

Upgrading to R12 - Lessons Learned and Functional Tips that you Need to Know

Presented By: Art Dowd, O2Works





Overview / Agenda

- Introductions and Audience survey
- R12 Support schedule
- Types of Upgrade
- Repeatable Methodology / Upgrade Process
- Critical documents
- R12.2 Upgrade timing / timeline
- A couple of critical considerations
- R12.2.x What's it about
- Information sources
- "Upgrading to the cloud"
- Contact information





R12 Upgrade Introduction

- Art Dowd, Consulting Director, O2Works
 - Former VP of IT for Hospitality Company
 - Extensive business background
 - Implemented / Upgraded Oracle eBus Suite
 - 18 years with Oracle Applications
 - Experience with Oracle Consulting and two well regarded Oracle Applications consulting firms
 - Board Member of OAUG Upgrade SIG





Audience Survey

Role

- ➤ Technical DBA
- ➤ Technical Developer
- ➤ Project Manager
- > Business Process Owner
- > Super user
- **≻**End user

Apps Release level

- 10.7
- 11.0.3
- 11.5.1 **—** 11.5.9
- 11.5.10
- 12.0
- 12.1





Oracle Application support

Release	GA Date	Premier Support Ends	Extended Support Ends	Sustaining Support Ends
11.5.10	Nov 2004	Nov 2010	Nov 2013*	Indefinite
12	Jan 2007	Jan 2012**	Jan 2015	Indefinite
12.1	May 2009	Dec 2021**	Not Available	Indefinite
12.2	Sep 2013	Sep 2023	Not Available	Indefinite

^{*}For Sustaining Support for Oracle E-Business Suite 11.5.10, provided from December 2013–December 2015, Oracle will continue to provide: Severity 1 fixes, critical patch updates and United States Tax Form 1099 updates for the 2013 and 2014 tax years. During this period, payroll regulatory tax updates will only be provided for the countries and tax years specified below.

Country	2013 Tax Year	2014 Tax Year		
United States and Canada	January 1, 2013 - December 31, 2014	January 1, 2014 - December 31, 2014		
United Kingdom	N/A	April 6, 2013 – April 5, 2014		
Australia	N/A	July 1, 2013 – June 30, 2014		

Customers must have the indicated baseline patches (or above) for new Severity 1 production bug fixes as per Patch Requirements for Extended Support of Oracle E-Business Suite Release 11.5.10 (see Doc ID 883202.1).

Customers running Oracle Fusion Middleware 10gR2 and 10gR3 in the Oracle E-Business Suite version 12 internal technology stack will remain supported for the duration of the support period for Oracle E-Business Suite 12.

E-Business Suite Applications Extensions for Oracle Endeca Products and EBS Mobile applications follow the Lifetime Support Policy of the E-Business Suite Release they utilize.





^{**} For more detailed information on EBS 12.0 and 12.1 bug fixing and for Extended Support minimum patch pre-requisites, please refer to the EBS Error Correction Support Policy (Doc ID 1195034.1). For additional information regarding the above points, please see the EBS Support Policies FAQ (Doc ID 1494891.1).

Support timeline



Premier Support

Bonus extension for 11.5.10

Extended Support

Exception Sustaining Support (11.5.10)

Sustaining Support

In September 2016, Premier Support for 12.1.3 was extended from Dec, 2016 until Dec, 2021.

February 2017

For more information check:

- My Oracle Support Note 1494891.1 E-Business Suite Releases Support Policy FAQ
- MOS Note 1195034.1 EBS 12.0 and 12.1 Extended Support minimum patch pre-reqs





Application Support Document

Oracle Lifetime Support Policy

Oracle Applications

Go to: www.Oracle.com

Query: "lifetime-support-applications"

Fill in: annoying Oracle sign in screen





<u>http://www.oracle.com/us/support/library/lifetime</u>
-support-applications-069216.pdf





Upgrade Type

- Technical upgrade only
 - Focus on the tech stack / less expensive option
 - Led by DBA / Tech team with little functional support
 - Functional impact = testing and possibly training
 - Common with dot release upgrades (i.e. 11.5.9 to 11.5.10)

Management / Executive Sponsor						
Project Manager						
DBA / Sys. Technical Developer / Super Users						
B/A Fin	B/A SC & Other	Business Process Owners	Trainer			
Help Desk / Network Support						
End Users / Testers						

Success - NO CHANGE on go-live Monday





Upgrade Type

- Full Business-Aligned Upgrade
 - Aligned with Business objectives / ROI expectation
 - Inclusive, wide-ranging project across IT and Business
 - Requires more Executive Sponsorship
 - Change Management Project; not just technical

Management / Executive Sponsor						
Project Manager						
DBA / Sys. Admin	Technical Lead	Developer / Analyst	Super Users			
B/A Fin	B/A SC & Other	Business Process Owners	Trainer			
Help Desk / Network Support						
End Users / Testers						

Represents the typical 11.5.10 to R12 upgrade.





Build a Repeatable Process

- Secure Active Executive sponsorship and support
- Communicate Transparent reporting on Progress
- Gather Proper Materials
- Recruit The Right Team Members
- Organize Create and Update Critical documents
- Analyze and Plan Use Iterative Method (minimum = three rounds)
- Execute A Serious and Dedicated Testing Process
- Experience Have a leader, bring back the vets

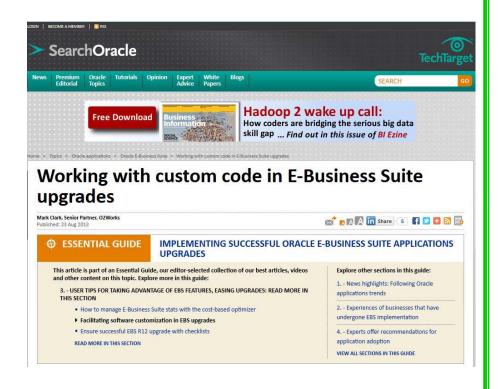




Customization Strategy

<u>http://searchoracle.techtarget.com/tip/Working-with-custom-code-in-E-Business-Suite-upgrades</u>

- Minimize EBS custom code
 - phase out obsolete
 - analyze concurrent requests
- Migrate only what's necessary
 - take a new copy from new release and reintroduce the modifications
 - main interface may not have been greatly modified but
 - test additional lookups or validations or extra data transformations that were added
- Forms involve tricky custom code
 - start with fresh menu from Oracle & make changes







Two Critical Documents

Master Checklist – Build a Master list for the upgrade and list every step.

TIP: Download Maintenance Wizard to a spreadsheet. Capture timings for pre, during, and post patching. LIST and Assign EVERYTHING.

Master Impact List – Complete full listing of all potential changes that should require investigation or retesting

- Drives new features use and all testing
- Applies to standard Oracle features and Customercreated impacts





Example of Master Impact List

Master Impact Analysis - Upgrade to R12.1.2 for 11.5.9 - SNAPSHOT

	muster impact Analysis - Opgrade to KT2:112 for T110.0 - ONAL OTTO									
Release	New Functionality	Classification	Impact on Business Process	Impact on Customization	Impact on Testing	Impact on Training	Status	Owner (Who?)	Ranking (H,M,L)	Notes
ΔР										
R11.5.10	Enhanced Matching Controls for Oracle iSupplier Portal	Optional	No	No	No	No				
R11.5.10	Supplier Bank Account Update Enhancements	Mandatory	Yes	No	Yes	Yes				
R11.5.10 CU1	1099 Formatting with XML Publisher	Dependent	Yes	No	Yes	Yes				
R12.0	Legal Entity	Mandatory	Yes	No	Yes	Yes				
R12.0	Multi-Org Access Control	Mandatory	Yes	No	Yes	Yes				
R12.0 RUP3	US Form 1099 Legislative Changes	Dependent	Yes	No	No	No				
R12.0 RUP4	US Form 1099 Legislative Changes	Dependent	Yes	No	No	No				
R12.1.1	Enhanced Withholding Tax Calculation for Brazil	Optional	No	No	No	No				
PO		·								
R12.0	E-Business Tax	Mandatory	Yes	No	Yes	Yes				
R12.0	Document Publishing Enhancements	Optional	No	No	No	No				
R12.0 RUP2	iSetup APIs	Optional	No	No	No	No				
R12.1.1	PO and Requisition Mass Update (12.1.1)	Optional	Yes	No	Yes	Yes				
R12.1.2	Procurement Web Services - Purchasing (12.1.2)	Optional	No	No	No	No				
R12.1.3	Landed Cost Management (LCM) Integration (12.1.3)	Optional	No	No	No	No				
GL		· ·								
R12.0	Streamline Consolidation Mappings	Mandatory	No	No	No	No				
R12.0	Replacement for Disabled Accounts	Optional	Yes	No	Yes	Yes				
R12.1.1	Enhanced Financial Statement Generator Reporting to Display Content Set Values	Mandatory	Yes	No	Yes	Yes				
R12.1.2	Streamlined Excel-based Financial Statement Publishing	Mandatory	Yes	No	Yes	Yes				
R12.1.3	Limit Accounts in Budget Wizard	Optional	Yes	No	Yes	Yes				
AR										
R12.0	E-Business Tax	Mandatory	Yes	No	No	No				
R12.0	Legal Entities	Mandatory	Yes	No	No	No				
R12.0	Subledger Accounting	Mandatory	Yes	No	No	No				
R12.0	Receivables Reconciliation Enhancements	Optional	Yes	No	No	No				
R12.1.1	Cash Application Work Queue	Optional	No	No	No	No				
R12.1.1	Enhanced Performance for High Volume Receivables Processing	Mandatory	Yes	No	No	No				
R12.1.2	Enhanced Aging Report to Support Multi-Fund Accounts Receivable	Optional	No	No	No	No				

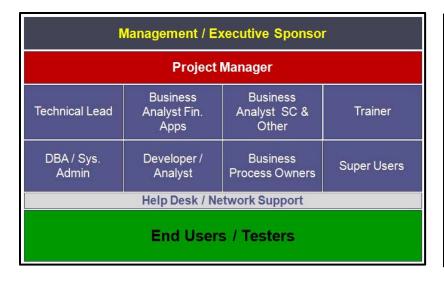




Upgrade Project Team Size

R11.5.10 to R12.2.X FULL UPGRADE

R12.0.6 or R12.1.3 to R12.2.X TECHNICAL UPGRADE



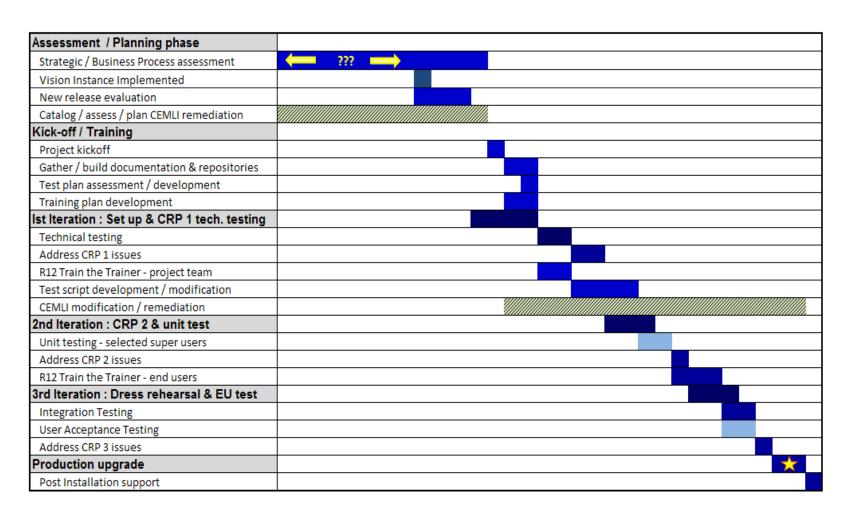
Ma	nagement / E	xecutive Spon	sor				
	Project	Manager					
DBA / Sys. Admin	Technical Lead	Silberiise					
B/AFin	B/A SC & Other	Business Process Owners	Trainer				
	Help Desk / N	etwork Support					
E	nd User	s / Teste	rs				

The reduction in Project team size significantly decreases overall effort needed for training and indoctrination. There will be less testing required for new functionality but customization and integration testing will be critical. Use of experienced testing resource is important.





R12 Upgrade High Level Time Line







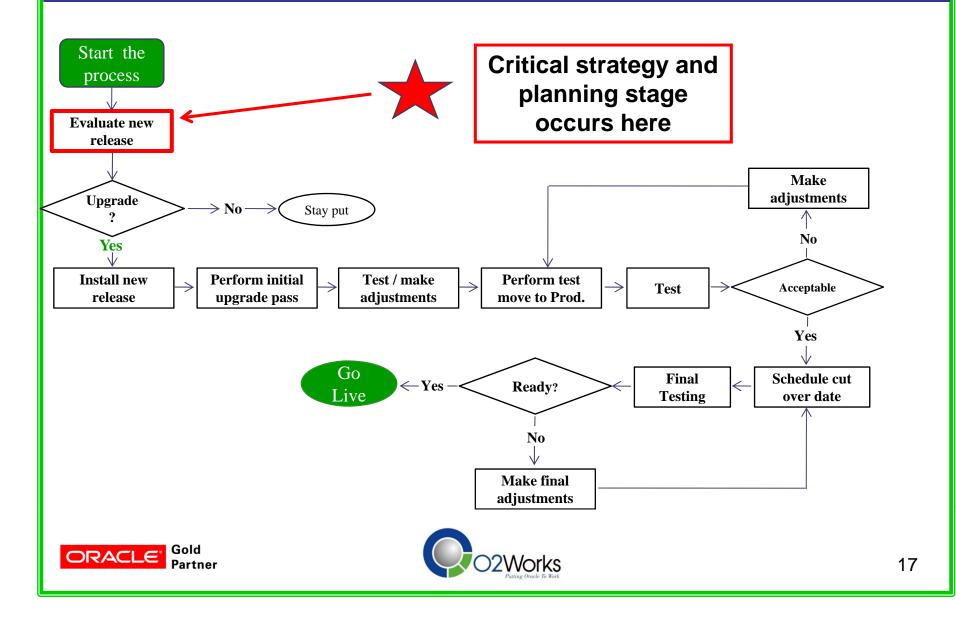
Dedicated Testing Process - Critical

- Have a library of Test Cases
- Detailed test scripts
- Include and use cases from past implementations or upgrades
- Be prepared to add some test cases for new features or functionality
- Modify test cases to reflect new or changed functionality
- Make sure your test cases have specifics about test data and expected results
- Check them back in to the library for next time
- More testers = more familiarity with application prior to golive > less productivity loss
- Track every item and assign accountability





Upgrade Process Flow



Upgrade Planning

Planning process needs to be comprehensive and inclusive of **Business alignment and technical** aspects

- Areas to evaluate include:
 - Upgrade extent
 - Business alignment
 - Hardware / platform / network capacity
 - Human resource availability who and when
 - Training capacity and tools
 - Application support
 - Testing strategy and experience
 - Oracle product strategy
 - Project planning & management capacity

Oracle Applications Upgrade Workshop



Putting Oracle to Work

Key Facts-02 Works:

- 100% reference-able client Strict Oracle E-Bus focus
- Consultants average more than 11 yrs. experience or Oracle products
- Wide ranging customer base of more than 130 clients
- Heavily involved in Oracle Application User Groups and Oracle Communities





Services Offered:

- Upgrades
- New Implementations (full and modules)
- ☐ Remote Support (DBA / Sys. Admin. & Functional) ■ Application optimization
- ☐ Training
- ☐ Client Advocate support ☐ Testing services

02 Works LLC

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Dallas Chicago Denver

If your Organization runs the Oracle E-Business Suite, you have an upgrade in your future.

Upgrades can be intimidating, time-consuming, and challenging. Per Oracle Corporation, customers should upgrade when there is a business reason to do so. In today's IT environment, it is critical that there is a return on your upgrade investment. To do that successfully, upgrades should be approached with the same level of planning, strategy, and execution as the original implementation

O2 Works LLC, with decades of hands-on experience, is offering a concise, packaged assessment designed to identify all of the technical and functional issues that need to be considered as part of any Oracle EBS upgrade effort.

Areas to be explored include

- Upgrade extent:
 - · Technical and functional upgrade efforts
 - Upgrade vs. re-implementation
- Business alignment
- · New features / functionality of potential new modules
- Customization & extension assessment / evaluation
- Top ten needs list
- Capacity planning: · Hardware and network scale-ability
- · Downtime requirements
- Database instance strategy
- Resource expectations
- Training and application support Review current learning tools
- Assess existing support effectiveness
- Evaluate on-going training needs
- Other considerations: · Patching status
- · De-support timeframes
- · Testing capacity, strategy
- Oracle product strategy / direction considerations
- Project planning capacity
- . Who needs to be on the team and when

Description of Service: Depending upon the size of your application footprint, O2 Works will deploy a team consisting of a technical lead and 1-2 functional resources to perform the assessment. It is expected that the evaluation will be completed within 1 week's time and results presentation/ report will be completed in the following week.

Deliverables: Engagement deliverables for the upgrade assessment include:

- ☑ Technical Assessment of current environment
- ☑ Strategic upgrade briefing meeting / presentation for key personnel and end-users covering:
- Proven upgrade strategy for customizations and extensions
- Third party tool recommendations
- · Best practice recommendations for testing and training
- Project planning assistance for technical and functional teams
- ☑ Final report detailing pre and post-upgrade recommendations





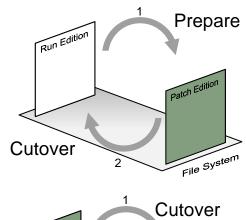
Oracle Applications R12.2.X

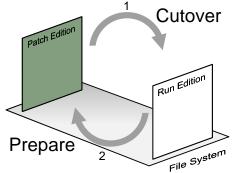
- Available as of Open World, 2013
- Represents the **HOLY GRAIL of Patching**... minimal downtime (middle tier re-boot only)
- Makes use of Edition-Based Redefinition (EBR) feature of the 11g and 12c Database
- Had been delayed for more than 2 years for extensive testing due to potential risk
- Beta testers consisted primarily of Oracle partners and integrators so the initial testing did not necessarily hold up to "full use" environments
- The future ability to avoid outages is critically important to 24 hour shops (i.e. world-wide operations and 3 shift manufacturers) who can't accommodate down-time.





R12.2 Overview





Two complete file systems are always present

- Run Edition Used by the running Application
- **Patch Edition** Either:
 - Currently being patched

or

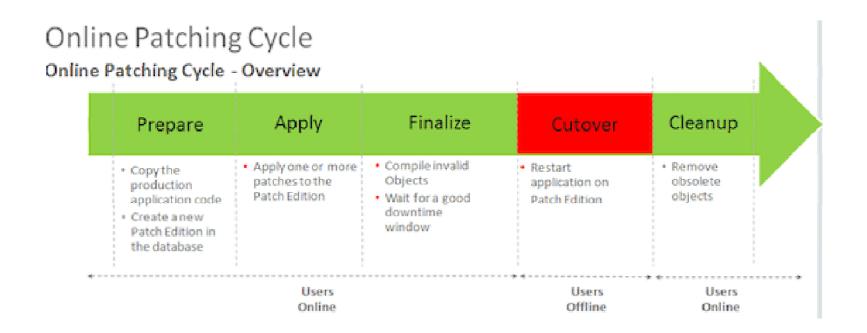
- Waiting for the next patching cycle
- The two files systems are rotated between Run and Patch during every patch cycle

Source: Kevin Hudson - Online Patching with Oracle E-Business Suite 12.2





R12.2 Online Patching Cycle







Top 9 frequently-asked questions about Online Patching

1. Which Oracle E-Business Suite releases can Online Patching be used with?

Online patching is used with Oracle E-Business Suite 12.2 and higher.

2. What types of patch are applied online?

All Oracle E-Business Suite Release 12.2 patches are applied online. This includes one-off patches, patch rollups, consolidated updates and security patches.

3. What is the Online Patching cycle?

The Online Patching cycle is a sequence of inter-related steps (phases) used to apply patches to an Oracle E-Business Suite system. (see the prior slide illustration)

Source: Steven Chan's Blog - https://blogs.oracle.com/stevenChan/





Top 9 frequently-asked questions about Online Patching

- 4. What tool is used to apply online patches?

 The AD Online Patching (adop) command-line utility is used to manage the Online Patching cycle.
- 5. Is there any downtime in Online Patching?

 There is a short period of downtime when the application tier services are shut down and restarted. The database remains open all the time.
- 6. Do I upgrade to Release 12.2 with Online Patching?
 No. After you upgrade to Oracle E-Business Suite Release 12.2, you will enable Online Patching.

Source: Steven Chan's Blog - https://blogs.oracle.com/stevenChan/





Top 9 frequently-asked questions about Online Patching

7. Once I upgrade to Release 12.2, can I still apply patches in the traditional way?

No. All patches for Release 12.2 will be online patches. The traditional, pre-12.2 method of applying patches will not work.

8. Can I still use adpatch in the Release 12.2 Online Patching environment?

No. While the Oracle tools may internally invoke the adpatch utility, direct user invocation of adpatch is not allowed.

9. Are there any plans to make Online Patching available with pre-12.2 releases?

No. Online patching can only be used with Release 12.2.

Source: Steven Chan's Blog - https://blogs.oracle.com/stevenChan/





For DBA'S

- 1. Familiarity with and tuning of BEA's Weblogic server
- 2. Use of AD On-Line Patching (**ADOP**) to apply patches
- 3. The lack of clear error messages in ADOP logs
- 4. The absolute need to take snapshots of the file system and guaranteed restore points of the database before patching
- 5. The handling of custom tops via the ADOP synch driver





For DBA'S

- 6. The strange errors that un-resolvable database links can cause in patching and upgrading
- 7. Importance of balancing the upgrade patch freeze with application of the latest tech and functional patches.
 - a. It is critical to arrive at a stable plan.
 - b. Additional database, tech and application patches can drastically change the experience of a mock upgrade.
 - c. You want to arrive at a point where you are NOT seeing new errors for more than one iteration. This is especially critical for large, complex clients





For DBA'S

- 8. Implementing security via roles for given users
- 9. Default weblogic memory settings are not adequate. This goes for java memory settings on start up parameters .
- 10. Handling of 3rd party products

For DBA'S and Developers:

11. The manner in which CEMLI's (customizations) have to applied





For All:

- 12. Everything must be tested during mock go-lives, no short cuts for either functional or technical people
- 13. All hands on deck for go-live. That means Linux admins and network people are present in case they are needed to quickly make corrections to firewalls, Linux configurations--no one gets a pass during go-live
- 14. Perform load testing via OATS or some other tool. It is unacceptable to performance issues after go-live due to lack of load testing





R12.2— Resource Considerations

- Database
 - SYSTEM tablespace requires double current space allocation
 - 25GB increase to 50GB
 - SEED tablespace requires double its current space allocation
 - 5GB increases to 10GB
- File System
 - 2 file systems require double the space of 1 file system
- The new 12c Database encompasses BEA's WebLogic, not the old Apache.
 - This is new and will require learning from unfamiliar DBA's and Sys Admins.
- There is a higher CPU use due to increased utilization of Java in the applications and platform.





R12.2— Customizations

- Database Objects & code must follow new set of standards using the correct DB synonyms
- Use of the readiness reports (Doc ID 1583902.1) will identify non-compliant custom code that will need to be addressed in the upgrade. The three related utilities are:
 - Online Patching Enablement Readiness Report checks the system's 12.2.x preparedness. (**Doc ID 1531121.1**)
 - Online Patching Database Compliance Checker
 (ADZDDBCC.sql), which reports database objects standards violations.
 - Global Standards Compliance Checker (GSCC.pl), which scans the file system for source files that violate the standards.





R12.2 Adoption planning

- Understand your risk profile
 - Conservative or "bleeding edge"
 - Higher risk on this due to technical implications
- Consider the support extensions
- 12.2 increases technical complexity
 - DBA will need to re-learn how to patch
 - New development standards
 - If you are coming from 11i, you're taking a double hit!
- Consider the hardware requirements if making changes
- MOS ability to support effectively is lagging
- Not as many DBA's with R12.2 experience as compared to R12.1.3





R12.1.3 v. R12.2 Risk Considerations

Risk area	R12.1.3	R12.2
Application maturity and stability	V	X
Functional: learning / participation required	X	X
Functional: testing support	X	X
Developer: significant code remediation	X	X
DBA: upgrade skills overhaul	V	X
External application support experience	V	X
Increased hardware requirements	possible	X

X = Risk exists





What you can expect from 12.2

- You won't have anymore extended outage windows for patching.
- DBA's will actually spend more time patching and it will be slower.
- One-off patches will be a pain to implement as it will require use of ADOP. (think bicycle / Winnebago)
- There will be contention on the Production instance and degraded performance while patching is occurring "in the background". It will be best to schedule patching in non-peak periods.
- For functional resources, testing will still be required.





For More Information

- My Oracle Support
- Appsnet Good Summary on New Features
- http://www.oracle.com/appsnet/technology/ upgrade/docs/features.html
- Online Help (New Features Section)
- Reference Manuals
- Blogs: Steven Chan: https://blogs.oracle.com/stevenChan/
- User Groups / Conferences





More Information on R12.1.3

12.1 Information Center (Doc ID 806593.1)

Oracle E-Business Suite Release 12.1 Information Center (Doc ID 806593.1) E-Business Suite Release 12.1 Highlights Oracle E-Business Suite Documentation Web Library Reference Information This library contains comprehensive documentation for global business applications. Use this library to review and download the latest documentation. Most Announcements documents are available in pdf and html formats. Click Here for details Documentation

Oracle E-Business Suite Mobile Apps, Release 12.1 and 12.2 Documentation

The purpose of this document is to communicate implementation, configuration, and administration information specific to Oracle E-Business Suite Mobile Apps currently available for the iOS operating system and the Android operating system. Read full details

Information Center: Oracle E-Business Suite Extensions for Oracle Endeca Install & Configure

This Index is designed to provide you with simple and quick navigation between the E-Business Suite and the Information Discovery integration. Read full

Oracle E-Business Suite Release 12.1.3+ Recommended Patch Collection 5 [RPC5] is Available!

Oracle is pleased to announce the availability of Oracle 12.1.3+ E-Business Suite Recommended Patch Collection 5 [RPC5]. This patch must be applied to an existing Release 12.1.3 E-Business Suite environment. This patchest combines important patches for Release 12.1.3 into a single integrated and regressiontested patchset. For the complete installation steps and Functional information, refer to My Oracle Support Knowledge Document 2152266.1. Read full

July 2016 Updates - E-Business Suite 12.1 Premier Support Now Through Dec. 2021 and Extended Support Updates

As per the July 2016 update to the Lifetime Support Policy: Oracle Applications, this release version is in Premier Support. The following is a Support Policy update for this release version:

- (1) Premier Support for E-Business Suite Release 12.1 has been extended by 5 additional years is now available through December, 2021.
- (2) Extended Support for Release 12.1 has been been removed due to the extension of Premier Support term.
- (3) Customers are recommended to have the minimum prerequisites patch level, or above, as identified in the E-Business Suite Error Correction Support Policy Doc ID 1195034.1

Read full details for July 2016

Patching & Maintenance Advisor: E-Business Suite (EBS) 11i and R12

Patching and Maintenance Advisors include steps to create a viable patching and maintenance strategy including a complete project patch plan specific to your environment. Read full details

Planning Your Oracle E-Business Suite Upgrade from Release 11i to Release 12.1

This document offers advice to those customers currently on Release 11i who are planning an upgrade to Release 12.1. It contains upgrade planning advice that currently focuses on Release 12.1.3, Read full details

Oracle Applications Virtual Briefing Center

Oracle is announcing the availability of the Oracle Applications Virtual Briefing Center. Access this free, global online repository and take advantage of a variety of resources across all Oracle product lines and solutions that will help you successfully manage your application initiatives without ever leaving your desk! To register click here.

Oracle Announces the Availability of Environmental Accounting & Reporting for 12.1.3

Oracle is announcing the availability of the Oracle Environmental Accounting & Reporting module, which enables organizations to track their greenhouse



Globalization Center

Additional Resources

Product Info Centers R11i Info Center

R12 0 Info Center

R12.1 Info Center R12.2 Info Center

Install

Implement

Manage

Upgrade

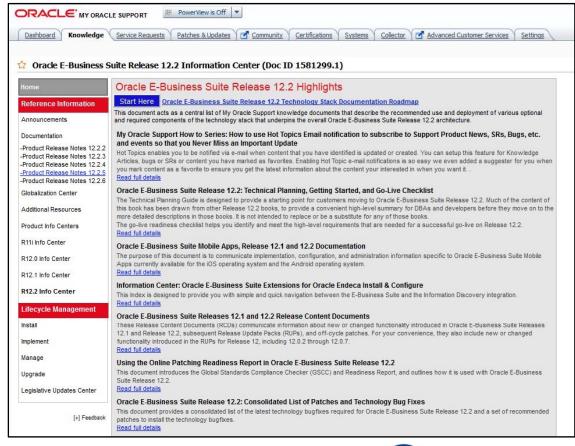
Lifecycle Management

Legislative Updates Center



More Information on R12.2

Oracle E-Business Suite Release 12.2 Information Center (Doc ID 1581299.1)



Topics (partial list)

- My Oracle Support: How to Series
- Technical Planning, Getting Started, and Go-Live Checklist
- Mobile Apps, Release 12.1 and 12.2 Documentation
- Extensions for Oracle Endeca: Install & Configure
- Using the Online Patching Readiness Report
- Consolidated List of Patches and Technology Bug Fixes
- Applying the Latest AD and TXK Release Update Packs
- Online Patching FAQ
- Release Value Propositions
- EBS Data Model Comparison Report
- EBS ATG Seed Data Comparison Report





"Upgrading to the cloud"

- For EBS customers who run or host their own platform (according to Oracle that is a "Private Cloud") and think they have an option to "Upgrade" to the cloud... think again!
- It is a full-on, heavy duty re-implementation project that will require that any customizations are redeveloped as part of the Platform as a Service (PaaS) offering in addition to the Software as a Service (SaaS) component
- Transitioning EBS to the cloud will reduce users flexibility to customize their applications
- Be certain that that the cloud footprint features and functionality will serve all of your application needs.
- Don't be fooled by the manic push to get everyone to think the Cloud is now. It is still years away.





"Upgrading to the cloud"

- As Oracle shifts their focus to become the cloud leader, you will hear about how you can just "*Lift and Shift*" your EBS platform to the Oracle Cloud under their Infrastructure as a Service (IaaS) offering. That is correct.
- Oracle's Infrastructure as a Service Cloud (IaaS) offering is Hosting.
 - They have been doing it for years
 - It has been known as "Oracle On Demand".
- There are numerous EBS hosting organizations. (i.e. MTG)
- This is not Oracle's Software as a Service (SaaS) cloud application that used to be know as the "Fusion" apps. It is your EBS applications running in Oracle's data center.





About O2Works

O2Works is one of the leading E-Business Suite services providers offering the most experienced teams of functional and technical consultants in the industry. Our hands-on *resources* average 18+ years of experience focused exclusively on implementing, upgrading, integrating, and extending Oracle's E-Business Suite. Stop by and talk to us about our large portfolio of successful projects.

R12 Presentations, White Papers, and other information shared on-line at:
www.o2works.com/knowledgeworks





Presentation Available

O2Works – Knowledge Base:

www.o2works.com

Thank you

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