Wireless LANs

Wireless LANs are simply considered as another network topology, so are not explicitly supported (or unsupported) with Oracle E-Business Suite

- A problem should if possible be reproduced using a non-wireless link
- If it cannot be reproduced, the wireless link will need to be checked

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### Network Features: Wireless LANs

As far as supportability of wireless LANs goes, they are simply considered to be another network topology, and as such are neither supported nor unsupported. Hence it is feasible to run Oracle E-Business Suite client PCs over a wireless LAN. However, in the event of problems, it would be desirable to be able to determine whether the problem also occurs via a normal network link, that is, whether the cause lies in Oracle E-Business Suite or the network.

## Module Summary

### Module Summary

In this module, you should have learned how to do the following:

- Describe the advantages of using a shared application tier file system
- Identify the main load balancing options and their key features
- List the major factors in efficient network design for Oracle E-Business Suite

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## Module Discussion

### Module Discussion

- Summarize the features offered by a shared application tier file system
- List three possible benefits of load balancing
- Describe the effect of latency on a network, and how it affects Oracle E-Business Suite
- How does use of the Forms Listener Servlet help with network operation?

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