

Recommended Browsers for Oracle E-Business Suite Releases 12.2 and 12.1 (Doc ID 389422.1)

This knowledge document describes the requirements for browsers certified for use with Oracle E-Business Suite Releases 12.2 and 12.1.

The most current version of this document can be obtained in My Oracle Support Knowledge [Document 389422.1](#).

There is a [change log](#) at the end of this document.

Note: To receive automatic notifications of updates, subscribe to the Hot Topics Notification feature in My Oracle Support, as described in [Document 793436.2](#), *Subscribing to Hot Topic E-Mails*.

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Section 1: Overview

Oracle's certification of the various third party client operating systems, service pack levels and browsers aligns with the respective vendors' support life cycles. We recommend that users running software versions no longer supported by their vendor should upgrade to the current release.

Note: Oracle will continue to offer support for earlier versions with Oracle E-Business Suite on a "best efforts" basis only. This means that where a customer problem is identified as being due to an issue with the old browser release, customers may be required to upgrade to a newer browser version to resolve the issue.

Browsers may require specific patches for compatibility with Oracle E-Business Suite. These patches are backward-compatible with earlier browser releases. For example, after installing the required Internet Explorer 11 patches, you will still be able to access your Oracle E-Business Suite environment using earlier Internet Explorer versions, as well as alternative browsers.

For information on specific internationalization issues with browsers, see the "Browser Notes" section of My Oracle Support Knowledge [Document 393320.1](#), *Internationalization Update Notes for Release 12*.

Oracle E-Business Suite Releases 12.2 and 12.1 have two interfaces: a web-based (OA Framework/HTML) model for modules such as iProcurement and iStore, and Oracle Forms/Java based model for modules such as Oracle Financials.

Section 2: Internet Explorer for Windows Users

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2.1 Internet Explorer: Certification Information

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2.1.1 Certification Summary for Internet Explorer

- Internet Explorer 11 is certified for Oracle E-Business Suite customers running web-based (OA Framework/HTML) screen.
- Internet Explorer 11 is certified for running Java content using Java Web Start (JWS). Refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.
- Internet Explorer 11 is certified for running Java content using the Java Plug-in. Refer to My Oracle Support Knowledge [Document 393931.1](#), *Deploying JRE (Native Plug-in) for Windows Clients in Oracle E-Business Suite Release 12*.

2.1.2 Certification Matrix for Internet Explorer using Java Web Start (JWS)

The table below outlines the certified combinations of Windows desktop client operating systems, Internet Explorer 11 (IE11) desktop browser (64-bit and 32-bit), and JRE 8 (64-bit and 32-bit) version required to run with JWS. As JWS runs outside the browser, using a 64-bit or 32-bit browser will have no bearing on whether you are running a 64-bit or 32-bit Java version. Java content will try to launch using the highest version of Java it can access on the desktop.

Browser Version	Windows 10 (64-bit and 32-bit) Service Options	Windows 8.1 (64-bit and 32-bit)
IE11 (64-bit and 32-bit)	<ul style="list-style-type: none"> JRE 8 (1.8.0_151 and later) 	<ul style="list-style-type: none"> JRE 8 (1.8.0_151 and later)

2.1.3 Certification Matrix for Internet Explorer (64-bit) using Java Plug-in (64-bit)

The table below outlines the certified combinations of Windows desktop operating systems with the Internet Explorer (64-bit) desktop browser, and the minimum JRE 8 and JRE 7 (64-bit) releases where applicable.

Browser Version	Windows 10 (64-bit) Service Options	Windows 8.1 (64-bit)
IE11 (64-bit)	<ul style="list-style-type: none"> JRE 8 (1.8.0_51 and later), 64-bit JRE 7 (1.7.0_85 and later), 64-bit 	<ul style="list-style-type: none"> JRE 8 (1.8.0_25 and later), 64-bit JRE 7 (1.7.0_10 and later), 64-bit

2.1.4 Certification Matrix for Internet Explorer (32-bit) using Java Plug-in (32-bit)

The table below outlines the certified combinations of Windows desktop operating systems with the Internet Explorer (32-bit) desktop browser, and the minimum JRE 8 & JRE 7 (32-bit) releases where applicable.

Browser Version	Windows 10 (32-bit and 64-bit) Service Options	Windows 8.1 (32-bit and 64-bit)
IE11 (32-bit)	<ul style="list-style-type: none"> JRE 8 (1.8.0_51 and later) JRE 7 (1.7.0_85 and later) 	<ul style="list-style-type: none"> JRE 8 (1.8.0_25 and later) JRE 7 (1.7.0_10 and later)

2.1.5 Certification Notes

2.1.5.1 Microsoft Windows 10 Service Options

- Microsoft provides updates for Windows 10 via its service options:
 - LTSC (Long Term Servicing Channel)** - Previously known as LTSB (Long Term Servicing Branch)
 - Semi-Annual Channel** - Previously known as CB (Current Branch)
 - Semi-Annual Channel** - Previously known as CBB (Current Branch for Business)

- For further information see, [Overview of Windows as a service](#) and [Windows 10 release information](#)

Oracle E-Business Suite is certified with all these Windows 10 service options.

2.1.5.2 Enterprise Mode and Compatibility View

Oracle E-Business Suite Release 12 is **not** certified with IE11 using either 'Enterprise Mode' or 'Compatibility View'.

- Enterprise Mode:** Internet Explorer 11 includes an 'Enterprise mode' that can be used to emulate Internet Explorer 8 behavior and provide compatibility for earlier browser standards. This should **not** be used with Oracle E-Business Suite, as it will have no effect on certain issues. If you need to use 'Enterprise Mode' for other applications, Oracle E-Business Suite should be added as an exception to bypass it.
- Compatibility View:** Due to display issues in earlier IE releases, it was previously recommended to access Oracle E-Business Suite using the browser's 'Compatibility View'. These display issues have been fixed for IE11, via the patches listed in the [IE11 Prerequisite Patch Requirements](#) below. Once you have applied the prerequisite patches, you should run Oracle E-Business Suite pages without enabling the 'Compatibility View' feature in the browser. You can check this by navigating to Internet Explorer 11 > Tools > Compatibility View settings, and ensuring that both of the following are true:
 - Your instance domain is not part of the Compatibility View settings
 - The 'Display intranet sites in Compatibility View' is not checked.
 - If this setting is checked, it can cause display issues as outlined under [Page Button Misalignment](#).

Users must follow [2.2 Internet Explorer 11: Prerequisite Patch Requirements](#) to fix compatibility issues with Oracle E-Business Suite Release 12.

- Network Desktop Policy**

Ensure 'Enterprise Mode' or 'Compatibility View' are not set as part of the group policy on your network. Having either set will cause unexpected behaviors, including spinning and a dialog box titled 'Message from webpage' with message 'Work in progress' during navigation in HTML. See My Oracle Support Knowledge [Document 2503760.1](#), *E-Business Suite Framework Users Receive Error Dialog Box Titled 'Message from webpage' with message 'Work in progress' After CPU / Security Patches (28840561, 28884056, etc)*.

2.2 Internet Explorer 11: Prerequisite Patch Requirements

To run Oracle E-Business Suite Releases 12.2 and 12.1 using Internet Explorer 11 (IE11), apply the following **General** patches (or later). Also apply any further prerequisite patch requirements as stated in the patch readme files applicable to your Oracle E-Business Suite release. Other product patches listed below (or their successors) will also be required if you use those particular products.

Product Requirements	Oracle E-Business Suite Release 12.2	Oracle E-Business Suite Release 12.1
General	<ul style="list-style-type: none"> Patch 20007138:R12.TXK.C ¹ Patch 20518047:R12.FWK.C ² Patch 19863340:R12.FND.C 	<ul style="list-style-type: none"> Patch 9239090:12.1.3 Release Update Pack Patch 17932167:R12.TXK.B Patch 18936791:R12.FWK.B.Delta.4 ⁵ Patch 21565052:R12.FWK.B ⁴
CRM	<ul style="list-style-type: none"> Patch 19195514:R12.JTT.C Patch 22766443:R12.JTT.C ⁶ 	<ul style="list-style-type: none"> Patch 20986782:R12.CC_PF.B ³ Patch 19486870:R12.JTT.B
Product Information Mgt (PIM)	<ul style="list-style-type: none"> Not Applicable 	<ul style="list-style-type: none"> Patch 21482112:R12.FWK.B
WebADI (BNE)	<ul style="list-style-type: none"> Patch 32612295:R12.BNE.C ⁷ 	<ul style="list-style-type: none"> Patch 19273341:R12.BNE.B.Delta.4
Report Manager (FRM)	<ul style="list-style-type: none"> Patch 19900999:R12.FRM.C 	<ul style="list-style-type: none"> Patch 19559960:R12.FRM.B.Delta.4

- ¹ [Patch 20007138:R12.TXK.C](#) must be applied first, *before* [Patch 20518047:R12.FWK.C](#) is applied.
- ² [Patch 20518047:R12.FWK.C](#) has superseded the previously recommended [Patch 19855051:R12.FWK.C](#). Forces IE11 to render web application pages in '*IE10 Standards Mode*'.
- ³ [Patch 20986782:R12.CC PF.B](#). Supersedes previously recommended [Patch 19659562:R12.CC PF.B](#). In environments where [Patch 17931904:R12.FND.B](#) had not been installed, [Patch 19659562:R12.CC PF.B](#) would fail to compile certain JSP files such as jtffmcr1.jsp. The FND patch has now been included in [Patch 20986782:R12.CC PF.B](#) to prevent this issue. For further information, see [CRM Prerequisite Patch 20986782:R12.CC PF.B Known Issues](#).
- ⁴ [Patch 21565052:R12.FWK.B](#): Post-install recommended patch for R12.FWK.B.Delta.4 contains further fixes for IE11. It is recommended to apply this latest FWK patch release.
- ⁵ [Patch 18936791:R12.FWK.B.Delta.4](#): Forces IE11 to render web application pages in *IE5 Quirks Mode*. This is to ensure that customers upgrading to IE10 and above do not need to ask all their application end users to set the compatibility view setting on their individual desktop browsers.
- ⁶ Email Center, Trade Planning Offer and Budget and Claims pages may have display issues such as overlapping buttons. This issue is fixed in [Patch 22766443:R12.JTT.C](#). This fix is also included in [Patch 21900895:R12.ATG_PF.C.DELTA.6](#) and later.
- ⁷ [Patch 32612295:R12.BNE.C](#) has superseded the previously recommended [Patch 19907901:R12.BNE.C](#).

2.3 Internet Explorer: Recommended Settings

The use of certain functions within Oracle E-Business Suite will require the default browser settings to be altered as outlined below. With the exception of these changes, Internet Explorer is tested with the default parameter settings.

- [2.3.1 Internet Explorer 'Trusted Sites' Security Zone](#)
- [2.3.2 Java Was Blocked Because It Is out of Date and Needs to Be Updated](#)
- [2.3.3 Pop-Up Blocker](#)
- [2.3.4 Page Refresh](#)
- [2.3.5 AutoComplete in Internet Explorer](#)
- [2.3.6 HTTP 1.1/Keep Alive Settings](#)
- [2.3.7 Shared Desktop Security](#)

2.3.1 Internet Explorer 'Trusted Sites' Security Zone

Note: We recommend that Oracle E-Business Suite is run through the 'Trusted Sites' zone, with a 'Medium' Security Setting.

Certain products and functions within Oracle E-Business Suite require the manipulation of the default browser security zone settings to function correctly. Altering security settings in the 'Internet Zone' is not recommended, because you are accessing more widespread web data of which you may not know the source. The Trusted Sites zone allows you to precisely control which specific sites or domains will be accessed through this zone. This allows you, if required, to manipulate the settings with minimal security risk.

To set your Oracle E-Business Suite environment to run through Internet Explorer's 'Trusted Sites' zone, navigate as follows in the browser:

Tools > Internet Options > Security > Trusted Sites > Sites (button) > Add this Web site to the zone:

- For a specific environment, add the hostname and domain: `https://myserver.example.com`
- For all sites under your domain, add: `*.<domain>`
- If you are entering an `http://...` or `*.domain` address, you must first uncheck the `Require server verification (https:)` for all sites in this zone check box. You may re-check this setting again after entering your values.

By default, the 'Trusted Sites' zone uses a 'Medium' security setting. This can be checked or altered using the sidebar via the following navigation in the browser:

Tools > Internet Options > Security > Trusted Sites > Sites > Security Level for this Zone:

2.3.2 Java Was Blocked Because It Is out of Date and Needs to Be Updated

In September 2014, Microsoft implemented an [Update to block out-of-date ActiveX controls in Internet Explorer](#) to block out of date ActiveX controls running through any security zone except the 'Local intranet' or 'Trusted sites' zones. Trying to run any Java content from your desktop using older JRE releases (prior to the latest CPUs on any JRE stream) through any other zones (such as the 'Internet' zone) will be blocked. This issue may therefore affect Oracle E-Business Suite users trying to access forms and any other Java content.

This change does not affect Oracle E-Business Suite users who are running through the 'Trusted Sites' zone. Upgrading to the latest and therefore most secure JRE CPU version will also prevent Java content being blocked from any Internet Explorer security zone.

2.3.3 Pop-Up Blocker

Certain content within Oracle E-Business Suite requires pop-ups to function in the browser. If you are blocking pop-ups through your browser settings, use one of the following paths from the browser menu to add the domain name from your URL (e.g. *.example.com) as an allowed site:

Tools > Pop-up Blocker > Pop-up Blocker Settings > Allowed Sites
Tools > Internet Options > Privacy > Pop-up Blocker: Settings > Allowed sites

2.3.4 Page Refresh

When using Oracle Self-Service products it is important to ensure that the most current data is being viewed. You may check if the page has been updated since your last visit by manually refreshing the page. However, it is desirable for this to be done automatically through IE by ensuring that the following parameter from the browser menu has been checked:

Tools > Internet Options > General tab > Browsing History > Settings: Every time I visit the webpage

With this option selected, Internet Explorer will check if the page has changed since it was last viewed.

Also note that *SSL users who export Discoverer Workbooks to Microsoft Excel* must leave the *Do not save encrypted pages to Disk* parameter *unchecked*:

Tools > Internet Options > Advanced (tab) > Security: Do not save encrypted pages to disk

2.3.5 AutoComplete in Internet Explorer

IE can automatically show previous values entered in the same form field. For privacy and security reasons this feature should be *disabled* by *unchecking* the following parameters from the browser menu:

Tools > Internet Options > Content > AutoComplete: Settings > Use AutoComplete for: Forms and Searches
Tools > Internet Options > Content > AutoComplete: Settings > Use AutoComplete for: User names and passwords on forms

2.3.6 HTTP 1.1/Keep Alive Settings

Users should have the HTTP 1.1/Keep Alive option *enabled* by *checking* the following parameters from the browser menu:

Tools > Internet Options > Advanced tab > HTTP 1.1 Settings: Use HTTP 1.1
Tools > Internet Options > Advanced tab > HTTP 1.1 Settings: Use HTTP 1.1 through proxy connections

2.3.7 Shared Desktop Security

If multiple users share the same desktop, they may be able to view a previous users browser content by pressing the 'Back' button on the browser. To avoid this issue, set the *Force Page Refresh* profile option to *Yes* at *Site* level in your Oracle E-Business Suite Release 12 instance.

For security reasons, if a PC is shared by multiple users it is also advisable not to save encrypted pages onto the drive by *checking* the following parameter from the browser menu:

Tools > Internet Options > Advanced (tab) > Security: Do not save encrypted pages to disk

Note: SSL users who export Discoverer Workbooks to Microsoft Excel must leave the `Do not save encrypted pages to Disk` parameter *unchecked*.

2.4 Internet Explorer: Running IE11 in 64-bit Mode

Internet Explorer runs in a multi-process architecture, wherein there is a Frame (Manager) process and one or more Tab (Content) processes. There are no longer separate 32-bit and 64-bit installs of the browser when running a 64-bit version of Windows. In this mode, the Frame (Manager) process always runs as 64-bit, while the Tab (Content) processes can run as either 32-bit or 64-bit.

[2.4.1 Internet Explorer Settings to Enable 64-bit Tabs](#)

[2.4.2 User Access Control Setting \(UAC\)](#)

[2.4.3 32-bit Add-Ons](#)

[2.4.4 Check Browser Set Up](#)

2.4.1 Internet Explorer Settings to Enable 64-bit Tabs

To access Oracle E-Business Suite through IE11 using 64-bit tabs with a 64-bit JRE release, set the following parameters from the browser menu.

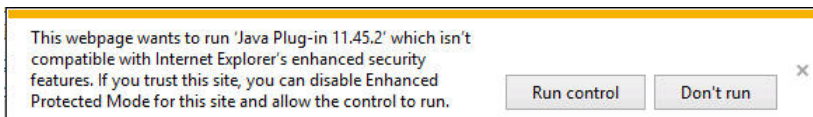
Using the 'Trusted Sites' zone as an example, ensure that the following browser menu parameters are *checked*:

```
Tools > Internet Options > Security > Trusted Sites > Enable Protected Mode
Tools > Internet Options > Advanced > Enable 64-bit processes for Enhanced Protection Mode
```

Also, ensure that the following parameter from the browser menu is *unchecked*:

```
Tools > Internet Options > Advanced > Enable Enhanced Protection Mode
```

If you have 'Enable Enhanced Protection Mode' selected (checked) when launching JRE, you will see the following warning in the browser window:



Click the `Don't Run` button and uncheck the value in the browser as outlined above.

(Clicking the `Run Control` button will disable Enhanced Protected Mode which will not allow the 64-bit JRE release to run. It will instead try to launch using a 32-bit version if available.)

2.4.2 User Access Control Setting (UAC)

Ensure the 'User Account Control Setting' (UAC) is not set to "Never Notify". This can be found under:

```
Control Panel > Action Center > Change User Account Control Settings
```

The default value for this setting is "Notify me only when programs try to make changes to my computer". Therefore, unless this has been changed by the user it is unlikely to need altering.

2.4.3 32-bit Add-Ons

If the browser has 32-bit add-ons or toolbars installed, the tab process will continue to open in 32-bit mode and prevent you running 64-bit applications. These can be checked through the IE browser menu at the following locations:

```
Tools > Manage add-ons > Toolbars and Extensions > Show: Currently loaded add-ons
Tools > Manage add-ons > Toolbars and Extensions > Show: Downloaded Controls
```

Any add-ons listed with a value of "32-bit" in the Architecture column must be disabled or uninstalled. Add-ons with a value of "32-bit and 64-bit" are approved for use in a 64-bit browser tab and can remain enabled.

After removing or disabling any old add-ons, clear the browser cache and start a new browser session.

2.4.4 Check Browser Set Up

You can verify your browser is now using 64-bit tabs with the following steps.

1. Close any open IE browser sessions.
2. Open a new IE session.
3. Launch your Oracle E-Business Suite environment logon page.
4. Check whether your IE tabs process is 32-bit or 64-bit by examining as follows:
 - a. Open *Windows Task Manager > Details (tab)*
 - b. Right click on one of the columns and click *Select columns*
 - c. Check *Platform*
 - d. The Platform column should now appear in the table showing whether the process is *32-bit* or *64-bit*.
5. Your iexplore.exe processes should show as *64-bit* if the tab is working correctly. If one of the iexplore.exe processes is shown as running as *32-bit*, re-check the set up steps above.

If you are still seeing a 32-bit tab, as a last resort you can try resetting your browser to set it back to its original state. This will also disable toolbars and add-ons. As well as resetting the browser parameters above, you will therefore also need to reset any other parameters you may have altered for your business requirements (such as required settings for WebADI).

To reset the browser, select the following from the browser menu:

Tools > Internet options > Advanced (tab) > Reset (button) > Reset (button)

2.5 Internet Explorer: Importing an SSL/TLS Certificate at Runtime

If you are using an SSL/TLS certificate that is not from one of the standard recognized Certificate Authorities (CA), for example your own in-house CA, add the root certificate as a trusted authority within IE.

Connecting to a Transport Layer Security (TLS) or Secure Socket Layer (SSL) enabled environment requires the certificate to be 'Trusted'. If the certificate is not from a trusted authority, or has not previously been trusted on the client (root certificate installed into the browser), it must be verified at runtime. When accessing such an environment, it will return the following warning message: 'There is a problem with this website's security certificate'. Using the automatic default install button may cause the certificate to be added to the browser's 'Intermediate Certification Authorities' folder and not the required 'Trusted Root Certification Authorities' folder. Therefore the security message will still be displayed.

If the certificate has wrongly been installed into the 'Intermediate Certification Authorities', remove it through the browser and re-install into the 'Trusted Root Certification Authorities' folder.

Installing an SSL certificate into the Browsers Trusted Certificates folder requires the browser's security option 'Enable Protected Mode' to be disabled (not checked), which is the default setting in the 'Trusted Sites' zone. (If required, 'Enable Protected Mode' may again be enabled (checked) after the certificate has been installed for runtime use). Alternatively, if you launch the browser with elevated privileges (Right click the IE icon and select 'Run as administrator'), the Install button will become available and allow you to install the certificate.

To trust the certificate authority and prevent the error page appearing on future logins, you can install the root certificate at runtime by following these instructions (which assume you are using the browsers 'Trusted Sites' zone):

1. Enter the Oracle E-Business Suite URL in the browser.
2. The warning message, 'There is a problem with this website's security certificate' will be displayed.
3. Click on, 'Continue to this website (not recommended)'.
4. The Address bar will be displayed with a red background, click on the 'Certificate error' message.
5. An 'Untrusted Certificate' window pops, click 'View Certificates'.
6. Click the 'Certification Path' (Tab).
7. Highlight the Root certificate (which will have a white cross in a red background next to it), and press 'View Certificate' button.
8. Click 'Install Certificate' (button) > 'Next' (button).
9. Select 'Place all the certificates in the following store'.
10. Click 'Browse' (button), select 'Trusted Root Certification Authorities' folder, then click 'OK' (button).
11. Click 'Next' (button) followed by 'Finish' (button).
12. When the 'Security Warning' window pops asking if you wish to install the certificate, click 'Yes' (button).
13. The 'Certificate Import Wizard' window should display stating 'The import was successful', click 'OK' (button).
14. Also close the two 'Certificate' windows by clicking 'OK' (buttons).
15. Close all your IE browser sessions.

If the install button is not active when trying to install the certificate, it may have been installed previously using the automatic facility (into the 'Intermediate Certification Authorities' zone). To remove the certificate:

1. Open the browser and go to Tools > Internet Options > Content > Certificates > Intermediate Certificate Authorities.
2. Highlight the appropriate certificate for the instance you are trying to access, press the 'Remove' button, then close down the browser.
3. Open a new browser session and follow the steps above to install the certificate into the 'Trusted Certificates' folder.

SSL/TLS Environment Issues

When running an Oracle E-Business Suite SSL/TLS enabled environment, Internet Explorer may display (in a modal window) one of the following two messages:

Do you want to view only the webpage content that was delivered securely?

This page contains both secure and nonsecure items.
Do you wish to display the nonsecure items?

To stop this message appearing, using the 'Trusted Sites' zone as an example:

1. Select Tools > Internet Options > Security (tab) > Trusted Sites > Custom Level (button) > Miscellaneous section from the browser menu.
2. Set Display mixed content to Enable.
3. Save the setting and close the browser window.

2.6 Internet Explorer: Known Issues

[2.6.1 CRM Prerequisite Patch 20986782:R12.CC_PF.B Known Issues](#)

[2.6.2 Page Button Misalignment](#)

[2.6.3 FWK Session Timeout](#)

[2.6.4 FWK LOVs Won't Open](#)

[2.6.5 IE Functionality: Window Ordering of HTML Pages](#)

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[2.6.8 IE Functionality: Loosely-Coupled IE \(LCIE\)](#)

[2.6.9 IE Functionality: Cross-Site Scripting Errors \(XSS\)](#)

2.6.1 CRM Prerequisite Patch 20986782:R12.CC_PF.B Known Issues

After applying CRM IE11 prerequisite [Patch 20986782:R12.CC_PF.B](#) the following issues have been observed.

- **Issue 1:** The following database objects are invalid. To fix the issues, apply the patches listed.
 - OZF_UTILITY_PVT (Trade Management): [Patch 14321766:R12.OZF.B](#)
 - IEM_EMAIL_PROC_PVT (Email Center): [Patch 12663292:R12.IEM.B](#)

For further information, see My Oracle Support Knowledge [Document 2037104.1](#), *After Patch 20986782 OZF_UTILITY_PVT IEM_EMAIL_PROC_PVT are invalid.*

- **Issue 2:** The following file fails on compilation. To fix the issue, apply the patch listed.
 - iemsa_attach.jsp 120.4.12010000.4, fixed by [Patch 13602427:R12.JTT.B](#)

2.6.2 Page Button Misalignment

Self service pages in Oracle E-Business Suite Release 12.2 may display button misalignments. To fix this issue ensure you have unchecked the 'Display intranet sites in Compatibility View' as outlined under [IE11 Enterprise Mode and Compatibility View](#).

For example, such misalignments can display in the Login page as shown below:

2.6.3 FWK Session Timeout

When running through Oracle Framework pages, in particular when revisiting the same pages numerous times, the session may suddenly time out and send you back to the login screen. After you log back in, the session is resumed normally.

You can temporarily work around this issue by change the page refresh setting to 'Automatically':

Tools > Internet Options > General tab > Browsing History > Settings (button) > Check for newer versions of stored pages: Automatically

To fix this issue, apply [Patch 28141361:R12.FND.C](#) by following its readme. After applying this patch change the page refresh setting back to the recommended 'Every time I visit the page':

Tools > Internet Options > General tab > Browsing History
> Settings (button) > Check for newer versions of stored pages: Every time I visit the webpage

2.6.4 FWK LOVs Won't Open

The 'Binary and script behaviors' parameter within IE is enabled by default. This setting is required for basic LOV and PPR functionality within FWK. Disabling it will cause LOVs not to open. so it must be left enabled.

Assuming you are running Oracle E-Business Suite through the 'Trusted Sites' security zone, this parameter can be reset through:

Tools > Internet Options > Security > Trusted Sites > Custom Level > ActiveX controls and plug-ins > Binary and script behaviors > Enable

2.6.5 IE Functionality: Window Ordering of HTML Pages

In certain circumstances, HTML pages may occasionally open behind the Forms Navigator. This issue can be avoided by instead opening pages in a new window. This is set in the browser through:

Tools > Internet Options > General (tab) > Tabs > Always open pop-ups in a new window

2.6.6 IE Functionality: Exporting Data and Opening Attachments (File Association)

Any file types that are used to interact between Oracle E-Business Suite and the desktop (e.g. *.xls, *.csv) must be associated with a suitable program to open it. Without any association, when run from the browser the file will either not open or will briefly open and then close immediately. This may occur, for example, when using File > Export to an Excel spreadsheet. or when opening an attachment from Oracle E-Business Suite.

2.6.7 IE Functionality: Browser Helpers and Toolbars

Incompatibility with older JRE versions means that the use of certain browser helpers and toolbars may cause the browser to crash when trying to log in to Oracle E-Business Suite. These extras can be enabled or disabled through the browser menu:

Tools > Manage Add-ons > Toolbars and Extensions

2.6.8 IE Functionality: Loosely-Coupled IE (LCIE)

Loosely-Coupled IE (LCIE) is standard IE browser behavior in IE8 and later. This splits the browser's frame and its tabs into separate processes on the desktop, to improve performance and aid browser recovery if a tab crashes. Oracle E-Business Suite users may be affected in the following ways.

With the `Show Console` option set in the Java Control Panel, launching a forms based application through IE8 or later may cause two separate *Java Console* windows to open. Accessing further Java applets from the same Oracle E-Business Suite session may also cause further *Java Console* windows to appear. This will not always be seen: not every tab will necessarily be started in its own process because LCIE will attempt to balance reliability with performance. Therefore the issue of multiple Java console windows is most likely to be seen if running from a high specification multi-core processor desktop.

If required, you can prevent the Java console from appearing by running the following from your desktop client:

```
Control Panel > Java (icon) > Advanced (tab) > Java Console > select the 'Hide Console' (radio button)
```

2.6.9 IE Functionality: Cross-Site Scripting Errors (XSS)

- Users may see the following XSS error in the browser window when launching any Forms-based application:

```
'Internet Explorer has modified this page to prevent a possible cross-site scripting attack'
```

This may occur because the required Forms 10.1.2.3 servlet components may not have been deployed properly when Forms 10.1.2.3 was first installed in your Oracle E-Business Suite Release 12 environment.

If your end-users running Internet Explorer encounter this error when attempting to launch a Forms-based E-Business Suite product, redeploy the Forms 10.1.2.3 formsapp.ear file by following My Oracle Support Knowledge [Document 397174.1](#), *Deploying a New EAR File in Oracle Applications Release 12*.

- Some users may suddenly encounter an XSS error after successfully opening and closing multiple forms within a session, thereby preventing any further forms launches. To fix this issue, turn off XSS for requests to the forms servlet by making the following configuration changes to the template file, `apps_conf_1013.tmp`:

- Back up your template file: `$FND_TOP/admin/template/apps_conf_1013.tmp`
- Add the following lines to the template file `apps_conf_1013.tmp`:

```
<Location /forms/frmservlet>
  Header set X-XSS-Protection 0
</Location>

<Location /OA_HTML/frmservlet>
  Header set X-XSS-Protection 0
</Location>
```

- Run AutoConfig to update the configuration file:

```
$INST_TOP/ora/10.1.3/Apache/Apache/conf/apps.conf.
```

Note: For further information on customizing AutoConfig template files, see Section 4: Customizing AutoConfig-Managed Configurations in My Oracle Support Knowledge [Document 387859.1](#), *Using AutoConfig to Manage System Configurations in Oracle E-Business Suite Release 12*.

2.7 Internet Explorer: JRE Plug-in Known Issues

The following known issues are only applicable to users that are still using Java Plug-in architecture.

- [2.7.1 JRE \(oaj2se.exe\) Download from Internet Explorer Fails](#)
- [2.7.2 Internet Explorer Browser Settings for User Download of oaj2se.exe \(JRE Plug-in Only\)](#)
- [2.7.3 TabProcGrowth Registry Setting \(JRE Plug-in\)](#)
- [2.7.4 Multiple Oracle E-Business Suite Java Sessions \(JRE Plug-in\)](#)
- [2.7.5 Unable to Authenticate Session \(JRE Plug-in\)](#)

2.7.1 JRE (oaj2se.exe) Download from Internet Explorer Fails

The September 2016 (IE11) security update KB3185319 breaks the JRE (oaj2se.exe) download function from the Oracle E-Business Suite application tier. Normally, if you do not have a suitable JRE Plug-in release installed on your desktop you will be prompted to install the version called from the server, allowing the oaj2se.exe file to be downloaded. After this update,

despite clicking through the prompts the oaj2se.exe file does not download. To fix this issue, install the appropriate patch for your Windows release, as outlined on Microsoft's [ActiveX installation that uses AXIS fails after you install MS16-104](#) page. (For seamless operation when accessing the patches it is advisable to use IE to access this page and associated links.)

- Windows 8.1 users require KB3192665
- Windows 10 users require KB3193519

If you are unable to install the fix at present, users may work around the problem by calling the file directly from the URL as follows:

```
http(s)://<myserver.example.com>:<port>/OA_HTML/oaj2se.exe
```

For further information on using the JRE download function, see [2.7.2 Internet Explorer Browser Settings for User Download of oaj2se.exe](#).

2.7.2 Internet Explorer Browser Settings for User Download of oaj2se.exe (JRE Plug-in Only)

Oracle recommends that customers accessing Oracle E-Business Suite through Internet Explorer (IE) use a 'Medium' security setting through the 'Trusted Sites' zone in the browser at runtime.

The JRE Plug-in will download and install from the web server on a medium security setting. After clicking on a 'forms link', a message similar to the following should appear in the browser window:

```
The website wants to install the following add-on: 'Java SE Runtime Environment from 'Oracle America, Inc.'.
```

To install the JRE Plug-in:

1. Click the **Install** Button.
2. Choose **Yes** to the prompt **Do you want to allow the following program to make changes to your computer?**
3. Once the browser has stopped processing, click on the 'forms link' again, and the oaj2se.exe file should start to download.
4. Once the download has completed, a security warning pop-up window will ask, **Do you want to allow the following program to make changes to your computer?**. Click the **Yes** button.
5. When the Java Setup window opens click the **Install** button and follow the on screen instructions.

2.7.3 TabProcGrowth Registry Setting (JRE Plug-in)

Since IE8 the default browser architecture has been [Loosely-Couple IE \(LCIE\)](#) whereby the browser frame and tabs are opened in two separate iexplore.exe processes. Users may previously have retained the old single iexplore.exe session where the tabs and frame all opened in a single iexplore.exe process by setting the TabProcGrowth key value to 0 in the Windows registry. Using this old standard can also prevent the JRE (oaj2se.exe) file from downloading causing no download prompt to open. If this is the case, turn LCIE on again by following the steps below.

1. Open the registry editor.
2. Navigate to: `HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\Main`.
3. Locate the `TabProcGrowth` key (if it exists).
4. If the `TabProcGrowth` key is set to 0 either, delete the key, or set its value to 1.
5. Save the change and reboot the desktop.

2.7.4 Multiple Oracle E-Business Suite Java Sessions (JRE Plug-in)

Older releases of Internet Explorer (IE7 and earlier) allowed users to run multiple independent Java sessions each within its own browser session when using the JRE Plug-in technology. This allowed multiple sessions to connect to the same Oracle E-Business Suite environment concurrently from the same desktop.

By default, the *Session Merging* feature introduced in IE8 prevents this functionality from working by default. This is because the same session ID is used when accessing the same Oracle E-Business Suite environment. By default this will occur if you select **New Window**, **New Tab** or **Duplicate Tab** from the the browsers **File** menu, or if you open another browser window through the desktop browser icon.

This can result in unusual behavior, with invalid sessions causing errors such as **Your login session has become invalid, Unable to authenticate session**, and failures to launch forms causing errors such as **FRM-92050: Failed**

to connect to the server: /forms/formervlet: -1.

To retain the use of multiple sessions through a separate session ID to the same Oracle E-Business Suite environment running IE11, use one of the three workarounds below to ensure each browser session remains independent:

- **Option 1:** Open a new Explorer window using its own session cookie by selecting `File -> New Session` from the `Menu Bar` in an existing browser window. Users may have to enable the `Menu Bar` first by right clicking the browser header frame and selecting `Menu Bar`.
- **Option 2:** Run from the command line, adding the `-noframemerging` parameter. For example, `Start -> Run -> iexplore -noframemerging`
- **Option 3:** Create a new IE icon, adding the `-noframemerging` parameter as follows:
 1. `Start > Program Files`
 2. Right-click on the `Internet Explorer` icon and select `Properties`
 3. Add `-noframemerging` to the end of the link in the `Target` field. For example: `"C:\Program Files\Internet Explorer\iexplore.exe" -noframemerging` OR `"C:\Program Files (x86)\Internet Explorer\iexplore.exe" -noframemerging`
 4. Click the `OK` button to close the window.
 5. This icon may then be copied to the desktop if desired.

2.7.5 Unable to Authenticate Session (JRE Plug-in)

If you receive an `Unable to authenticate session` error in your browser when running multiple sessions using the JRE Plug-in technology, set the `-noframemerging` option as outlined in the [Multiple Oracle E-Business Suite Java Sessions \(JRE Plug-in\)](#) section above.

If this does not resolve the problem, or you are not running multiple sessions, clear your browser cache by deleting the 'Temporary Internet Files' as follows:

Tools > Internet Options > General (tab) > Browsing History > Delete (button)

Section 3: Firefox ESR for Windows and macOS Users

[3.1 Firefox ESR: Certification Information](#)

[3.2 Firefox ESR: Prerequisite Patch Requirements](#)

[3.3 Firefox ESR: Recommended Settings](#)

[3.4 Firefox ESR: Importing an SSL/TLS Certificate](#)

[3.5 Firefox ESR: Known Issues](#)

3.1 Firefox ESR: Certification Information

[3.1.1 Certification Summary for Firefox ESR \(Windows\)](#)

[3.1.2 Certification Matrix for Firefox ESR and Java Web Start \(Windows\)](#)

[3.1.3 Certification Summary for Firefox ESR \(macOS\)](#)

[3.1.4 Certification Matrix for Firefox ESR and Java Web Start \(macOS\)](#)

[3.1.5 Additional Firefox Extended Support Release \(ESR\) Information](#)

[3.1.6 Compatibility with Higher JRE Releases](#)

[3.1.7 Oracle E-Business Suite Patching Policy for Firefox Compatibility Issues](#)

3.1.1 Certification Summary for Firefox ESR (Windows)

- Only Firefox Extended Support Releases (ESR) are certified with Oracle E-Business Suite. Rapid Release Firefox versions are **not** certified.
- Firefox ESR is certified for Oracle E-Business Suite customers running web-based (OA Framework/HTML) applications.
- Firefox ESR is certified for running Java content using Java Web Start (JWS). Refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.
- Firefox ESR does not support NPAPI, so is not certified for running Java content using the JRE Plug-in

3.1.2 Certification Matrix for Firefox ESR and Java Web Start (Windows)

Both 32-bit and 64-bit releases of Firefox ESR can use Java Web Start (JWS) for running Java content within Oracle E-Business Suite. JWS runs on the desktop rather than within the browser. The *bitness* (32-bit or 64-bit) of the browser and

JRE version are independent of each other, and can therefore run in any combination.

The table below outlines the currently certified browser Version, Java technology, and Windows desktop operating system releases certified with Oracle E-Business Suite Releases 12.2 and 12.1.

Browser Version	Java Technology	Windows 10 (32-bit and 64-bit)	Windows 8.1 (32-bit and 64-bit)
Firefox ESR 78.x (32-bit and 64-bit)	JWS (32-bit or 64-bit)	JRE 8 (1.8.0_221 and later)	JRE 8 (1.8.0_221 and later)
Firefox ESR 68.x (32-bit and 64-bit) ¹	JWS (32-bit or 64-bit)	JRE 8 (1.8.0_151 and later)	JRE 8 (1.8.0_151 and later)

¹ **Firefox ESR 68.x** is 'End of Life' and unsupported by the vendor since 22nd September 2020. For further information, see section Special Notes in [Firefox for Enterprise 79 - Release notes](#). It is recommended that any users running this release upgrade to Firefox ESR 78.x.

3.1.3 Certification Summary for Firefox ESR (macOS)

- Only Firefox Extended Support Releases (ESR) are certified with Oracle E-Business Suite. Rapid Release Firefox versions are **not** certified.
- Firefox ESR is certified for Oracle E-Business Suite users accessing web-based (OA Framework/HTML) applications.
- Firefox ESR is certified running Java content using Java Web Start (JWS) technology.
 - Running Firefox ESR on macOS using Java Web Start (JWS) requires additional patching and setup.
 - For further information, refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.
- Firefox ESR does not support NPAPI, so is not certified for running Java content using the JRE Plug-in.

3.1.4 Certification Matrix for Firefox ESR and Java Web Start (macOS)

The table below outlines the minimum certified macOS, Firefox ESR browser, and JRE releases for Oracle E-Business Suite Releases 12.2 and 12.1.

macOS	Firefox ESR Browser	JRE (using JWS technology)
macOS Big Sur 11.3 or later	ESR 78.x	JRE 8 (1.8.0_301 and later)
macOS Catalina 10.15.1 or later	ESR 78.x	JRE 8 (1.8.0_251 and later)
macOS Mojave 10.14.5 or later	ESR 78.x	JRE 8 (1.8.0_251 and later)
macOS High Sierra 10.13.3 or later	ESR 78.x	JRE 8 (1.8.0_261 and later)
macOS Mojave 10.15.1 or later	ESR 68.x ¹	JRE 8 (1.8.0_241 and later) ²
macOS Mojave 10.14.1 or later	ESR 68.x ¹	JRE 8 (1.8.0_221 and later) ²
macOS High Sierra 10.13.3 or later	ESR 68.x ¹	JRE 8 (1.8.0_221 and later) ²

¹ **Firefox ESR 68.x** is 'End of Life' and unsupported by the vendor since 22nd September 2020. For further information, see section Special Notes in [Firefox for Enterprise 79 - Release notes](#). It is recommended that any users running this release upgrade to Firefox ESR 78.x.

² Running Java content using JWS downloads a *.jnlp file into the specified browser downloads folder. These are not removed automatically when running this version of JRE on macOS. To have the files removed automatically, upgrade to JRE 8 (1.8.0_192 or later).

For further information on the latest certification, required settings and other information, see My Oracle Support Knowledge [Document 1533334.1](#), *Oracle E-Business Suite Release Notes for Apple macOS Clients, Release 12*.

For Internationalization information, see My Oracle Support Knowledge [Document 393320.1](#), *Internationalization Update Notes for Release 12*.

3.1.5 Additional Firefox Extended Support Release (ESR) Information

The Netscape Application Programming Interface (NPAPI) plugin is no longer supported by Firefox, meaning that you can no longer access Java content using the Java Plug-in. Users must implement Java Web Start (JWS) to run any Java content

using Firefox by following My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.

Firefox Extended Support Release (ESR) is expected to receive a major update every 12 months with a 3 month support overlap between the new ESR and the end-of-life of the previous ESR. Point release updates which can include minor updates such as crash fixes, security fixes and policy updates are expected to be released every 4 weeks. Expected release dates are available on the [Firefox Release Calendar](#) page.

3.1.6 Compatibility with Higher JRE Releases

Oracle has certified the Oracle E-Business Suite with the minimum JRE releases noted above. Oracle E-Business Suite users may use or upgrade to later production releases of JRE on any stream at their discretion. However, we recommend upgrading to the latest certified JRE releases to obtain the latest security and functional fixes. For further information, see My Oracle Support Knowledge [Document 1682574.1](#), Java SE Versions, Patch Updates and Schedules: CPUs, PSUs, BPRs, Public v. Support Only Releases.

Oracle will continue to test and certify Oracle E-Business Suite with upcoming CPU versions of JRE in advance of their general availability to the public, and will update this document with any known compatibility issues or workarounds as needed.

3.1.7 Oracle E-Business Suite Patching Policy for Firefox Compatibility Issues

Oracle E-Business Suite Development will issue new Oracle E-Business Suite patches or workarounds that can be reproduced with Firefox ESRs. If you report compatibility issues with Firefox Rapid release versions that cannot be reproduced with Firefox ESRs, your options are as follows:

- Deploy a certified Firefox ESR version instead of the Firefox personal version.
- Report the incompatibility between Firefox ESR and Firefox personal to Mozilla.
- Use Internet Explorer (on Windows) or Safari (on macOS) until Mozilla resolves the issue.

3.2 Firefox: Prerequisite Patch Requirements

Oracle E-Business Suite Release 12.1 Users

As a minimum requirement, Oracle E-Business Suite Release 12.1 users running Firefox ESR must apply the Oracle Fusion Middleware 10.1.3.5 Oct 2015 CPU patch or later.

- UNIX Users: [Patch 21845960](#)
- Windows Server Users: [Patch 21845962](#)

For further information, see My Oracle Support Knowledge [Document 2051000.1](#), *Oracle E-Business Suite Releases 11i and 12 Critical Patch Update Knowledge Document (October 2015)*.

3.3 Firefox: Recommended Settings

3.3.1 Pop-Up Blocker

Certain content within Oracle E-Business Suite requires pop-ups to function in the browser. If you are blocking pop-ups through your browser settings, add your URL (e.g. <https://server.example.com:4443>) as an allowed exception under:

Open Application Menu > Settings > Privacy & Security > Permissions > Block pop-up windows > Exceptions (button)

3.3.2 Shared Desktop Security

If multiple users share the same desktop, they may be able to view a previous users browser content by pressing the 'Back' button on the browser. To avoid this issue, set the `Force Page Refresh` profile option to `Yes` at `Site` level in your Oracle E-Business Suite Release 12 instance.

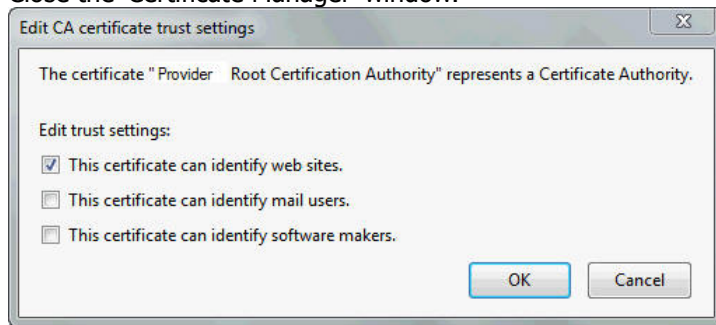
3.4 Firefox ESR: Importing an SSL/TLS Certificate

If you are using an SSL certificate that is not from one of the standard recognized Certificate Authorities (CA), for example your own in-house CA, add the root certificate as a trusted authority within Firefox.

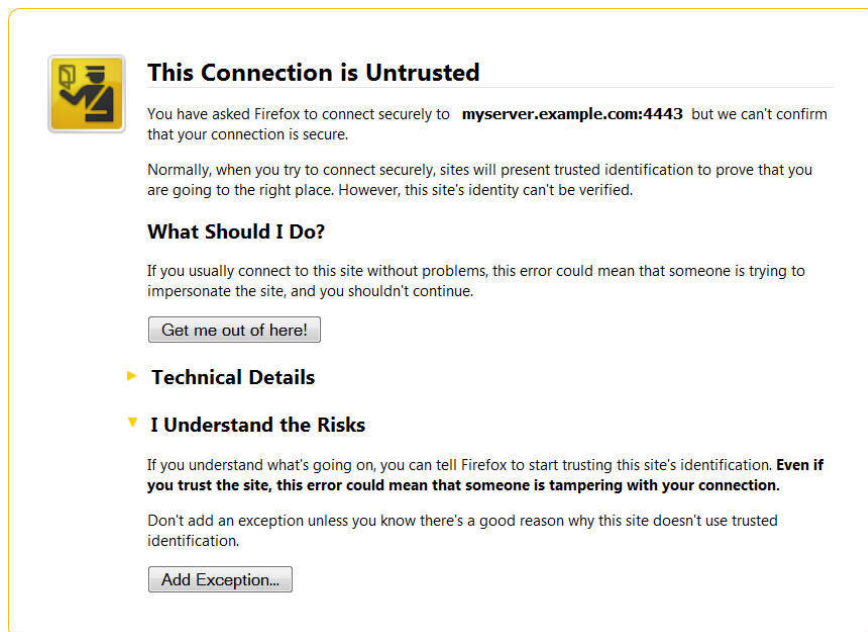
1. Copy the SSL/TLS root certificate to your desktop.
2. Open Firefox and navigate to 'Certificate Manager':

Open Application Menu > Settings > Privacy & Security > Security > Certificates > View Certificates (button)

3. Upload the root certificate from your desktop and tick: Trust this CA to identify websites.
4. Close the 'Certificate Manager' window.

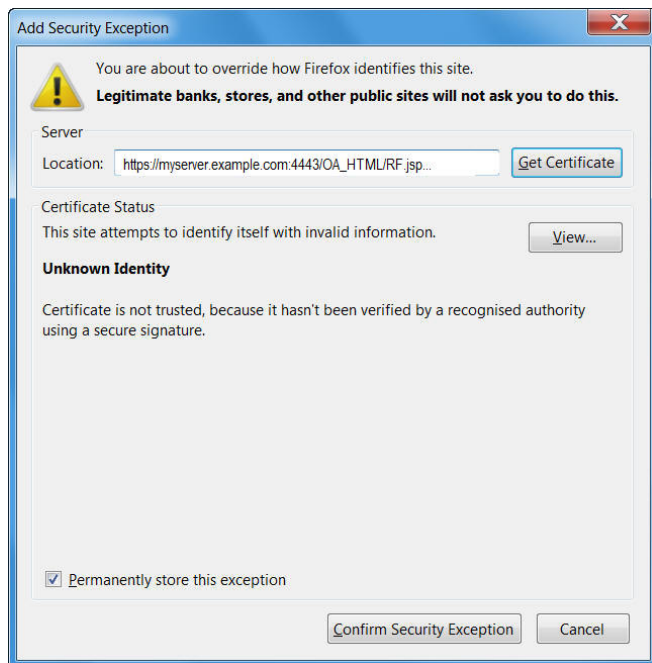


If the root certificate is not installed, a message like the following will be displayed:



If you cannot install the root certificate at present, as a workaround you can trust the certificate authority and stop the error page appearing on future logins by adding an exception:

1. Click the 'Add Exception...' button and the 'Add Security Exception' window should open.



2. Check 'Permanently store this exception'. If this checkbox is grayed out, you will first need to turn on History and then click the OK button:

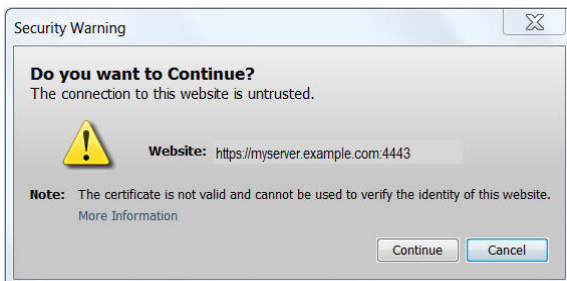
Tools > Options > Privacy & Security > Set Firefox will: Remember history

(History can be turned off again after trusting the certificate.)

3. Click the `Confirm Security Exception` button.

3.4.1 SSL 'Connection Untrusted' Warning Message

If you are using an SSL/TLS certificate that is not from a recognized Certificate Authority (CA), for example your own in-house CA, you may see the following pop-up when launching Java content:



To prevent this message from appearing, copy your SSL root certificate to the desktop and then import it into the Java 'Secure Site CA' certificate store:

Java Control Panel > Security (tab) > Manage Certificates (button) > Certificate Type: Secure Site CA > Import (button)

3.5 Firefox: Known Issues

[3.5.1 Associated Files Not Opened Automatically and Blank Tab Left Open](#)

[3.5.2 Browser Window Opens Behind the Forms Window](#)

[3.5.3 Multiple Sessions](#)

[3.5.4 Tab functionality in the Firefox Browser](#)

[3.5.5 Personal Homepage Setting](#)

[3.5.6 Rich Text Editing](#)

[3.5.7 Balanced Scorecard](#)

[3.5.8 Product Workbench](#)

[3.5.9 Projects Interface](#)

[3.5.10 XML Reports \(RTF file extensions\)](#)

[3.5.11 Firefox ESR 68.0, 68.1 & 78.0 Users](#)

[3.5.12 Generated Oracle Proposals Documents Are Downloaded With Incorrect Filenames](#)

3.5.1 Associated Files Not Opened Automatically and Blank Tab Left Open

Despite having previously ticked the 'Do this automatically for files like this from now on.' in the Firefox Save/Open pop-up window it continues to open when downloading files. Additionally a blank tab can be left in the browser window after closing the pop-up. This can be seen when downloading files through 'File > Export', for example.

To fix this issue, install the Firefox add-on "Inline Disposition 2". For JRE Plug-in users, this fixes both the Save/Open pop-up window and tab not closing issues. For JWS users, this fixes the Save/Open pop-up window issue but does not fix the tab not closing issue. This tab can be closed manually.

3.5.2 Browser Window Opens Behind the Forms Window

Opening an HTML page from the Forms navigator may cause the HTML window to open behind the navigator window when using Firefox.

This issue is fixed in JRE 1.6.0_30 (6u30) and later, with browser options set as follows:

```
Tools > Options > Content > Enable JavaScript (checked)
Tools > Options > Content > Enable JavaScript > Advanced... (button) > Raise or lower windows (checked)
Tools > Options > Tabs > Open new windows in a new tab instead (unchecked)
```

3.5.3 Multiple Sessions

You may only access a single Oracle E-Business Suite instance from a single desktop session when using the Firefox ESR browser. Currently *'Internet Explorer'* is the only browser that allows you to access multiple instances or multiple Application responsibilities concurrently from the same desktop session, through the use of multiple browser sessions.

3.5.4 Tab functionality in the Firefox Browser

Firefox uses tabbed browsing by default. Forms in Oracle E-Business Suite are supported and launched through a separate frame. Therefore, even with tabs enabled, the Forms navigator and the forms windows will continue to open in a new window and not in a new tab. This is the intended functionality.

3.5.5 Personal Homepage Setting

The ICX 'Personal Homepage' setting is not supported with the Firefox browser.

3.5.6 Rich Text Editing

The Cut, Copy and Paste buttons within the Rich text Editor on Oracle Application Framework do not work by default with Firefox ESR. This is due to a security feature within the browser. We recommend that the keyboard shortcut keys (which do still work by default) are used to obtain this functionality. If you still wish to use the buttons, this can be enabled by editing the user's Firefox preference file. Further information is available from the [Cut, Copy and Paste Buttons](#) and [Security preferences](#) pages.

3.5.7 Balanced Scorecard

The VB client is not supported when using Firefox.

3.5.8 Product Workbench

Product Workbench requires ActiveX controls which are not supported in Firefox ESR. If you need to run this product, use Internet Explorer with ActiveX controls enabled.

3.5.9 Projects Interface

Oracle Projects interface with Microsoft Projects through WebADI is only supported using Internet Explorer. Trying to use this functionality through Firefox ESR will display the following exception:

```
Exception Name: oracle.apps.bne.exception.BneFatalException - Viewer only available for Microsoft Internet Explorer.
```

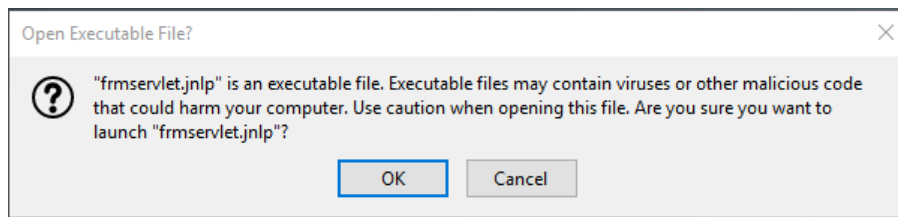
3.5.10 XML Reports (RTF file extensions)

Firefox ESR users cannot open .rtf format files through the browser. When clicking the 'OK' button on the 'Opening *.rtf' modal window the file will not open and the modal window will appear again. To enable these files to open on the desktop, use the following instructions to associate the .rtf file extension with a different program such as Wordpad or Microsoft Word:

1. Open Control Panel > Default Programs > Associate a file type or protocol with a program.
2. Select .rtf under the Name column from the list.
3. Click the 'Change Program' button.
4. Select an appropriate program, such as Wordpad.
5. Click the 'OK' button

3.5.11 Firefox ESR 68.0, 68.1 & 78.0 Users

In previous releases of Firefox ESR, setting the JNLP file to open with 'Java Web Start Launcher' within the browser allowed Java content to launch seamlessly when called. Due to a new security feature in Firefox 68.0 ESR, Firefox ESR 68.1 ESR and Firefox 78.0 ESR, this setting will now prompt the user with the following pop-up message: Click 'OK' to verify you wish to run the *.jnlp file to continue the launch process.



This issue is fixed in Firefox 68.2 ESR and later and Firefox ESR 78.1 and later, returning Firefox to the original behavior whereby the pop-up will no longer appear.

3.5.12 Generated Oracle Proposals Documents Are Downloaded With Incorrect Filenames

Impacts: Firefox ESR (Windows and macOS) with Oracle E-Business Suite Release 12.1

When downloaded to a client, a generated Oracle Proposals document (RTF file) is given an extraneous prefix that results in a file name such as "UTF-8'en-us'MyProposal.rtf" instead of "MyProposal.rtf". This behavior is only seen with Firefox ESR (Windows and macOS).

Solution: Apply patch <33137988:R12.PRP.B> for Oracle E-Business Suite Release 12.1.

Section 4: Chrome for Windows Users

[4.1 Chrome: Certification Information](#)

[4.2 Chrome: Prerequisite Patch Requirements](#)

[4.3 Chrome: Recommended Settings](#)

[4.4 Chrome: Known Issues](#)

4.1 Chrome: Certification Information

[4.1.1 Certification Summary for Chrome \(Windows\)](#)

[4.1.2 Certification Matrix for Windows Operating Systems and Oracle E-Business Suite Releases 12.2 and 12.1](#)

[4.1.3 Certification Matrix for Mobile Devices](#)

[4.1.4 Using Other Mobile Devices and Later Chrome Releases](#)

4.1.1 Certification Summary for Chrome (Windows)

- Chrome is certified for Oracle E-Business Suite customers running web-based (OA Framework/HTML) applications.
- Chrome is certified for running Java content using Java Web Start (JWS). Refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.
- Chrome does not support NPAPI, so is not certified for running Java content using the JRE Plug-in.

4.1.2 Certification Matrix for Windows Operating Systems and Oracle E-Business Suite Releases 12.2 and 12.1

The table below outlines the currently certified Windows operating system and JRE 8 releases for use with Java Web Start (JWS).

Browser	Windows 10 (32-bit and 64-bit)	Windows 8.1 (32-bit and 64-bit)
Chrome	JRE 8 (1.8.0_151 and later)	JRE 8 (1.8.0_151 and later)

New Chrome versions are scheduled to be released every six to eight weeks. Oracle is unable to test every new version of Chrome with the Oracle E-Business Suite but is expected to test selected Chrome releases on an ongoing basis.

Later Chrome releases are considered certified on release. Oracle will investigate any reported issues and attempt to reproduce the problem. We may then provide patches for reproducible issues, subject to technical feasibility. If an issue cannot be reproduced, customers may be advised to pursue one of the following options:

- Wait to see whether the next release of Chrome fixes the issue.
- Use a certified version of Internet Explorer or Firefox ESR.

Issues specific to other Chrome releases may still be documented as known issues.

4.1.3 Certification Matrix for Mobile Devices

Browser Version	Mobile Operating System	Certified Devices	Oracle E-Business Suite Release 12.2.4 and later	Oracle E-Business Suite Release 12.1.3
Chrome v35	Android v4.1 or later	Samsung Galaxy Tab (4.1.2)	Certified	Certified

4.1.4 Using Other Mobile Devices and Later Chrome Releases

Oracle E-Business Development uses Samsung and Nexus mobile devices in the certification testing cycles for Oracle E-Business Suite. These are our *reference devices*.

Customers may use other Android-based devices and later Chrome releases. Oracle will attempt to reproduce reported issues on our reference devices. Oracle may provide patches for reproducible issues, subject to technical feasibility.

If the issue cannot be reproduced using our reference devices, customers may be advised to:

- Wait and see whether the next release of Chrome fixes the issue.
- Consult their device vendor for guidance.
- Use a desktop client.

Device-specific issues that cannot be reproduced with our reference devices may be documented as known issues.

4.2 Chrome: Prerequisite Patch Requirements

Oracle E-Business Suite Release 12.2.4 and later

There are no patch requirements for Oracle E-Business Suite Release 12.2.4 and later.

Oracle E-Business Suite Release 12.1

Oracle E-Business Suite Release 12.1 users must apply [Patch 18936791](#):R12.FWK.B.delta.4 or later.

4.3 Chrome: Recommended Browser Settings

4.3.1 Pop-Up Blocker

Certain content within Oracle E-Business Suite requires pop-ups to function in the browser. If you are blocking pop-ups through your browser settings, add your URL (e.g. <https://example.com>) as an allowed exception under:

```
Settings > Privacy and security > Site Settings > Pop-ups and redirects > Allowed to send pop-ups and use redirects > Add (button)
```

4.3.2 Shared Desktop Security

If multiple users share the same desktop, they may be able to view a previous users browser content by pressing the 'Back' button on the browser. To avoid this issue, set the `Force Page Refresh` profile option to `Yes` at `Site` level in your Oracle E-Business Suite Release 12 instance.

4.3.3 JavaScript

Ensure JavaScript is enabled as follows:

Settings > Privacy and security > Site Settings > JavaScript > Sites can use Javascript (radio button)

4.4 Chrome: Known Issues

[4.4.1 Knowledge Management](#)

[4.4.2 MES for Discrete Manufacturing](#)

[4.4.3 Order Management](#)

[4.4.4 Product Workbench](#)

[4.4.5 Projects Interface](#)

[4.4.6 SSL Server Probably Obsolete](#)

[4.4.7 Hide Column \(EBS 12.2 Only\)](#)

[4.4.8 Tab Display \(EBS 12.1 Only\)](#)

[4.4.9 MRTE Display \(EBS 12.1 Only\)](#)

[4.4.10 SameSite Cookie Attribute with Chrome Stable Releases v80, v81, v83, v84 and later](#)

4.4.1 Knowledge Management

- You are unable to change the Solution Name when using Chrome. When trying to save the change the error "you do not have access to this solution. Contact your system administrator" is displayed, preventing the change.
- The 'Details' and 'Remove' columns cannot be hidden or removed in the 'Recommended Solutions' rich table when using Chrome. Despite clicking on the 'settings' icon, unchecking the tick marks against these columns and clicking anywhere on the screen, they are still displayed.

4.4.2 MES for Discrete Manufacturing

TIF or TIFF image attachment types are not opened by default when using the Chrome browser, but they are saved to downloads. To view the image, open it from downloads.

4.4.3 Order Management

Clicking on the navigator icon from within the 'Create Order' page causes the navigator tree to display outside the window.

4.4.4 Product Workbench

Product Workbench requires ActiveX controls which are not supported in Chrome. If you need to run this product use Internet Explorer with ActiveX controls enabled.

4.4.5 Projects Interface

Oracle Projects interface with Microsoft Projects through WebADI is only supported using Internet Explorer. Trying to use this functionality through Chrome will result in the following exception being displayed:

```
Exception Name: oracle.apps.bne.exception.BneFatalException - Viewer only available for Microsoft Internet Explorer.
```

4.4.6 SSL Server Probably Obsolete

Trying to open an SSL-enabled Oracle E-Business Suite environment from Chrome V45 or later may show the following error:

```
SSL server probably obsolete  
ERR_SSL_FALLBACK_BEYOND_MINIMUM_VERSION
```

To fix this issue, apply the appropriate Oracle Fusion Middleware 10.1.3.5 Oct 2015 CPU patch:

- UNIX Users: [Patch 21845960](#)
- Windows Server Users: [Patch 21845962](#)

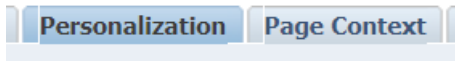
For further information, see My Oracle Support Knowledge [Document 2051000.1](#), *Oracle E-Business Suite Releases 11i and 12 Critical Patch Update Knowledge Document (October 2015)*.

4.4.7 Hide Column (EBS 12.2 Only)

The hide column function in the Framework toolkit does not respond on the first click after entering the page. Click a second time and the column is hidden correctly. A fix for this issue is currently in progress.

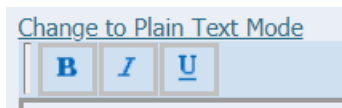
4.4.8 Tab Display (EBS 12.1 Only)

Tabs may display with a visible white vertical line in front of the leading letter in a tab. A fix for this issue is currently in progress.



4.4.9 MRTE Display (EBS 12.1 Only)

MRTE displays limited options when running through Edge. A fix for this issue is currently in progress.



4.4.10 SameSite Cookie Attribute with Chrome Stable Releases v80, v81, v83, v84 and later

For Chrome Stable channel users on Chrome versions 80, 81, 83, 84 and later, cookies will begin to default to SameSite=Lax. For more information regarding the new behavior being introduced with these versions of the browser, see [The Chromium Projects:SameSite Updates](#).

The new SameSite behavior change delivered with Chrome may impact Oracle E-Business Suite iProcurement Punchout functionality.

If you are using Oracle E-Business Suite Release 12.2 or 12.1.3 and have implemented the requirements for using the SameSite cookie attribute with Oracle E-Business Suite no additional action is required.

If you have not implemented the SameSite cookie attribute for Oracle E-Business Suite, the following options are available to ensure that iProcurement Punchout will continue to function as expected after the new SameSite behavior changes for Chrome:

Option 1: Enable the SameSite Cookie Attribute for Oracle E-Business Suite (recommended)

We recommend that you enable the SameSite cookie attribute for Oracle E-Business Suite. For more information on how to deploy the SameSite cookie attribute for Oracle E-Business Suite, refer to question, *Can I use the SameSite cookie attribute with Oracle E-Business Suite?* in My Oracle Support Knowledge Document <2063486.1>, *FAQ: Oracle E-Business Suite Security*.

Option 2: Implement the required steps for iProcurement Punchout

If you do not enable the SameSite cookie attribute for Oracle E-Business Suite you may alternatively implement the following requirements.

- Oracle E-Business Suite Release 12.2
 - Apply [Patch 31259179:R12.ICX.D](#)
 - Review and follow the instructions as required per your current ATG level:
 - If your ATG level is R12.ATG_PFC.DELTA.7 [Patch 24690680](#) or later: apply [Patch 29705896:R12.FND.C](#) and all prerequisites as defined in the patch README.
 - If your ATG level is R12.ATG_PFC.DELTA.6 [Patch 21900895](#): Manually add `/OA_HTML/jsp/icx/punchout/PunchoutCallBack.jsp` to `allowed_jsps_Procurement.conf`
 - If your ATG level is R12.ATG_PFC.DELTA.5 [Patch 19245366](#) and lower: no additional patch is required. No additional configuration is required.

- Oracle E-Business Suite Release 12.1.3
 - Apply [Patch 31286630:R12.ICX.B](#) and [Patch 31914956:R12.FND.B](#).

Section 5: Edge for Windows Users

[5.1 Edge: Certification Matrixes](#)

[5.2 Edge: Prerequisite Patch Requirements](#)

[5.3 Edge: Recommended Settings](#)

[5.4 Edge: Known Issues](#)

5.1 Edge: Certification Matrixes

5.1.1 Certification Summary for Edge

- Edge is certified for Oracle E-Business Suite customers running web-based (OA Framework/HTML) applications.
- Edge is certified for running Java content using Java Web Start (JWS). Refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.
- Edge does not support NPAPI, so is not certified for running Java content using the JRE Plug-in.

Note: Internet Explorer (IE) mode in Edge (Chromium) is **not** certified with Oracle E-Business Suite. (Enhancement Request [bug_33029490](#))

5.1.2 Certification Matrix for Windows Operating Systems and Oracle E-Business Suite Releases

The table below outlines the currently certified Desktop Client Operating System and minimum required JRE 8 releases for use with Java Web Start (JWS).

Browser	Windows 10 (32-bit and 64-bit)
Edge (Chromium) v83 and later	JRE 8 (1.8.0_241 and later)
Edge Legacy (up to v44)	JRE 8 (1.8.0_151 and later)

Edge (Chromium) versions (v83 and later) are scheduled to be released every six to eight weeks and are considered *certified* for E-Business Suite users upon release.

Oracle is unable to fully test every new version of Edge with Oracle E-Business Suite but is expected to test selected Edge releases on an ongoing basis. Oracle will investigate any new reported issues and attempt to reproduce the problem. We may then provide patches for reproducible issues, subject to technical feasibility. If an issue cannot be reproduced, customers may be advised to pursue one of the following options:

- Wait to see whether the next release of Edge fixes the issue.
- Use a certified version of Internet Explorer or Firefox ESR.

Issues specific to other Edge releases may still be documented as known issues.

5.2 Edge: Prerequisite Patch Requirements

Running Microsoft Edge requires the following patches (or later). Apply the patches and any prerequisites by following their READMEs as applicable to your Oracle E-Business Suite 12.2 or 12.1 release:

Browser	Oracle E-Business Suite Release 12.2	Oracle E-Business Suite Release 12.1
Edge General Patches	<ul style="list-style-type: none"> • Patch 21900895 R12.ATG_PFC.delta.6 	<ul style="list-style-type: none"> • Patch 9239090 12.1.3 Release Update Pack • Patch 22284589 R12.FWK.B.delta.5 • Patch 28446128:R12.FWK.B ¹
Edge v83 and later (Chromium Based)	<ul style="list-style-type: none"> • Patch 30800919:R12.FND.C 	<ul style="list-style-type: none"> • Patch 30800919:R12.FND.B

¹ [Patch 28446128:R12.FWK.B](#) includes a fix for better download file name handling when using Edge browser. This patch has since been superseded by [Patch 30793673:R12.FWK.B](#).

WebADI and FRM Users

For WebADI and FRM patch requirements and additional information, see My Oracle Support Knowledge [Document 1077728.1](#), *Microsoft Office Integration with Oracle E-Business Suite 11i and R12*.

5.3 Edge: Recommended Settings

5.3.1 Shared Desktop Security

If multiple users share the same desktop, they may be able to view a previous users browser content by pressing the 'Back' button on the browser. To avoid this issue, set the `Force Page Refresh` profile option to `Yes` at `Site` level in your Oracle E-Business Suite Release 12 instance.

5.4 Edge: Known Issues

The following issues apply to Edge (Chromium and legacy):

[5.4.1 Product Workbench](#)

[5.4.2 Projects Interface](#)

[5.4.3 Value and Supply Chain Planning](#)

The following issues are specific to Edge (Chromium) v83 and later:

[5.4.4 Hide Column \(EBS 12.2 Only\)](#)

[5.4.5 PPR Event Queing \(EBS Releases 12.2 and 12.1\)](#)

[5.4.6 Tab Display \(EBS Release 12.1 Only\)](#)

[5.4.7 MRTE Display \(EBS 12.1 Only\)](#)

[5.4.8 SameSite Cookie Attribute with Microsoft Edge \(Chromium\) v83, v84 and later](#)

5.4.1 Product Workbench

Product Workbench requires ActiveX controls which are not supported in Edge. If you need to run this product, use Internet Explorer with ActiveX controls enabled.

5.4.2 Projects Interface

Oracle Projects interface with Microsoft Projects through WebADI is only supported using Internet Explorer. Trying to use this functionality through Edge will result in the following exception being displayed:

```
Exception Name: oracle.apps.bne.exception.BneFatalException - Viewer only available for Microsoft Internet Explorer.
```

5.4.3 Value and Supply Chain Planning

Value Chain Planning and Supply Chain Planning are currently not certified with the Edge browser.

Issues Specific to Edge (Chromium) v83 and later

5.4.4 Hide Column (EBS 12.2 Only)

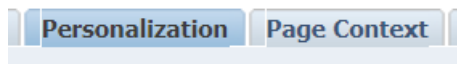
The hide column function in the Framework toolkit does not respond on the first click after entering the page. Click a second time and the column is hidden correctly. A fix for this issue is currently in progress.

5.4.5 PPR Event Queing (EBS Releases 12.2 and 12.1)

A PPR queued up action may not fire after clicking the submit button. In such cases clicking the submit button a second time will fire the event. A fix for this issue is currently in progress.

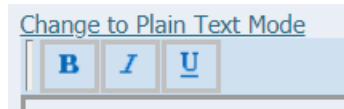
5.4.6 Tab Display (EBS Release 12.1 Only)

Tabs may display with a visible white vertical line in front of the leading letter in a tab. A fix for this issue is currently in progress.



5.4.7 MRTE Display (EBS 12.1 Only)

MRTE displays limited options when running through Edge. A fix for this issue is currently in progress.



5.4.8 SameSite Cookie Attribute with Microsoft Edge (Chromium) v83, v84 and later

With Microsoft Edge (Chromium) cookies will begin to default to SameSite=Lax. For more information regarding the new behavior being introduced with these versions of the browser; see [Site compatibility-impacting changes coming to Microsoft Edge](#).

The new SameSite behavior change delivered with Microsoft Edge (Chromium) may impact Oracle E-Business Suite iProcurement Punchout functionality.

If you are using Oracle E-Business Suite Release 12.2 or 12.1.3 and have implemented the requirements for using the SameSite cookie attribute with Oracle E-Business Suite no additional action is required.

If you have not implemented the SameSite cookie attribute for Oracle E-Business Suite, the following options are available to ensure that iProcurement Punchout will continue to function as expected after the new SameSite behavior changes for Chrome:

Option 1: Enable the SameSite Cookie Attribute for Oracle E-Business Suite (recommended)

We recommend that you enable the SameSite cookie attribute for Oracle E-Business Suite. For more information on how to deploy the SameSite cookie attribute for Oracle E-Business Suite, refer to question, *Can I use the SameSite cookie attribute with Oracle E-Business Suite?* in My Oracle Support Knowledge Document <2063486.1>, *FAQ: Oracle E-Business Suite Security*.

Option 2: Implement the required steps for iProcurement Punchout

If you do not enable the SameSite cookie attribute for Oracle E-Business Suite you may alternatively implement the following requirements.

- Oracle E-Business Suite Release 12.2
 - Apply [Patch 31259179:R12.ICX.D](#)
 - Review and follow the instructions as required per your current ATG level:
 - If your ATG level is R12.ATG_PFC.DELTA.7 [Patch 24690680](#) or later: apply [Patch 29705896:R12.FND.C](#) and all prerequisites as defined in the patch readme.
 - If your ATG level is R12.ATG_PFC.DELTA.6 [Patch 21900895](#): Manually add `/OA_HTML/jsp/icx/punchout/PunchoutCallBack.jsp` to `allowed_jsps_Procurement.conf`
 - If your ATG level is R12.ATG_PFC.DELTA.5 [Patch 19245366](#) and lower: no additional patch is required. No additional configuration is required.
- Oracle E-Business Suite Release 12.1.3
 - Apply [Patch 31286630:R12.ICX.B](#) and [Patch 31914956:R12.FND.B](#).

Section 6: Safari for macOS Users

6.1 Safari: Certification Matrix

6.1.1 Certification Summary for Safari (macOS)

Note: Safari 12 or later is not certified with Oracle E-Business Suite. These browser releases no longer support Legacy NPAPI plug-ins (except Adobe Flash), meaning you will no longer be able to run Java content using the JRE Plug-in. For further information, see [Safari 12 Implications for E-Business Suite Users](#).

- Safari is certified for Oracle E-Business Suite users running web-based (OA Framework/HTML) applications.
- Safari 11 is certified for running Java content using the JRE Plug-in. Refer to My Oracle Support Knowledge [Document 393931.1](#), *Deploying JRE (Native Plug-in) for Windows Clients in Oracle E-Business Suite Release 12*.
- Safari is not certified for running Java content using Java Web Start (JWS). Refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.

6.1.2 Certification Matrix for Safari and JRE Plug-in

The table below outlines the minimum certified macOS, Safari Browser, and JRE Plug-in releases for Oracle E-Business Suite Releases 12.2 and 12.1.

macOS	Safari Browser	JRE Plug-in
macOS High Sierra 10.13.3 (or later)	Safari 11 (11.0.3 and later)	JRE 8 (1.8.0_171 and later)
macOS Sierra 10.12.6 (or later)	Safari 11 (11.0.2 and later)	JRE 8 (1.8.0_171 and later)
OS X El Capitan 10.11.6 (or later)	Safari 11 (11.0.2 and later)	JRE 8 (1.8.0_121 and later)

For further information on the latest certification, required settings and other information, see My Oracle Support Knowledge [Document 1533334.1](#), *Oracle E-Business Suite Release Notes for Apple macOS Clients, Release 12*.

For Internationalization information, see My Oracle Support Knowledge [Document 393320.1](#), *Internationalization Update Notes for Release 12*.

Section 7: Common Requirements and Issues

[7.1 Running Multiple Sessions Using Java Web Start](#)

[7.2 Additional SSL/TLS Requirements for Java Web Start Users](#)

[7.3 WebADI and Report Manager Users](#)

7.1 Running Multiple Sessions Using Java Web Start

The functionality to enable running multiple sessions on a single E-Business Suite instance when using Java Web Start (JWS) is now available. For details and patch requirements, refer to My Oracle Support Knowledge [Document 2188898.1](#), *Using Java Web Start with Oracle E-Business Suite*.

7.2 Additional SSL/TLS Requirements for Java Web Start Users

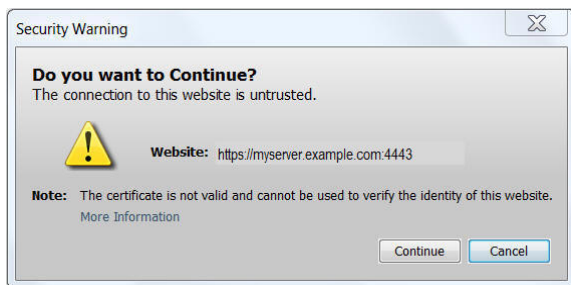
SSL/TLS users running Java Web Start (JWS) require a chain of trust to the Java certificate store for their server certificate on the desktop. This is in addition to the usual chain of trust to the browser.

If using a recognized certificate authority (CA) there should be no further requirements as the server certificate will already be included in the Java 'System' store by default.

If using your own in-house CA you must import the server root (and if applicable the intermediate) certificate into the Java 'Secure Site CA' certificate store through the Java Control Panel:

Java Control Panel > Security (tab) > Manage Certificates (button) > Certificate Type: Secure Site CA > Import (button)

Without this chain of trust you will see the following security warning stating that 'The connection to this website is untrusted' when trying to run Java content within Oracle E-Business Suite:



7.3 WebADI and Report Manager Users

For further information on additional patch requirements for WebADI and Report Manager against all certified browsers, see My Oracle Support Knowledge [Document 1077728.1](#), *Microsoft Office Integration with Oracle E-Business Suite 11i and R12*.

Section 8: References

You should also refer to the following My Oracle Support knowledge documents as needed.

- [Document 393320.1](#), *Internationalization Update Notes for Release 12*
- [Document 393931.1](#), *Deploying JRE (Native Plug-in) for Windows Clients in Oracle E-Business Suite Release 12*
- [Document 277535.1](#), *Recommended Set Up for Client/Server Products with Oracle E-Business Suite 11i and R12*
- [Document 1077728.1](#), *Microsoft Office Integration with Oracle E-Business Suite 11i and R12*
- [Document 1526099.1](#), *Using Apple iPads (iOS) with Oracle E-Business Suite Release 12*
- [Document 218898.1](#), *Using Java Web Start with Oracle E-Business Suite*
- [Document 2510500.1](#), *FAQ: Essentials of Java Usage in Oracle E-Business Suite*
- [Document 1533334.1](#), *Oracle E-Business Suite Release Notes for Apple macOS Clients, Release 12*
- [Document 1155883.1](#), *Oracle E-Business Suite Desktop Client Hardware and Software Requirements*

Change Log

Date	Description
2021-08-25	<ul style="list-style-type: none"> • Added macOS Big Sur certification to 3.1 Firefox ESR: Certification Information. • Added Patch 32612295:R12.BNE.C to 2.2 Internet Explorer 11: Prerequisite Patch Requirements. • Added Enhancement Request Bug 33029490 for Internet Explorer (IE) mode in Edge (Chromium) support to 5.1. Edge: Certification Matrixes. • Replaced Patch 28598365:R12.FWK.B with Patch 30793673:R12.FWK.B in 5.2 Edge: Prerequisite Patch Requirements. • Reformatted and restructured document to meet latest standards.
2020-11-02	<ul style="list-style-type: none"> • Updated patch requirements in Section 5.4.8.
2020-08-07	<ul style="list-style-type: none"> • Added Firefox Browser ESR 78.x for Oracle E-Business Suite Releases 12.2 and 12.1 to Firefox: Certification Matrixes.
2020-07-23	<ul style="list-style-type: none"> • Added SameSite Cookie Attribute information to Chrome and Edge Known Issues.
2020-07-21	<ul style="list-style-type: none"> • Added Edge (Chromium based) browser v83 and later certification to 5.1. Edge: Certification Matrixes.
2020-05-05	<ul style="list-style-type: none"> • Reformatted and restructured document to meet latest standards.
2020-04-07	<ul style="list-style-type: none"> • Added macOS Catalina (10.15) to macOS: Firefox Certification Matrix.

2020-01-14	<ul style="list-style-type: none"> Added mention of Microsoft ending support of Windows 7, and that those running this desktop operating system should refer to the third party software support lifecycle statement.
2020-01-09	<ul style="list-style-type: none"> Added alert for Chrome-based Microsoft Edge browser.
2019-10-23	<ul style="list-style-type: none"> Removed Firefox ESR 60.x Firefox: Certification Matrixes as this browser has reached end of life.
2019-10-02	<ul style="list-style-type: none"> Added Firefox Quantum ESR 68.x certification with macOS to Section 6: macOS Users.
2019-08-12	<ul style="list-style-type: none"> Added Firefox Quantum ESR 68.x for Oracle E-Business Suite Releases 12.2 and 12.1 to Firefox: Certification Matrixes.
2007-06-02	<ul style="list-style-type: none"> Initial publication.

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