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Securing Oracle E-Business Suite with the Latest Features and Tools

Great Lakes Oracle Conference

Elke Phelps, Product Management Director Contributor: Eric Bing, Senior Director

E-Business Suite Development Oracle

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Safe Harbor Statement

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Program Agenda

- Securing Your Oracle E-Business Suite Environment
- Guidelines for Secure Configuration and Auditing
- Additional Secure Configuration When Running EBS in Oracle Cloud Infrastructure
- 4 Roadmap

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Oracle E-Business Suite Security

Documentation

- Security FAQ
 - MOS Note 2063486.1
- Secure Configuration Guides
 - EBS 12.2: Security
 Administration Guide,
 Secure Configuration
 Chapter
 - EBS 12.1: MOS Note 403537.1
- Enabling TLS
 - EBS 12.2: MOS Note 1367293.1
 - EBS 12.1: MOS Note 376700.1
- EBS CPUs
 - MOS Note <u>2484000.1</u>



EBS Security Features

- Secure Configuration Console √
 - Tool to assist with secure configuration
 - Easy to see where you are out of compliance
 - Use the console to enable security features or set secure configuration
 - Guidance is provided for items that cannot be turned on via the console

- Allowed Resources √
 - Key feature for reducing your attack surface
 - Defines whitelist of allowed resources for Oracle E-Business Suite Release 12.2
 - Prevents access to resources which are not used
- Allowed Redirects
 - Defines whitelist of allowed redirects for Oracle E-Business Suite 12.2

Enabled by default with Oracle E-Business Suite 12.2.6

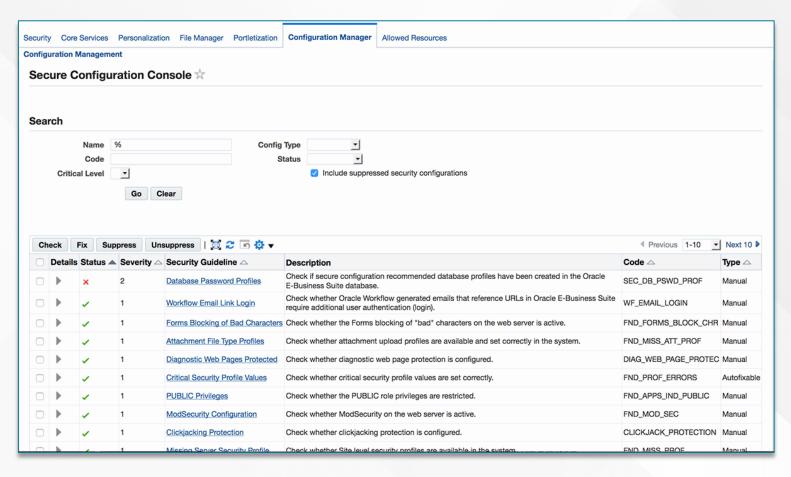


Secure Configuration Console





Secure Configuration Console Automatic Assessment of Your Environment



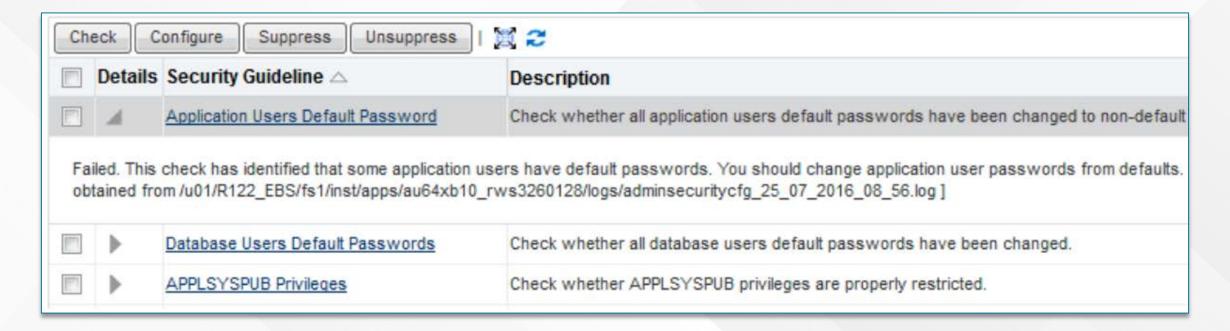
- Review and implement secure configuration recommendations from a dashboard
- Access via the "Functional Administrator" responsibility, "Configuration Manager" tab
- Check your configuration
- Automatically configure items that are out of compliance
- Checks are assigned a severity level
- Suppress checks that are not relevant to your system





Secure Configuration Console

Details: Failed Configuration







Secure Configuration Console Security Guideline Details

Security Guideline Details

Security Guideline

Application Users Default Password

Description

Check whether all application users default passwords have been changed to non-default values.

Detailed Info

This check will list the default (seeded) applications users that still have their default passwords. You should change all the default passwords, even if the user is end dated.

Note that this will not list shipped accounts that cannot be used for login (disabled/end dated accounts).

Refer to the following for additional information:

. Oracle E-Business Suite Security Guide, Release 12.2 > Oracle E-Business Suite Security > Authentication > Change Passwords for Seeded Application User Account





Secure Configuration Console Security Checks

- Default application users passwords have been changed to non-default values
- 2 Attachment upload profiles are available and set correctly
- 3 Critical profile values are set correctly
- 4 Default database users default passwords have been changed to non-default values
- 5 Forms blocking of bad characters on the web server is active
- 6 Site level security profiles are available in the system

7	ModSecurity on the web server is active
8	Serversecurity (Secure Flag in DBC file) is enabled
9	Allowed Redirects feature is enabled
10	APPLSYSPUB privileges are properly restricted
11	Auditing profiles are set
12	Cookie Domain scoping is configured
13	Application user passwords have been migrated to hashed passwords
14	HTTPS is enabled





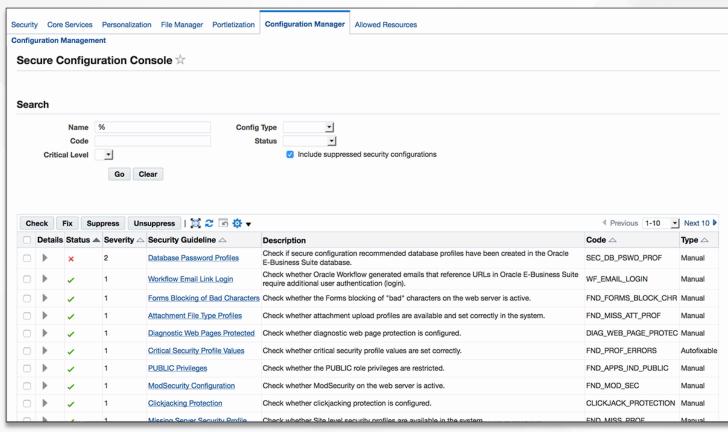
Secure Configuration Console 10 Additional Checks for a Total of 24 Checks

15 Clickjacking protection is configured 16 Diagnostic web page protection is configured 17 PUBLIC role privileges are restricted 18 Oracle Workflow generated emails that reference URLs in EBS require additional user authentication Allowed Resources feature is enabled 19 Required whitelist configuration for the allowed resources feature is correct and up-to-date 20 21 Recommended Database initialization parameters have been set Database profiles have been created in the EBS database for password management 22 23 iRecruitment file upload security profile value is set Oracle Workflow Admin access is restricted 24

Oracle E-Business Suite Security Guide Release 12.2



Secure Configuration Console Backport to Oracle E-Business Suite 12.1.3 with Patch 26090737



- Review and implement secure configuration recommendations from a dashboard
- Performs 23 secure configuration checks
- Configures items that are out of compliance
- Suppress checks that are not relevant to your system
- System is locked down after application of patch 26090737

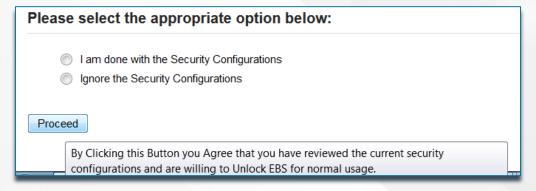
MOS Note 2311308.1





Secure Configuration Console Configure or Acknowledge and Accept Warnings





Note: Your system will be locked down until the system administrator configures or acknowledges the recommended security configurations.



Allowed JSPS/Resources





History of Allowed JSPs / Resources

- Allowed JSPs introduced in E-Business Suite 12.2.4
 - Enabled by default in E-Business Suite ATG 12.2.6
- Rebranded to Allowed Resources in 12.2.6+ with the following patches:
 - ENABLE ALLOWED RESOURCES (24737426:R12.FND.C)
 - This patch will turn the Allowed Resources feature ON.
 - ATG 12.2.6 (21900895:R12.ATG_PF.C.DELTA.6)
 - TKX Delta 9 (25180736:R12.TXK.C.DELTA.9)
- User interface and configuration metadata stored in the database in E-Business Suite ATG 12.2.7





Feature Overview of Allowed Resources Principles

- Defines whitelist of web allowed resources
 - A whitelist is an explicit list of items that are allowed for access
- Enhancements to Allowed JSPs feature
 - Whitelist resources including servlets and JSPs
- Prevents access to resources which are not used
- Enables configuration of actively allowed resources to avoid unnecessary exposure
- Allows custom resources to be defined in the list of allowed resources





Feature Overview of Allowed Resources

What Additional Features are Available?

- Metadata now stored in the database (not in configuration files)
- New user interface
- With configuration metadata stored in the database, allowed resources configuration will be preserved when upgrading and patching
- Whitelist configuration recommendations are provided based upon products used and underlying resource usage
- Utilities to identify custom resources and populate usage data





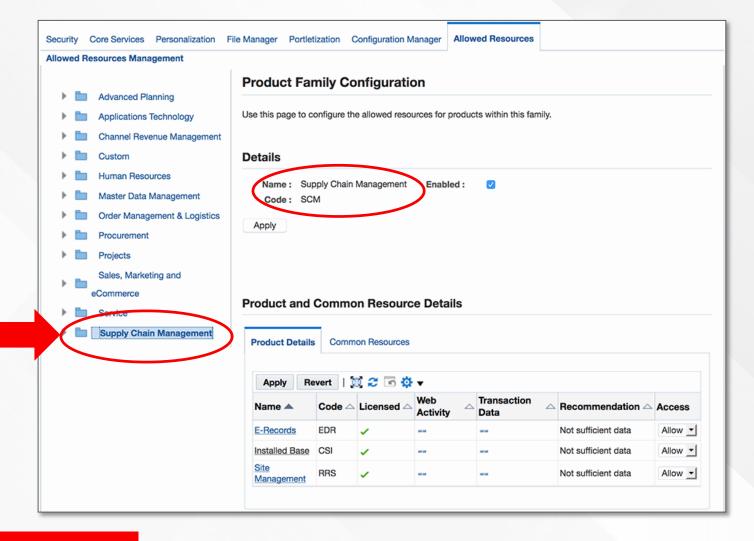
Configuration Overview of Allowed Resources 3 Levels of Granularity for Configuring Access

- If you are not using any products in a particular product family, ensure that the Enabled check box is not selected in the Details section of the Product Family Configuration page.
- To restrict access at the product level, deny access to the appropriate product-level resources on the **Product Details** tab in the Product and Common Resources section.
- To restrict access at the individual resource level, deny access to the resources in question by drilling down to the Resource Details or denying access in Common Resources tab.





User Interface for Allowed Resources



UI is accessible via the Functional Administrator responsibility → Functional Administrator page → Allowed Resources tab

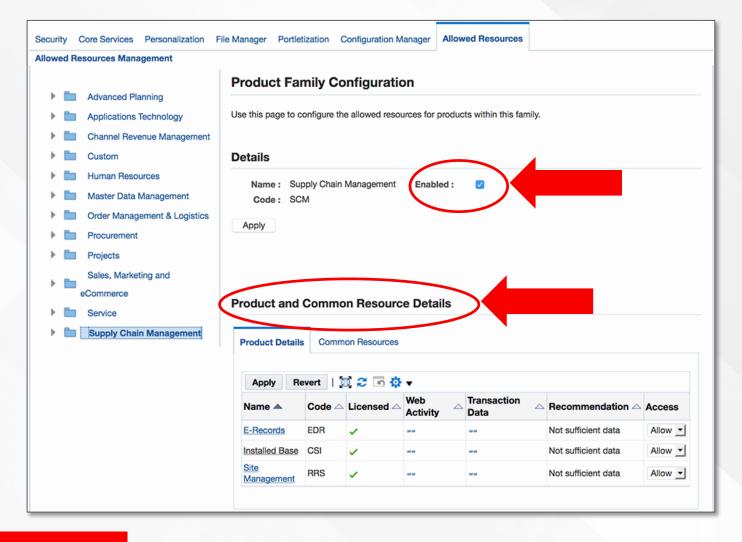
Easily allow or deny access to products and underlying resources

A family name may be selected from the left menu to view the Product Family Configuration





User Interface for Allowed Resources



Details section

Enabled check box indicates whether or not the product family resources are used and allowed.

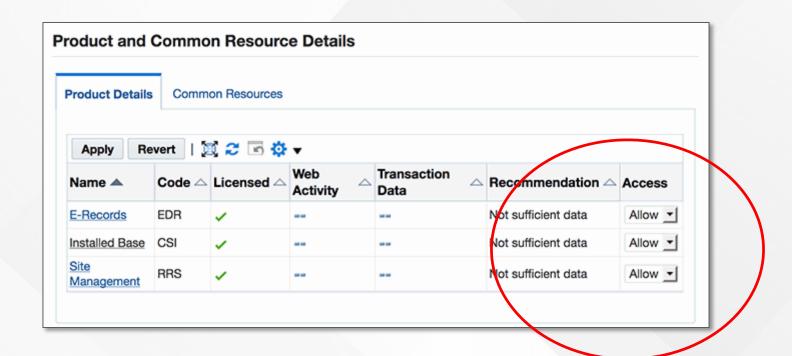
Product and Common Resources Details Section

Use this section of the page to configure products.





User Interface for Allowed Resources Product and Common Resource Details → Product Details tab





Allowed Redirects





Feature Overview for Allowed Redirects Principles

Filliciples

- Provides "defense-in-depth" protection against phishing redirect attacks
- Defines whitelist of allowed redirects for Oracle E-Business Suite 12.2
 - A whitelist is an explicit list of hosts that are allowed for redirects
- Prevents redirects that are not listed as allowed
- Enables configuration of allowed redirects to avoid unnecessary exposure
- Allows custom redirects to be defined in the list of allowed redirects
- Allows all redirects by default

Oracle E-Business Suite Security Guide Release 12.2





Which Redirects Should Be Allowed?

Configuration You Need to Add to the Configuration File

- Oracle E-Business Suite iProcurement with Punchout
 - Add host or domain entry for each Punchout site
- Oracle E-Business Suite Configurator integration with Agile or Siebel using Oracle Application Integration Architecture
 - Add host or domain entry for each integration point
- Identity Cloud Service (IDCS) integration for single sign-on
- Any custom redirects used in your environment

Oracle E-Business Suite Security Guide Release 12.2



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- Additional Secure Configuration When Running EBS in Oracle Cloud Infrastructure
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How to Deploy Oracle E-Business Suite Securely Follow Our Secure Configuration Guidelines

- Secure Configuration Guide for Oracle E-Business Suite
 - Previously known as "Best Practice" documents
 - Release 12.2, Security Administration Guide, Secure Configuration Chapter
 - Release 12.1, MOS Note 403537.1
- Secure Configuration Scripts
 - Security Configuration and Auditing Scripts for Oracle E-Business Suite, MOS Note
 2069190.1

How to Deploy Oracle E-Business Suite Securely

Follow Our Development Standards

 Developing and Deploying Customizations in Oracle E-Business Suite Release 12.2 (MOS Note 1577661.1)

 Guidance for Integrating Custom and Third-Party Products with Oracle E-Business Suite Release 12.2 (MOS Note 1916149.1)

 Guidance for Providing Access to the Oracle E-Business Suite Database for Extensions and Third-Party Products (MOS Note 2327836.1)



How to Deploy Oracle E-Business Suite Securely Stay Current with Patching

- Review the Critical Patch Updates Advisory Page on a quarterly basis http://www.oracle.com/technetwork/topics/security/alerts-086861.html
- Review the Latest CPU document for Oracle E-Business released with CPU,
 - Covers Oracle E-Business Suite Release 12.1 and 12.2
 - Apply to Oracle E-Business Suite
 - Apply to Oracle E-Business Suite technology stack

MOS Note 2270270.1

How to Deploy Oracle E-Business Suite Securely Stay Current with Latest Oracle E-Business Suite Code

- Update to the latest release or release update pack
 - Yes, Oracle E-Business Suite releases and release updates improve security as well
- Release Upgrade
 - Oracle E-Business Suite Release 12.2.8
 - Oracle E-Business Suite Release 12.1.3 + Recommended Patch Collection 5

Oracle E-Business Suite 12.2 Information Center: MOS Note 1583092.1



Oracle E-Business Suite DMZ Features

Reduce Attack Surface

- Limited number of Oracle E-Business Suite products certified for internet
- External Oracle E-Business Suite application tier access limited by setting
 Node Trust Level
- Responsibilities available for external use only upon configuration
- URL Firewall exposes only the pages that are required

EBS 12.2: 1375670.1, EBS 12.1: 380490.1



Feature Overview for Cookie Domain Scoping

Principles

- Reduces the attack surface of Oracle E-Business Suite
- Provides additional protection for communication between the browser and the Oracle E-Business Suite web tier
- Provides the ability to define the scope for cookie sharing to avoid unnecessary exposure
- Allows for a custom scope to be defined

Oracle E-Business Suite Security Guide Release 12.2



Enable Auditing and Logging

- Detect suspicious activity and attacks
- Investigate incidents after an attack
- Adhere to compliance standards (SOX, HIPAA, PCI-DSS)
- Implement business process monitoring and controls
- Debug application problems
- Performance monitoring

- Scripts are available
 - Review MOS Note 2069190.1, Security
 Configuration and Auditing Scripts for
 Oracle E-Business Suite
 - Setup notification for updates to this MOS
 Note
- Download EBSAuditScripts.zip
 - Contains multiple SQL scripts
 - Validate audit configuration
 - Query audit tables
 - Configure database auditing

Oracle E-Business Suite Security Guide Release 12.2, Auditing and Logging Chapter



Implement or Migrate to TLS 1.2

For Oracle E-Business Suite Inbound, Outbound and Loopback Connections

- Oracle E-Business Suite Release 12.2 and 12.1 Certified with TLS 1.2
- For EBS 12.2, enable TLS for the WLS Admin Port
- Optional Configurations
 - Configuring "TLS 1.2 Only"
 - Disabling HTTP Port
 - Enabling HTTP Strict Transport Security (HSTS)



Enabling TLS from Oracle HTTP Server (OHS) to Application Server (OC4J / WLS)

EBS 12.2: 1367293.1, EBS 12.1: 376700.1



What's New with Oracle E-Business Suite Security?



EBS Secure Configuration

- 1. Nosniff
- 2. HTTPOnly Cookie Flag
- 3. HTTP Strict Transport Security (HSTS)
- 4. Elliptic Curve Cryptography
- Lockdown WLS Traffic Encrypt WLS Admin Port

Defense Against

- 1. Meltdown/Spectre
- 2. Cross-site scripting (XSS)
- 3. Man-in-the-middle attacks
- 4. TLS cipher attacks
- 5. WLS attacks





Features for HTTP Headers

- Nosniff Header response code that prevents browsers from "reinterpreting" the mime type of a file
 - Available for all EBS 12.2.x releases and EBS 12.1.3
 - Apply October 2018 CPU, Oracle E-Business Suite Release 12 Critical Patch Update Knowledge Document (October 2018) (Doc ID 2445688.1)
- HTTPOnly Cookie Flag EBS session (aka ICX session) cookie cannot be accessed from browser via script/code
 - Available for all EBS 12.2.x releases
 - Apply R12.ATG_PF.C.DELTA.7 (24690680)
 - Enable Java Web Start, Using Java Web Start with Oracle E-Business Suite (Doc ID 2188898.1)
 - Backport in progress EBS 12.1.3





Features for HTTP Headers

- HTTP Strict Transport Security (HSTS) specifies a time period that browsers will communicate using only HTTPS
 - Optional configuration available for all EBS 12.2.x releases and EBS 12.1.3
 - Deployment recommendations:
 - This feature should be configured at the TLS termination point (for example: Oracle HTTP Server (OHS), Load-balancer)
 - Either use the default HTTPS port (443) or specify the HTTPS port in all URLs
 - When testing HSTS, start the configuration using short time periods

EBS 12.2: 1367293.1, EBS 12.1: 376700.1



Recent Certificate Certifications for EBS 12.2 and 12.1.3

- Elliptic Curve Cryptography
 - Elliptic Curve Cryptography supports both forward secrecy and stronger cipher suites
 - Apple's <u>App Transport Security</u> mandates forward secrecy, and we expect this to be a requirement for mobile clients
- Subject Alternative Name (SAN) & Wildcard Certificates
 - Use of the SAN field in a certificate request (CSR) allows you to specify multiple host names to be protected by a single public key certificate
 - Use of SAN will also allow for using a single certificate for multiple domains.
 - Wildcard Certificates can be used with multiple sub-domains of a domain



Lockdown WebLogic Server (WLS) Traffic Oracle E-Business Suite 12.2.x

- Apply April 2019 CPU
 - Oracle E-Business Suite Release 12 CPU Knowledge Document (April 2019) (Doc ID 2514102.1)
- Allow Direct Access to WLS from Trusted Hosts
 - Trusted hosts include known web entry points via the Oracle HTTP Server (OHS)
 Note: You will need to add trusted hosts for administrative access to WLS Admin Console
- Disable Web Services Atomic Transactions
 - Disables protocol not required by EBS
 - Perform required configuration steps as per the documentation

Oracle E-Business Suite 12.2 Setup Guide,

Technical Configuration

Managing Configuration of Web Application Services





Lockdown WebLogic Server (WLS) Traffic Oracle E-Business Suite 12.2.x – April 2019 CPU Configuration

Configuration Required for WLS Administration Console Access

 Use the context variable s_wls_admin_console_access_nodes to add trusted hosts used by administrators that require access to the Oracle WebLogic Server Administration Console

OR

 Establish an SSH tunnel from the client (administrator) in order to access the Oracle WebLogic Server Administration Console



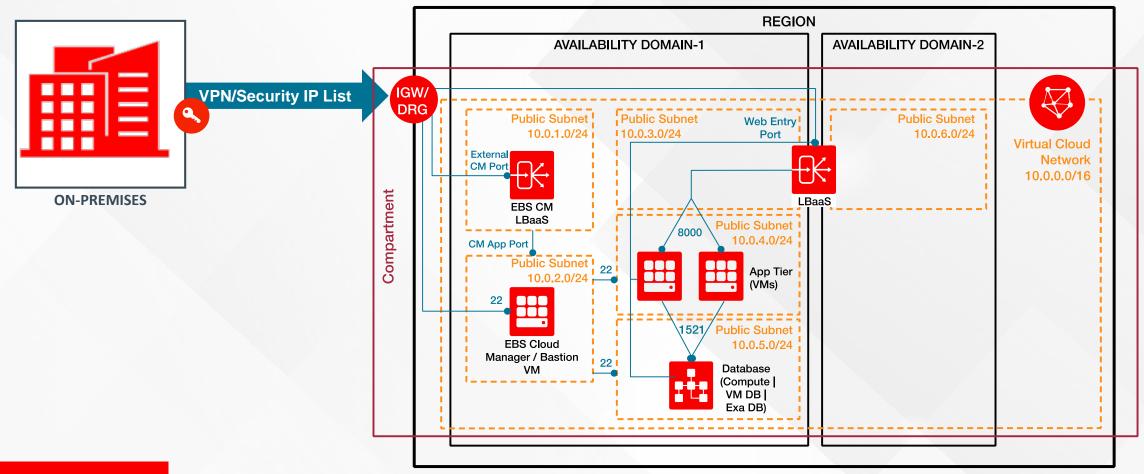
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Oracle E-Business Suite on Oracle Cloud Infrastructure

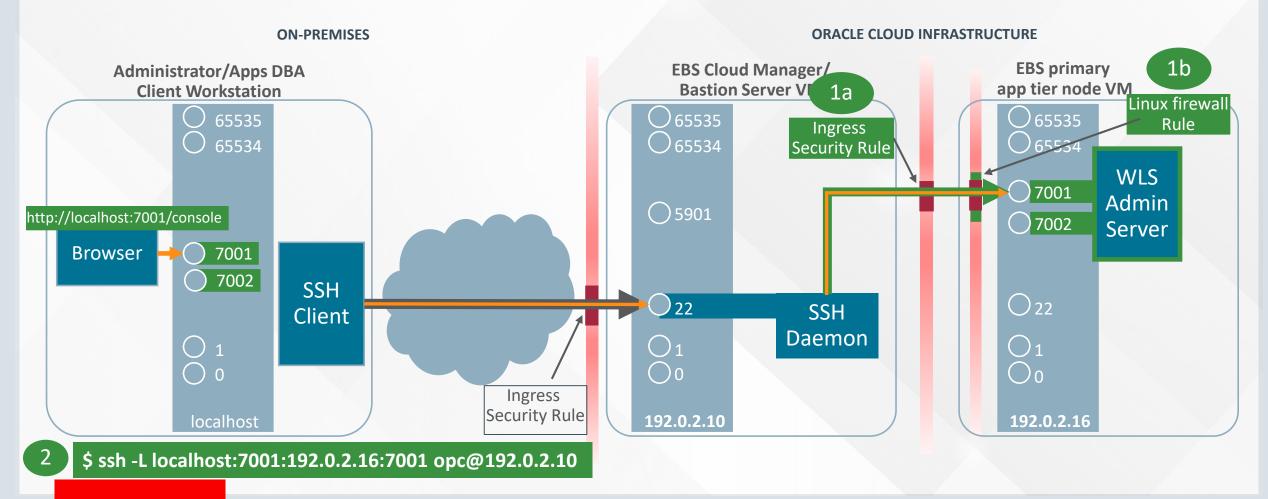
Defining Network Resources

ORACLE CLOUD INFRASTRUCTURE





Guidance for Securing Admin Traffic FMW Control and WLS Admin Console (WLS Admin Port)







Guidance for Securing Admin Traffic FMW Control and WLS Admin Console (WLS Admin Port)

1 Perform one-time configuration

Go to the following OBE to configure the required security and firewall rules

Performing Post-Provisioning and Post-Cloning Tasks for Oracle E-Business Suite on Oracle Cloud Infrastructure

For every Oracle E-Business Suite environment on OCI, perform the steps listed in the following section

Configure Security and Firewall Rules for Secure Access to the Fusion Middleware Control and WebLogic Server 2 Repeat setup per every new client connection

Go to the following OBE and perform the instructions to establish an SSH tunnel from the client

Accessing the Fusion Middleware Control and WebLogic Server Administration Console with SSH Port Forwarding for Oracle E-Business Suite on Oracle Cloud Infrastructure



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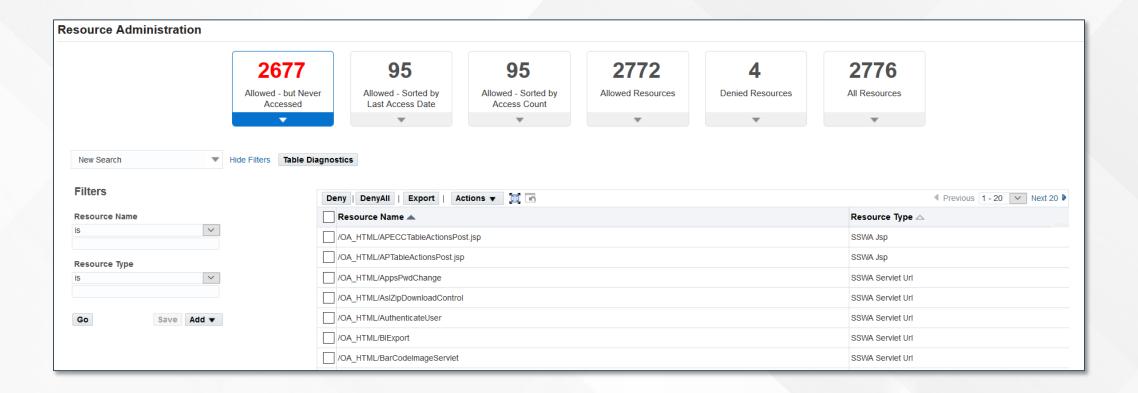
Oracle E-Business Suite Security

- Oracle E-Business Suite Release 12.1.3
 - Backport Allowed Resources Feature
- Oracle E-Business Suite Release 12.2 and Release 12.1
 - Ongoing updates to documented security guidelines (e.g., DB Access Control List)
 - Add more Secure Configuration Console checks (e.g., Default WLS Admin password)
 - Improve recommendations based upon activity for Allowed Resources
 - Automate configuration of resource level lockdown for Allowed Resources



Roadmap

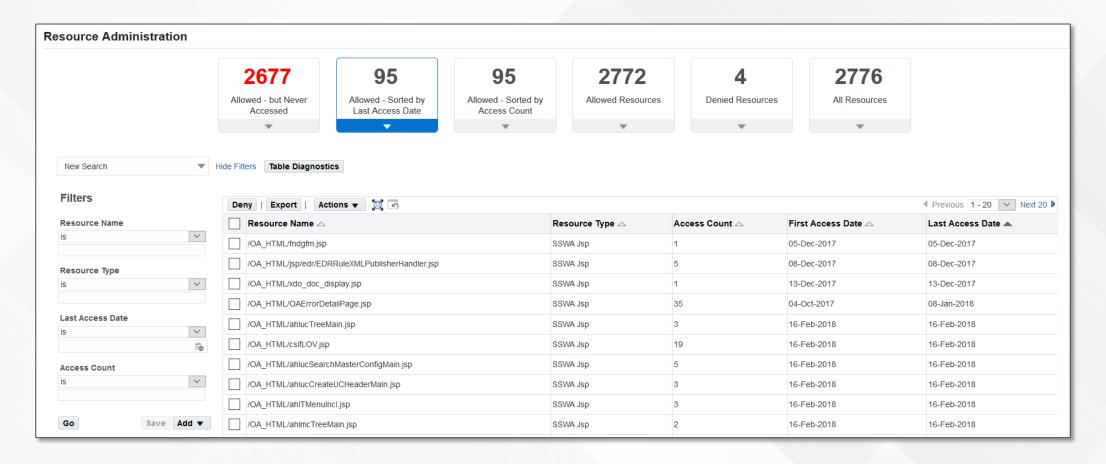
Allowed Resources – Resource Administration Ease of Configuration – Deny All Resources Not Accessed





Roadmap

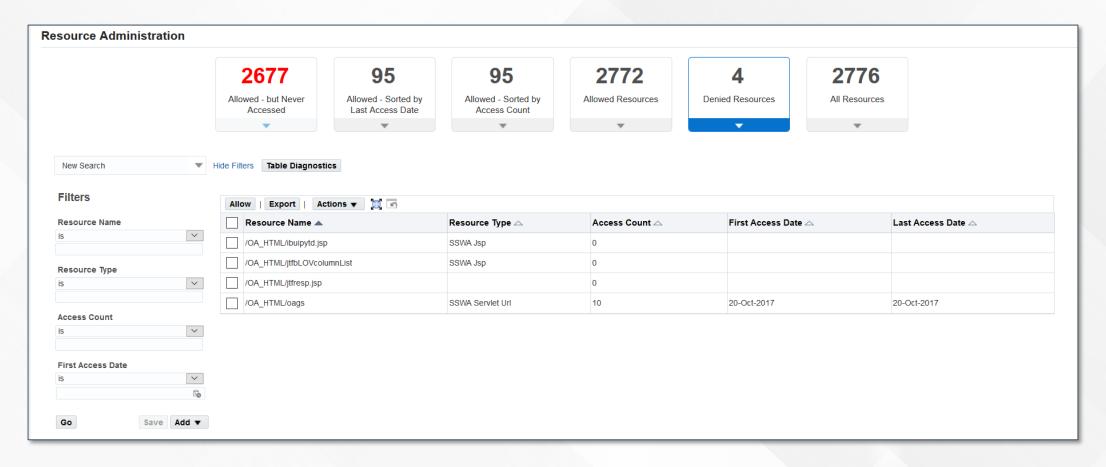
Allowed Resources — Resource Administration Ease of Configuration — See All Resources Used





Roadmap

Allowed Resources — Resource Administration Ease of Configuration — See All Denied Resources



Additional Resources



Blog: Oracle E-Business Suite and Oracle Cloud

New URL

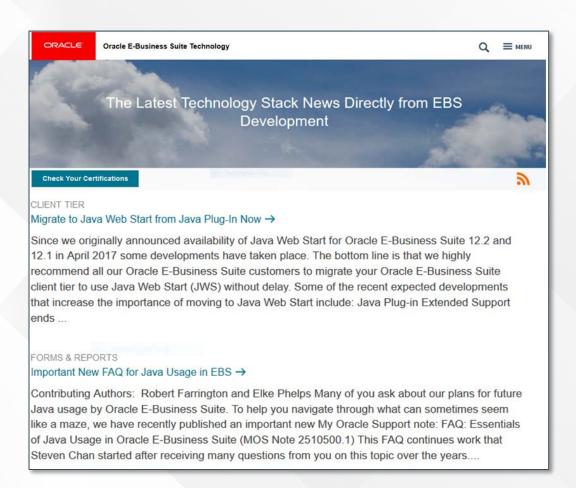
https://blogs.oracle.com/ebstech (previously blogs.oracle.com/stevenchan)

Same blog, new URL

Note: **blogs.oracle.com/stevenchan** will automatically redirect to **blogs.oracle.com/ebstech**

- News about EBS Technology
- Certification announcements
- Quarterly upgrade recommendations
- Primers, FAQs, tips
- Statements of Direction
- Desupport reminders

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Transfer of Information (TOI) Online Training

Learn More About Oracle E-Business Suite 12.2 New Features

- Implement and Use Application Object Library Secure Configuration Console
- Implement and Use E-Business Suite Secure Configuration Allowed Resources
- Implement and Use Application Object Library SECURITY: Redirect Filter
- Implement and Use E-Business Suite Secure Configuration Cookie Domain Scoping

MOS Note 807319.1

Documentation

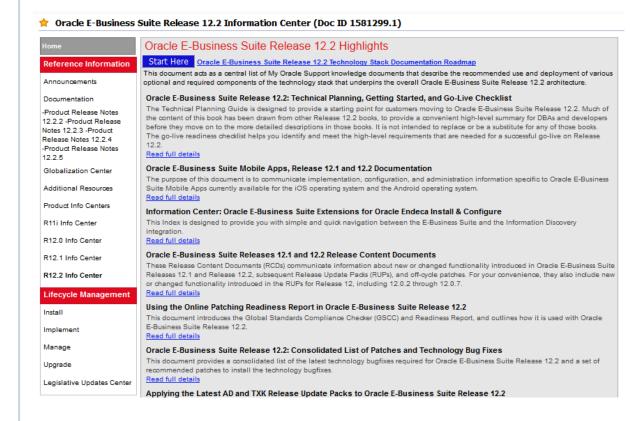
Title	Doc ID
FAQ: Oracle E-Business Suite Security	2063486.1
Oracle E-Business Suite Security Guide, Release 12.2 – Secure Configuration Chapter	N/A
Secure Configuration for Oracle E-Business Suite Release 12	403537.1
Enabling TLS in Oracle E-Business Suite Release 12.2	1367293.1
Enabling SSL or TLS in Oracle E-Business Suite Release 12.2	2143101.1
Enabling TLS in Oracle E-Business Suite Release 12.1	376700.1
Enabling SSL or TLS in Oracle E-Business Suite Release 12	2143099.1
CVE-2014-3566 - Instructions to Mitigate the SSLv3 Vulnerability ("POODLE Attack") in Oracle E-Business Suite	1937646.1



Where to Find More Information Oracle E-Business Suite Release 12.2

- EBS Documentation and Training
 - EBS 12.2 Information Center
 MOS Note 1581299.1
 Includes link to the EBS Documentation Web Library
 - EBS Release Content Documents
 MOS Note 1302189.1
 - EBS Transfer of Info (TOI) Online Training
 MOS Note 807319.1

EBS 12.2 Information Center





Blog: Oracle E-Business Suite and Oracle Cloud

https://blogs.oracle.com/EBSandOracleCloud/

- Live since 1st June 2016
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Oracle E-Business Suite and Oracle Cloud

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Welcome to Oracle E-Business Suite and Oracle Cloud Blog

By Nadia Bendjedou-EBS-Oracle on Jun 01, 2016

[Publisher's note: We are pleased to launch this new blog with the following introductory article by Cliff Godwin, Senior Vice President, Oracle E-Business Suite Development.]

Welcome to the Oracle E-Business Suite and Oracle Cloud Blog, which will cover all aspects of running Oracle E-Business Suite on Oracle Cloud - including what you can do right now, and what you can plan for as our offerings evolve.

Larry Ellison, Founder and Executive Chairman of Oracle stated, "Coexistence of cloud and on-premises computing is going to be a decades-long process, if not forever".

Oracle has invested extensively in providing solutions to help customers realize the benefits of cloud computing at the infrastructure, platform, and business application levels. These cloud services are broadly grouped as follows:

- · Oracle's Infrastructure as a Service (laaS)
- . Oracle's Platform as a Service (PaaS)
- · Oracle's Software as a Service (SaaS)

While each Oracle product line (including Oracle E-Business Suite) continues its development roadmap to serve its target markets and customer base, Oracle is actively promoting a coexistence or hybrid model that enables customers to adopt Oracle's cloud services in ways that complement and augment their existing enterprise applications.

Most Oracle E-Business Suite customers will think about embracing cloud computing as a journey, rather than a "big

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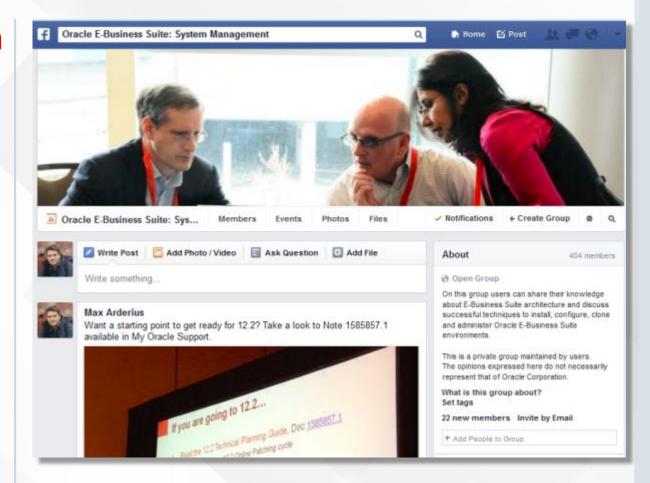
Oracle E-Business Suite on Oracle Cloud - Offerings Available Today



E-Business Suite: System Management

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