



# Citrix Workspace app for Mac

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## About this release

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### Important

Starting with macOS Catalina, Apple has enforced extra requirements for root CA certificates and intermediate certificates which administrators must configure. For more information, see Apple Support article [HT210176](#).

### What's new in 2102

This release addresses several issues that help to improve overall performance and stability.

#### What's new in 2101

##### Apple silicon (M1 chip) support

Citrix Workspace app for Mac now supports Apple silicon devices (M1 chip) using Rosetta 2 on macOS Big Sur (11.0 and later). As a result, all third party virtual channels must use Rosetta 2. Otherwise, these virtual channels might not work in Citrix Workspace app for Mac on macOS Big Sur (11.0 and later). For more information about Rosetta, see the [Apple support article](#).

##### Microsoft Teams optimization support for seamless app sessions

Citrix Workspace app for Mac now supports Microsoft Teams optimization for seamless app sessions. As a result, you can launch Microsoft Teams as an application from within the Workspace app. For more information, see the following:

- [Optimization for Microsoft Teams](#)
- [Microsoft Teams redirection](#)

##### Support for Dual Tone Multi Frequency (DTMF) with Microsoft Teams

Citrix Workspace app for Mac now supports Dual Tone Multi Frequency (DTMF) signaling interaction with telephony systems (for example, PSTN) and conference calls in Microsoft Teams. This feature is enabled by default.

#### What's new in 2012

##### Apple silicon (M1 chip) support preview

Citrix Workspace app for Mac now supports Apple silicon devices (M1 chip) on a preview basis.

### **Screen sharing optimization with Microsoft Teams**

Citrix Workspace app for Mac now supports screen sharing optimization with Microsoft Teams. For more information, see the following:

- [Optimization for Microsoft Teams](#)
- [Microsoft Teams redirection](#)

### **Performance improvements**

This release addresses several issues that help to improve overall performance and stability.

### **What's new in 2010**

#### **Authentication enhancement**

To provide a seamless experience, the authentication dialog now appears inside Citrix Workspace app. The Store details appear on the logon screen. Authentication tokens are encrypted and stored so that you don't need to reenter the credentials in case of a system reboot or session restart.

**Note:**

This authentication enhancement is applicable only in cloud deployments.

#### **macOS Big Sur support**

Citrix Workspace app for Mac is supported on macOS Big Sur (11.0.1).

### **Performance improvements**

This release addresses several issues that help to improve overall performance and stability.

### **What's new in 2009**

#### **Optimization for Microsoft Teams (preview)**

Optimization for desktop-based Microsoft Teams using Citrix Virtual Apps and Desktops and Citrix Workspace app. Optimization for Microsoft Teams is similar to HDX RealTime Optimization for Microsoft Skype for Business. The difference is that we bundle all necessary components for Microsoft Teams optimization into the VDA and the Workspace app for Mac. Citrix Workspace app for Mac supports audio and video with Microsoft Teams optimization.

For more information, see the following:

- [Optimization for Microsoft Teams](#)

- [Microsoft Teams redirection](#)
- [Known issues](#)

### **Citrix Workspace app for Mac on macOS Big Sur Beta**

Citrix Workspace app 2009 for Mac has been tested on macOS Big Sur Beta 8. Please use this setup in a test environment and provide your [feedback](#). See the Known issues section for issues specific to macOS Big Sur Beta.

#### **Caution:**

Do not use Citrix Workspace app for Mac on macOS Big Sur Beta versions in production environments.

### **Kernel extensions for USB redirection**

Citrix Workspace app 2009 for Mac is no longer dependent on kernel extensions (KEXT) for USB redirection.

### **What's new in 2008**

#### **Performance improvements**

This release addresses several issues that help to improve overall performance and stability.

#### **macOS version support**

Citrix Workspace app 2008 for Mac is the last release that supports macOS versions High Sierra (10.13) and Mojave (10.14).

### **What's new in 2007**

#### **Performance improvements**

This release addresses several issues that help to improve overall performance and stability.

### **What's new in 2006**

#### **Update to Citrix Analytics Service**

Citrix Workspace app is instrumented to securely transmit data to Citrix Analytics Service from ICA sessions that you launch from a browser. For more information on how Citrix Analytics uses this information, see [Self-Service for Performance](#) and [Self-service search for Virtual Apps and Desktops](#).

### **H.264 support for webcam redirection**

Citrix Workspace app for Mac now supports the H.264 (also known as MPEG-4 AVC) video compression standard. As a result, 64-bit published apps can now use webcam redirection.

### **Stability improvements**

This release addresses a number of issues that help to improve overall stability.

### **What's new in 2005**

#### **Language support**

Citrix Workspace app for Mac is now available in the Italian language.

#### **Performance improvements**

- This release addresses several issues that help to improve overall performance and stability on the Citrix Workspace (Cloud stores).
- With this release, cloud users will notice shorter logon times and shorter app enumeration times.

### **What's new in 2002**

#### **4096-bit length keys in FIPS mode**

Citrix Workspace app for Mac now supports RSA keys of 4096-bit length in Federal Information Processing Standard Publication (FIPS 140) cryptography mode.

#### **Performance improvements**

This release addresses several issues that help to improve overall performance and stability.

### **What's new in 2001**

#### **App protection**

Citrix Workspace app for Mac now supports app protection. App protection is an add-on feature that provides enhanced security when using Citrix Virtual Apps and Desktops. The feature restricts the ability of clients to be compromised by keylogging and screen capturing malware. App protection prevents exfiltration of confidential information such as user credentials and sensitive information displayed on the screen. The feature prevents users and attackers from taking screenshots and from

using keyloggers to glean and exploit sensitive information. For information on app protection configuration on Citrix Virtual Apps and Desktops, see [App protection](#).

### **Known issues or limitations:**

For this feature to function properly, disable the **Client clipboard redirection** policy on the VDA.

### **Language support**

Citrix Workspace app for Mac is now available in the Portuguese (Brazil) language.

### **Enhanced third-party virtual channels loading**

Citrix Workspace app for Mac now supports superior loading of third-party virtual channels. This enhances the user experience in the following ways:

- Third-party virtual channels (for example, RealTime Media Engine) do not need to be installed again when you uninstall and then reinstall Citrix Workspace app.
- Users with standard account privileges can also have an Optimized Real Time Optimization Pack experience even when their RealTime Media Engine was installed by an administrator.

### **What's new in 1912**

#### **Workspace with intelligence**

This version of Citrix Workspace app for Mac is optimized to take advantage of the upcoming intelligent features when they are released. For more information, see [Workspace Intelligence Features - Microapps](#).

### **What's new in 1910.2**

This release resolves issues with Citrix Workspace Updates and macOS Catalina.

- Customers using Citrix Workspace app 1910 and 1910.1 for Mac must upgrade to Citrix Workspace app for Mac 1910.2 manually to receive future updates through Citrix Workspace Updates.
- Customers using Citrix Workspace app 1906 for Mac or earlier can get Citrix Workspace app 1910.2 for Mac through Citrix Workspace Updates.

### **What's new in 1910.1**

This release addresses several issues that help to improve overall performance and stability.

## What's new in 1910

### macOS Catalina support

Citrix Workspace app for Mac is supported on macOS Catalina.

**Note:**

When opening Citrix Workspace app for Mac and Citrix Viewer for the first time on macOS Catalina, the OS prompts users to allow notifications from Citrix Viewer. Click **Allow** to receive notifications related to Citrix Workspace app for Mac.

### Cipher suite update

The following cipher suites are deprecated for enhanced security:

- Cipher suites with prefix “TLS\_RSA\_”
- Cipher suites RC4 and 3DES
- TLS\_RSA\_WITH\_AES\_256\_GCM\_SHA384 (0x009d)
- TLS\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (0x009c)
- TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA256 (0x003d)
- TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA (0x0035)
- TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA (0x002f)
- TLS\_RSA\_WITH\_RC4\_128\_SHA (0x0005)
- TLS\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA (0x000a)

Citrix Workspace app for Mac supports only the following cipher suites:

- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384 (0xc030)
- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA384 (0xc028)
- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (0xc013)

For DTLS 1.0 users, Citrix Workspace app for Mac 1910 supports only the following cipher suite:

- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (0xc013)

Citrix recommends you to upgrade your NetScaler version to 12.1 or later if you want to use DTLS 1.0. Otherwise, it falls back to TLS based on the DDC policy. For more information, see Knowledge Center article [CTX250104](#).

### Citrix Casting updates

Citrix Casting now disconnects automatically when users close the laptop lid.

## What's new in 1906

### Citrix Casting updates



Control your session on the Citrix Ready workspace hub using peripheral devices. You can now use the keyboard and mouse on both the hub and the device to manage the session. For more information, see [Citrix Ready workspace hub](#).

### **Language support**

Citrix Workspace app for Mac is now available in the Dutch language.

### **What's new in 1903.1**

#### **Citrix Casting updates**

Citrix Casting has been updated throughout with new features and enhancements. For more information on Citrix Casting, see [Citrix Casting](#).

### **What's new in 1901**

This release addresses several issues that help to improve overall performance and stability.

### **What's new in 1812**

#### **Citrix Casting**

Citrix Casting is used to cast your Mac screen to nearby Citrix Ready workspace hub devices. In this release, support is provided to mirror your Mac screen to workspace hub connected monitors.

For more information on Citrix Casting, see [Configure Citrix Casting](#).

#### **Keyboard layout synchronization**

Starting with this release, Citrix Workspace app for Mac provides dynamic synchronization of the keyboard layout from the client to a Linux VDA in a session. This enables you to switch among preferred keyboard layouts on the client device, providing a consistent user experience when, for example, switching the keyboard layout from English to Spanish.

For more information on configuring keyboard layout, see [Keyboard layout](#). For more information on configuring keyboard layout sync on Linux VDAs, see [Dynamic keyboard layout synchronization](#).

#### **Enhanced client IME experience**

Starting with this release, Citrix Workspace app for Mac provides a better user experience with client IME input and Linux VDAs. Using this feature, you can see two improvements in client IME input:

- The candidate window with the list of composing characters always appears beside the insertion point rather than in the previous left-bottom corner location.
- The composed characters shown in the VDA are marked so that you do not confuse them with the determined characters.

This feature depends on the keyboard layout synchronization feature.

For more information on configuring this client IME enhancement, see [Enhanced client IME](#). For more information on configuring client IME on Linux VDA, see [Client IME user interface synchronization](#).

### **Selective H264**

Selective H264 allows parts of the screen that change rapidly, such as when playing a video, to be received as an H264 stream. To enable Selective H264, set the **Use Video Codec for Compression** policy to **For Actively Changing Regions**.

### **What's new in 1809**

#### **macOS Mojave support**

Citrix Workspace app for Mac fully supports macOS Mojave, including Dark Mode.

#### **WebApp support**

Secure Browser for Citrix Workspace app for Mac now supports cookies and redirects when using Citrix Gateway.

### **What's new in 1808**

#### **64-bit support**

Citrix Workspace app for Mac is now fully 64-bit compliant.

##### **Note:**

Users who upgrade to Citrix Workspace app will not have an optimized Skype for Business (Lync) experience due to a bitness mismatch. Citrix Workspace app for Mac is 64-bit, while the currently installed version of RTME is 32-bit. As a workaround, consider using the RTME preview release.

##### **Note:**

32-bit custom virtual channels no longer work and must be updated to 64-bit.

### **Federated authentication**

Citrix Workspace app for Mac now supports federated authentication through Azure Active Directory.

## Show or hide the remote language bar

Starting with this release, you can choose to show or hide the remote language bar in an application session using the GUI. The language bar displays the preferred input language in a session. In earlier releases, you can change this setting using only the registry keys on the VDA. Starting with Citrix Workspace app for Mac version 1808, you can change the settings using the **Preferences** dialog. The language bar appears in a session by default.

For more information, see [Configuration](#) and Knowledge Center article [CTX231913](#).

### Note:

This feature is available in sessions running on VDA 7.17 and later.

## Support for Citrix Analytics

Citrix Workspace app is instrumented to securely transmit logs to Citrix Analytics. The logs are analyzed and stored on Citrix Analytics when enabled. For more information about Citrix Analytics, see [Citrix Analytics](#) documentation.

## Fixed issues

### Fixed issues in 2102

This release also addresses several issues that help to improve overall performance and stability.

### Fixed issues in 2101

- Attempts to open a Microsoft Teams meeting using OWA (Outlook Web App) might fail, causing all related windows to exit unexpectedly. [CTXBR-1175]
- When you start a video call, Microsoft Teams might become unresponsive, displaying a **Citrix HDX not connected** error. [RFMAC-6727]
- On macOS Big Sur (11.0.1), attempts to connect USB devices might fail, causing the session to exit unexpectedly. [RFMAC-7079]
- In a published desktop, files saved to your local Mac device might display a file created date of 30 Nov 1979 instead of the current date. [CVADHELP-16309]
- Sometimes, the logon screen in published apps might not display properly, resulting in a reduced window size and red background color. [CVADHELP-16027]
- Audio calls might disconnect on your side when you disconnect and connect audio devices. [RFMAC-7371]

- Attempts to copy text from within Office 365 apps might succeed even when the clipboard restriction policy is enabled. [CTXBR-1166]
- Attempts to launch Microsoft Teams might fail due to issues with the HDX RealTime Connector engine and the following error message appears.

Sorry, we couldn't connect you

[CVADHELP-16432]

### Fixed issues in 2012

- When using Citrix Workspace app for Mac 2008 or later, attempts to launch multiple instances of a published application might fail. [CVADHELP-16019]
- Attempts to launch Generic USB redirection might fail when you use a USB docking station. [RFMAC-6687]
- Attempts to open a window using CTRL+O in published desktops might result in two open windows. [CVADHELP-15747]
- When using Citrix Workspace app for Mac on macOS Big Sur Beta, audio calls might disconnect. The issue occurs when you disconnect audio devices and connect different audio devices during an audio call. [RFMAC-6112]
- HDX RealTime Connector engine might exit unexpectedly when you turn the camera on and off in Microsoft Teams. [RFMAC-6293]
- Attempts to launch Citrix Files from within Workspace app for Mac might fail due to issues with single sign-on. [RFMAC-4477]

### Fixed issues in 2010

- Attempts to launch published desktops or applications might fail, displaying an error message. The issue occurs if your computer name contains special characters. [CVADHELP-15492]
- Attempts to sign in to published applications and desktop sessions might fail. The issue occurs when you use a mouse to click **OK** to sign in. [CVADHELP-15300]

### Fixed issues in 2009

This release also addresses several issues that help to improve overall performance and stability.

### Fixed issues in 2008

If you add the EULA on VDAs, attempts to launch published desktops might result in a gray or black screen. [CVADHELP-14986]

### Fixed issues in 2007

- When a user enables Enlightened Data Transport (EDT) on Citrix Gateway, issues in the client audio settings might cause Citrix Workspace app for Mac to exit unexpectedly. [CVADHELP-14686]
- When the Intel SDK is used on VDAs that have the **Use video codec for compression** policy enabled, attempts to launch published desktops might result in a green screen. [CVADHELP-13647]
- Attempts to get the WMI (Windows Management Instrumentation) latency data might fail in Citrix Workspace app for Mac versions 2002 and 2005. [RFMAC-4325]

### Fixed issues in 2006

- Attempts to sign in to Citrix Workspace app for Mac might fail, displaying an unrelated UI. As a workaround, click **Refresh apps** on the menu to load the store. [RFMAC-4063]

### Fixed issues in 2005

- Attempts to sign in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail, displaying the following error message: “Could not detect the specified account.” [CVADHELP-14155]
- Sometimes, the main window of a published instance of Microsoft Outlook might become black when its modal window is in focus. [CVADHELP-14169]

### Fixed issues in 2002

- Attempts to launch a session in Citrix Workspace app on macOS Catalina (10.15.2) using PIV smart cards might fail, displaying the following error message: “One or more root certificates is not valid.” [RFMAC-3365]
- Attempts to type in published apps (such as Notepad and so on) with the language set to Chinese or Japanese might fail. [RFMAC-3556]

### Fixed issues in 2001

- Attempts to launch published desktops with the 16 bpp maximum color depth policy enabled on a MacBook might display a gray screen and become unresponsive. [CVADHELP-13605]
- Attempts to paste screenshots taken in the DingTalk app into published instances of Microsoft Paint and Microsoft Word might fail, displaying a blank screen or an error message, respectively. [CVADHELP-13938]

### **Fixed issues in 1912**

- When using Citrix Workspace app for Mac versions 1812 or 1901, attempts to move published apps across the screen are slow to respond. [RFMAC-2300]
- Attempts to sign in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail. [RFMAC-2788]
- When using Citrix Workspace app for Mac version 1909, opening an .ICA file with non-English names might cause Citrix Viewer to exit unexpectedly. [RFMAC-2986]
- Attempts to launch published Microsoft Outlook and PowerShell apps are either unresponsive or slow to respond after upgrading Citrix Workspace app for Mac. [LD1192]
- Windows of published apps either do not update or are slow to update when you move them across the screen. [LD1485]

### **Fixed issues in 1910.2**

This release also addresses several issues that help to improve overall performance and stability.

### **Fixed issues in 1910.1**

- When using a MacBook Pro 2018 and later and FaceTime, users might see a green bar at the bottom of the video preview. [RFMAC-2317]
- Launching a session with a smartcard through Citrix Gateway might fail, displaying the error message “The remote SSL peer sent a handshake failure alert”. [RFMAC-2727]
- When SAML authentication is enabled, the authentication screen might be slow or unresponsive. As a workaround, restart the device. [RFMAC-3047]
- Denying automation permission after launching subscribed apps might cause Citrix Workspace app for Mac to become unresponsive. [RFMAC-3048]

### **Fixed issues in 1910**

- Copying text from Citrix Workspace app for Mac to another application might display incorrect characters. [RFMAC-2581]
- Signing in to Citrix Workspace app for Mac might take longer than expected. [RFMAC-2608]
- Using a proxy to connect might cause the proxy to exit unexpectedly. [RFMAC-2612]
- Mouse movements might be out of sync in seamless apps when using more than one monitor. [RFMAC-2623]
- Signing back into Citrix Workspace app for Mac might cause the app to exit unexpectedly. [RFMAC-2679]

- When you use the Command-Tab hotkey to switch tabs, the virtual desktop becomes unresponsive. [RFMAC-2691]
- Launching the ShareFile app fails when enhanced security is on. [RFMAC-2724]
- Citrix Viewer might consume an excessive amount of CPU. [RFMAC-2777]

### Fixed issues in 1906

- Smart card sessions might disconnect randomly. [RFMAC-1816, RFMAC-2313]
- Disconnected sessions might cause Citrix Workspace app for Mac to become unresponsive. [RFMAC-2137]
- The webview window displays over all applications. [RFMAC-2146]
- After waking a MacBook, Citrix Workspace app for Mac repeatedly prompts for authentication. [RFMAC-2161]
- When logging on, an error might appear to say the server cannot be found. [RFMAC-2192]
- Launching a webapp without single sign-on configured might cause a 401 error instead of prompting for credentials. [RFMAC-2194]
- Seamless application windows might disappear when moved to a secondary monitor. [RFMAC-2314]
- A “Page could not load” error page occasionally displays. [RFMAC-2322]
- Users might not be able to select menus when using the published Microsoft Outlook app. [RFMAC-2335]
- Using a webform might display an authentication error. [RFMAC-2349]
- When attempting to connect through Citrix Gateway and virtual server is configured to use signed Intermediate certificates, Citrix Workspace app for Mac exits unexpectedly with an SSL 61 error. [RFMAC-2393]
- Credentials for certain websites might clear, not allowing users to sign in. [RFMAC-2394]
- Launching an Outlook web app displays a blank page. [RFMAC-2395]
- When minimizing and maximizing seamless applications, the app might not redraw properly. [RFMAC-2411]
- Users might not be able to upload files to Jira when launched as a published app. [RFMAC-2467]

### Fixed issues in 1903.1

- Citrix Workspace app for Mac might exit unexpectedly when launching desktop sessions.
- Certain custom applications might not launch. [RFMAC-2081]
- When moving the Notepad app, the app might move to the background when two or more apps are active. [RFMAC-2107]
- When attempting to edit a Citrix Workspace store, the Citrix Files UI appears instead. [RFMAC-2111]

- When you click the dock icon after launching a seamless app but before the seamless app is ready, the session is no longer seamless. [RFMAC-2139]
- After waking a MacBook from sleep, Citrix Workspace repeatedly asks for authentication. [RFMAC-2161]
- After reconnecting to a seamless VDA session, the graphics in the session might be distorted. [RFMAC-2176]
- When using a local keyboard layout and a Japanese keyboard, deleting uncommitted typed characters might not work correctly. [RFMAC-2287]

### **Fixed issues in 1901**

- Apps might not launch after upgrading Citrix Workspace app for Mac. [RFMAC-2003]
- USB audio redirection might not work correctly. [RFMAC-2043]
- You cannot select drop-down menus in seamless versions of Microsoft Outlook. [RFMAC-2079]
- Sessions might become unresponsive when using seamless applications. [RFMAC-2083]
- Sessions might become unresponsive when minimizing or maximizing windows spanning multiple monitors. [RFMAC-2103]

### **Fixed issues in 1812**

- After checking a tooltip in a Microsoft Office application, a black area remains where the tooltip was displayed. [RFMAC-1793]
- Sessions might appear blurry when using a Retina display. [RFMAC-1944]
- Using the three finger swipe gesture on a trackpad in a session running on three monitors might not work correctly. [RFMAC-1968]
- Citrix Viewer might use App Nap when running in the background. [RFMAC-1979]
- After a network connection drops, the logon page might take longer than usual to reappear once reconnected to the network. [RFMAC-2001]
- Pressing Delete might delete more than one character. [RFMAC-2011]
- VDAs with EDT enabled might become unresponsive when playing YouTube videos for more than three minutes. [RFMAC-2017]
- If the Citrix Receiver Launcher is registered with Google Chrome, upgrading to Citrix Workspace app doesn't allow session launches from Chrome. [RFMAC-2020]
- The Use Video Codec for Compression policy might not work correctly. [RFMAC-2021]

### **Fixed issues in 1809**

- Sessions that have reconnected might not stay connected. [RFMAC-1823]



### Fixed issues in 1808

- On dual GPU Macs, the client might use the discrete GPU on battery power instead of the more power efficient integrated GPU. [RFMAC-1439]
- The client might not upgrade correctly when installed with JamF. [RFMAC-1523]
- USB devices might not appear in a session when attempting to use them for generic USB redirection. [RFMAC-1592]
- Checking for client updates might fail with a “Problem Checking for Updates” error. [RFMAC-1589]
- When more than one published app window is open, activating a published application window can result in a different published app window coming to the foreground. [RFMAC-1696]

### Known issues

#### Known issues in 2102

No new issues have been observed in this release.

#### Known issues in 2101

- Attempts to access files under Network Shares from within Workspace app for Mac might fail even when the option is enabled. [RFMAC-7272]
- On macOS Big Sur, attempts to launch the web SAML single sign-on app on Citrix Workspace app for Mac might fail, displaying the following error message.

Page could not load. Please **try** again later or contact your administrator **for** assistance. Incident ID:-202

[RFMAC-7282]

#### Known issues in 2012

- When you start a video call, Microsoft Teams might become unresponsive, displaying a **Citrix HDX not connected** error. As a workaround, restart Microsoft Teams or the VDA. [RFMAC-6727]
- Video calls on Microsoft Skype for Business are not supported on macOS Big Sur (11.0.1).
- On macOS Big Sur (11.0.1), attempts to connect USB devices might fail, causing the session to exit unexpectedly. As a workaround, reconnect the USB device. [RFMAC-7079]

#### Known issues in 2010

- On Skype for Business, incoming video is not visible on macOS Big Sur (11.0.1).

- When using Citrix Workspace app for Mac 2008 or later, attempts to launch multiple instances of a published application might fail. [CVADHELP-16019]
- Attempts to launch Generic USB redirection might fail when you use a USB docking station. [RFMAC-6687]
- When using a MacBook Pro 2018 and later and FaceTime, users might see a green, black, or a distorted rectangular bar at the bottom of the video preview. [RFMAC-2829]

### **Known issues in 2009**

#### **macOS Big Sur Beta**

- In a cloud deployment, published desktops might launch with a mismatch in background color. The issue occurs intermittently on some macOS Big Sur Beta versions. [RFMAC-6343]
- The installer icon for Citrix Workspace app for Mac might be missing when you open the **Citrix-WorkspaceApp.dmg** file. The issue occurs intermittently on some macOS Big Sur Beta versions. [RFMAC-6378]

#### **Optimization for Microsoft Teams (preview)**

- Only third-party applications (for example, Microsoft PowerPoint) can be shared when you use screen sharing in Microsoft Teams on Citrix Workspace app for Mac. However, incoming screen sharing is fully supported. [RFMAC-3403]
- HDX RealTime Connector engine might exit unexpectedly when you turn the camera on and off in Microsoft Teams. [RFMAC-6293]
- HDX RealTime Connector engine might exit unexpectedly when you switch camera devices on an optimized video call in Microsoft Teams. [RFMAC-6157]
- Audio and video calls might disconnect when you switch networks in Microsoft Teams. [RFMAC-6292]
- When using Citrix Workspace app for Mac on macOS Big Sur Beta, audio calls might disconnect. The issue occurs when you disconnect audio devices and connect different audio devices during an audio call. [RFMAC-6112]

### **Known issues in 2008**

No new issues have been observed in this release.

### **Known issues in 2007**

No new issues have been observed in this release.

### **Known issues in 2006**

No new issues have been observed in this release.

### **Known issues in 2005**

- Attempts to sign in to Citrix Workspace app for Mac might fail, displaying an unrelated UI. As a workaround, click **Refresh apps** on the menu to load the store. [RFMAC-4063]

### **Known issues in 2002**

- Citrix Workspace app for Mac supports webcam redirection only for 32-bit published apps. As a result, webcam redirection for the 64-bit published Microsoft Teams app is not supported. [RFMAC-2199]
- Citrix Workspace app for Mac does not support high DPI (Retina) displays. As a result, text might appear blurry on those devices. [RFMAC-650]
- Attempts to sign in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail, displaying the following error message: “Could not detect the specified account.” [CVADHELP-14155]

### **Known issues in 2001**

- Attempts to sign in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail, displaying the following error message: “Could not detect the specified account.” [CVADHELP-12609]
- Attempts to launch a session in Citrix Workspace app on macOS Catalina (10.15.2) using PIV smart cards might fail, displaying the following error message: “One or more root certificates is not valid.” [RFMAC-3365]

### **Known issues in 1912**

No new issues have been observed in this release.

### **Known issues in 1910.2**

- Signing in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail. [RFMAC-2788]

### **Known issues in 1910.1**

- Signing in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail. [RFMAC-2788]

### **Known issues in 1910**

- When using a MacBook Pro 2018 and later and FaceTime, users might see a green bar at the bottom of the video preview. [RFMAC-2317]
- Launching a session with a smartcard through Citrix Gateway might fail, displaying the error message “The remote SSL peer sent a handshake failure alert”. [RFMAC-2727]
- Signing in to Citrix Workspace app on macOS Catalina using PIV smart cards might fail. [RFMAC-2788]
- When SAML authentication is enabled, the authentication screen might be slow or unresponsive. As a workaround, restart the device. [RFMAC-3047]
- Denying automation permission after launching subscribed apps might cause Citrix Workspace app for Mac to become unresponsive. As a workaround, go to **System Preferences > Security and Privacy > Privacy > Automation** and allow permissions for Citrix Viewer.app, Citrix Workspace.app, and all subscribed apps. [RFMAC-3048]

### **Known issues in 1906**

- When using a MacBook Pro 2018 and later and FaceTime, users might see a green bar at the bottom of the video preview. [RFMAC-2317]

### **Known issues in 1903.1**

- Smart card sessions might disconnect randomly. [RFMAC-1816]
- When logging on, an error might appear to say the server cannot be found. [RFMAC-2192]
- When using a MacBook Pro 2018 and later and FaceTime, users might see a green bar at the bottom of the video preview. [RFMAC-2317]

### **Known issues in 1901**

- Smart card sessions might disconnect randomly. [RFMAC-1816]

### **Known issues in 1812**

- Smart card sessions might disconnect randomly. [RFMAC-1816]
- USB audio redirection might not work correctly. [RFMAC-2043]

### **Known issues in 1809**

- App and desktop sessions might not launch when using Safari version 12. As a workaround, see Knowledge Center article [CTX238286](#). After the workaround, Safari asks for permissions which users have to allow every time to launch sessions.

### **Known issues in 1808**

- When an error occurs with an app using Secure SaaS, the error that appears inside the browser is not localized. [RFMAC-1836]

### **Third-party notices**

Citrix Workspace app might include third-party software licensed under the terms defined in the following document:

[Citrix Workspace app for Mac Third-Party Notices](#)

## **Prerequisites to install Citrix Workspace app**

March 5, 2021

### **System requirements and compatibility**

#### **Supported operating systems**

Citrix Workspace app for Mac supports the following operating systems:

- macOS Big Sur (11.2.2)
- macOS Big Sur (11.0.1 and 11.1)
- macOS Catalina (10.15)

#### **Compatible Citrix products**

Citrix Workspace app for Mac is compatible with all currently supported versions of the following Citrix products. For information about the Citrix product lifecycle, and to find out when Citrix stops supporting specific versions of products, see the [Citrix Product Lifecycle Matrix](#).

## Compatible browsers

Citrix Workspace app for Mac is compatible with the following browsers:

- Safari 7.0 and later
- Mozilla Firefox 22.x and later
- Google Chrome 28.x and later

## Hardware requirements

- 257.7 MB of free disk space
- A working network or Internet connection to connect to servers

## Software requirements

- Web Interface:
  - Web Interface 5.4 for Windows with XenApp Services sites, for access to applications natively from Citrix Workspace app for Mac rather than from a web browser.
- To deploy Citrix Workspace app for Mac:
  - Citrix Workspace for Web 2.1, 2.5 and 2.6
  - Citrix Web Interface 5.4
- StoreFront:  
StoreFront 2.x or later for access to applications natively from Citrix Workspace app for Mac or from a web browser.

## Connections, Certificates, and Authentication

### Connections

Citrix Workspace app for Mac supports the following connections to Citrix Virtual Apps and Desktops:

- HTTP
- HTTPS
- ICA-over-TLS

Citrix Workspace app for Mac supports the following configurations:

---

For LAN connections	For secure remote or local connections
StoreFront using StoreFront services or Citrix Receiver for Web site; Web Interface 5.4 for Windows, using XenApp Services sites	Citrix Gateway 10.5–12.0, including VPX; Enterprise Edition 9.x-10.x, including VPX; VPX; Citrix Secure Web Gateway 3.x (for use with Web Interface only)

---

## Certificates

### Private (Self-signed) certificates

If a private certificate is installed on the remote gateway, the root certificate for the organization's certificate authority must be installed on the user device. Then, you can successfully access Citrix resources using Citrix Workspace app for Mac.

#### Note:

If the remote gateway's certificate cannot be verified upon connection (because the root certificate is not included in the local keystore), an untrusted certificate warning appears. When a user chooses to continue through the warning, a list of applications is displayed. However, applications fail to launch.

### Importing root certificates on Citrix Workspace app for Mac devices

Obtain the certificate issuer's root certificate and email it to an account configured on your device. When clicking the attachment, you are asked to import the root certificate.

### Wildcard certificates

Wildcard certificates are used in place of individual server certificates for any server within the same domain. Citrix Workspace app for Mac supports wildcard certificates.

### Intermediate certificates with Citrix Gateway

If your certificate chain includes an intermediate certificate, the intermediate certificate must be mapped to the Citrix Gateway server certificate. For information on this task, see [Citrix Gateway](#) documentation. For more information about installing and linking an intermediate certificate with Primary CA on a Citrix Gateway appliance, refer [How to Install and Link Intermediate Certificate with Primary CA on Citrix Gateway](#).

### Joint Server Certificate Validation Policy

Citrix Workspace app for Mac has a stricter validation policy for server certificates.

#### Important

Before installing this version of Citrix Workspace app for Mac, confirm that the certificates at the server or gateway are correctly configured as described here. Connections can fail if:

- the server or gateway configuration includes a wrong root certificate
- the server or gateway configuration does not include all intermediate certificates

- the server or gateway configuration includes an expired or otherwise invalid intermediate certificate
- the server or gateway configuration includes a cross-signed intermediate certificate

When validating a server certificate, Citrix Workspace app for Mac now uses **all** the certificates supplied by the server (or gateway) when validating the server certificate. As in previous Citrix Workspace app for Mac releases, it then also checks that the certificates are trusted. If the certificates are not all trusted, the connection fails.

This policy is stricter than the certificate policy in web browsers. Many web browsers include a large set of root certificates that they trust.

The server (or gateway) must be configured with the correct set of certificates. An incorrect set of certificates might cause Citrix Workspace app for Mac's connection to fail.

Suppose a gateway is configured with these valid certificates. This configuration is recommended for customers who require stricter validation, by determining exactly which root certificate is used by Citrix Workspace app for Mac:

- "Example Server Certificate"
- "Example Intermediate Certificate"
- "Example Root Certificate"

Then, Citrix Workspace app for Mac checks that all these certificates are valid. Citrix Workspace app for Mac also checks that it already trusts "Example Root Certificate". If Citrix Workspace app for Mac does not trust "Example Root Certificate," the connection fails.

### **Important**

Some certificate authorities have more than one root certificate. If you require this stricter validation, make sure that your configuration uses the appropriate root certificate. For example, there are currently two certificates ("DigiCert"/"GTE CyberTrust Global Root," and "DigiCert Baltimore Root"/"Baltimore CyberTrust Root") that can validate the same server certificates. On some user devices, both root certificates are available. On other devices, only one is available ("DigiCert Baltimore Root"/"Baltimore CyberTrust Root"). If you configure "GTE CyberTrust Global Root" at the gateway, Citrix Workspace app for Mac connections on those user devices fail. Consult the certificate authority's documentation to determine which root certificate must be used. Also note that root certificates eventually expire, as do all certificates.

### **Note**

Some servers and gateways never send the root certificate, even if configured. Stricter validation is then not possible.

Now suppose a gateway is configured with these valid certificates. This configuration, omitting the root certificate, is normally recommended:



- “Example Server Certificate”
- “Example Intermediate Certificate”

Then, Citrix Workspace app for Mac uses these two certificates. It then searches for a root certificate on the user device. If it finds one that validates correctly, and is also trusted (such as “Example Root Certificate”), the connection succeeds. Otherwise, the connection fails. This configuration supplies the intermediate certificate that Citrix Workspace app for Mac needs, but also allows Citrix Workspace app for Mac to choose any valid, trusted, root certificate.

Now suppose a gateway is configured with these certificates:

- “Example Server Certificate”
- “Example Intermediate Certificate”
- “Wrong Root Certificate”

A web browser might ignore the wrong root certificate. However, Citrix Workspace app for Mac does not ignore the wrong root certificate, and the connection fails.

Some certificate authorities use more than one intermediate certificate. In this case, the gateway is normally configured with all the intermediate certificates (but not the root certificate) such as:

- “Example Server Certificate”
- “Example Intermediate Certificate 1”
- “Example Intermediate Certificate 2”

### **Important**

Some certificate authorities use a cross-signed intermediate certificate. This is intended for situations when there is more than one root certificate. An earlier root certificate is still in use at the same time as a later root certificate. In this case, there will be at least two intermediate certificates. For example, the earlier root certificate “Class 3 Public Primary Certification Authority” has the corresponding cross-signed intermediate certificate “Verisign Class 3 Public Primary Certification Authority - G5.” However, a corresponding later root certificate “Verisign Class 3 Public Primary Certification Authority - G5” is also available, which replaces “Class 3 Public Primary Certification Authority.” The later root certificate does not use a cross-signed intermediate certificate.

### **Note**

The cross-signed intermediate certificate and the root certificate have the same Subject name (Issued To), but the cross-signed intermediate certificate has a different Issuer name (Issued By). This distinguishes the cross-signed intermediate certificate from an ordinary intermediate certificate (such as “Example Intermediate Certificate 2”).

This configuration, omitting the root certificate and the cross-signed intermediate certificate, is normally recommended:

- “Example Server Certificate”
- “Example Intermediate Certificate”

Avoid configuring the gateway to use the cross-signed intermediate certificate, as it selects the earlier root certificate:

- “Example Server Certificate”
- “Example Intermediate Certificate”
- “Example Cross-signed Intermediate Certificate” [not recommended]

It is not recommended to configure the gateway with only the server certificate:

- “Example Server Certificate”

In this case, if Citrix Workspace app for Mac cannot locate all the intermediate certificates, the connection fails.

### Authentication

For connections to StoreFront, Citrix Workspace app for Mac supports the following authentication methods:

	Workspace for Web using browsers	StoreFront Services site (native)	StoreFront XenApp Services site (native)	Citrix Gateway to Workspace for Web (browser)	Citrix Gateway to StoreFront Services site (native)
Anonymous	Yes	Yes			
Domain	Yes	Yes		Yes*	Yes*
Domain pass-through					
Security token				Yes*	Yes*
Two-factor (domain with security token)				Yes*	Yes*
SMS				Yes*	Yes*
Smart card	Yes	Yes		Yes*	Yes

## Citrix Workspace app for Mac

	Workspace for Web using browsers	StoreFront Services site (native)	StoreFront XenApp Services site (native)	Citrix Gateway to Workspace for Web (browser)	Citrix Gateway to StoreFront Services site (native)
User certificate				Yes	Yes (Citrix Gateway Plug-in)

\*Available only for Citrix Receiver for Web sites and for deployments that include Citrix Gateway, with or without installing the associated plug-in on the device.

For connections to Web Interface 5.4, Citrix Workspace app for Mac supports the following authentication methods:

**Note:**

Web Interface uses the term Explicit to represent domain and security token authentication.

	Web Interface (browsers)	Web Interface XenApp Services site	Citrix Gateway to Web Interface (browser)	Citrix Gateway to Web Interface XenApp Services site
Anonymous	Yes			
Domain	Yes	Yes	Yes	Yes
Domain pass-through				
Security token			Yes*	Yes
Two-factor (domain with security token)			Yes*	Yes
SMS			Yes*	Yes
Smart card	Yes		Yes	
User certificate			Yes (Require Citrix Gateway Plug-in)	Yes (Require Citrix Gateway Plug-in)

\* Available only in deployments that include Citrix Gateway, with or without installing the associated plug-in on the device.

## Install, Uninstall, and Upgrade

July 21, 2020

Citrix Workspace app for Mac contains a single installation package and supports remote access through Citrix Gateway, and Secure Web Gateway.

You can install Citrix Workspace app for Mac in any of the following ways:

- From the Citrix website
- Automatically from Workspace for Web
- Using an Electronic Software Distribution (ESD) tool.

### Manual install

#### By a user from Citrix.com

As a first-time user, you can download Citrix Workspace app for Mac from Citrix.com or your own download site. You can then set up an account by entering an email address instead of a server URL. Citrix Workspace app for Mac determines the Citrix Gateway or StoreFront server associated with the email address. Then it prompts the user to log on and continue the installation. This feature is referred to as email-based account discovery.

**Note:**

A first-time user is a user who does not have Citrix Workspace app for Mac installed on their user device.

Email-based account discovery for a first-time user does not apply if you have downloaded from a location other than Citrix.com (such as a Citrix Receiver for Web site).

If your site requires the configuration of Citrix Workspace app for Mac, use an alternate deployment method.

#### Using an Electronic Software Distribution (ESD) tool

A first-time Citrix Workspace app for Mac user must enter a server URL to set up an account.

### From Citrix Downloads page

You can install Citrix Workspace app for Mac from a network share, or directly on to the user device. You can do this by downloading the file from the Citrix website at <http://www.citrix.com>.

To install Citrix Workspace app for Mac:

1. Download the .dmg file for the version of Citrix Workspace app for Mac you want to install from the Citrix website. Open it.
2. On the Introduction page, click **Continue**.
3. On the **License** page, click **Continue**.
4. Click **Agree** to accept the terms of the License Agreement.
5. On the **Installation Type** page, click **Install**.
6. Enter the user name and password of an administrator on the local device.

### Uninstall

You can uninstall Citrix Workspace app for Mac manually by opening the .dmg file. Select **Uninstall Citrix Workspace App** and follow the on-screen instructions. The .dmg file is the file that is downloaded from Citrix when installing Citrix Workspace app for Mac for the first time. If the file is no longer on your computer, download the file again from [Citrix Downloads](#) to uninstall the application.

### Upgrade

Citrix Workspace app for Mac sends you notifications when there is an update available for an existing version or an upgrade to a newer version. Alternatively, you can also right-click on the Citrix Workspace app icon and click **Check for Updates** to find out whether updates or upgrades are available.

You can upgrade Citrix Workspace app for Mac from any of the previous versions of Citrix Workspace app for Mac.

When you perform an upgrade to a newer version of Citrix Workspace app for Mac, the previous version is uninstalled automatically. You do not need to restart your machine.

### Configure

February 3, 2021

After the Citrix Workspace app for Mac software is installed, the following configuration steps allow users to access their hosted applications and desktops.

Users might connect from the Internet or from remote locations. For those users, configure the authentication through Citrix Gateway.

### **Content Collaboration Service integration**

Citrix Content Collaboration enables you to easily and securely exchange documents, send large documents by email, securely handle document transfers to third parties, and access a collaboration space.

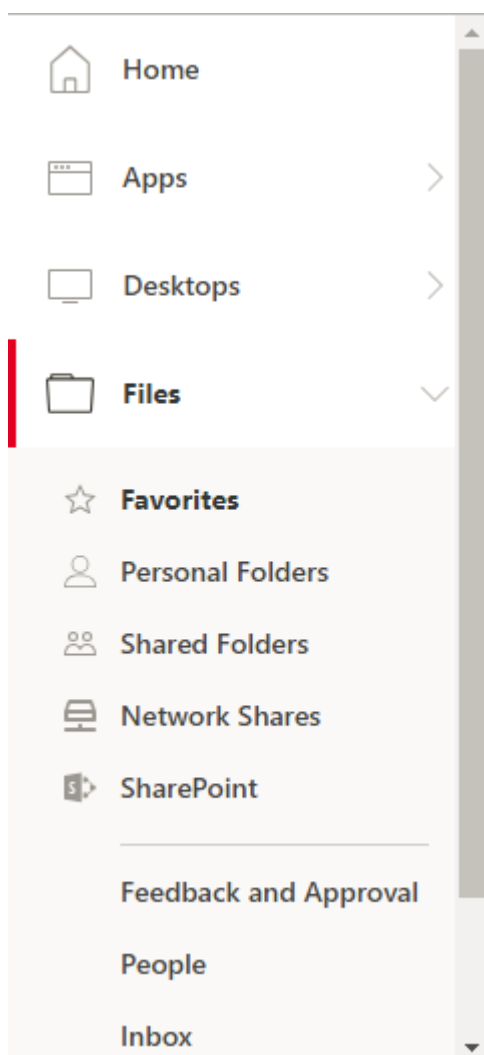
Citrix Content Collaboration provides many ways to work, including a web-based interface, mobile clients, desktop apps, and integration with Microsoft Outlook and Gmail.

You can access Citrix Content Collaboration functionality from the Citrix Workspace app using the **Files** tab displayed within Citrix Workspace app. You can view the **Files** tab only if Content Collaboration Service is enabled in the Workspace configuration in the Citrix Cloud console.

**Note:**

Citrix Content Collaboration integration in Citrix Workspace app is not supported on Windows Server 2012 and Windows Server 2016. This is due to a security option set in the operating system.

The following image displays the example contents of the **Files** tab of the new Citrix Workspace app:



### Limitations

- Resetting Citrix Workspace app does not cause Citrix Content Collaboration to log off.
- Switching stores in Citrix Workspace app does not cause Citrix Content Collaboration to log off.

### USB redirection

HDX USB device redirection enables redirection of USB devices to and from a user device. For example, a user can connect a flash drive to a local computer and access it remotely from a virtual desktop or a desktop hosted application.

During a session, users can plug and play devices, including Picture Transfer Protocol (PTP) devices. For example:

- Digital cameras, Media Transfer Protocol (MTP) devices such as digital audio players or portable media players

- Point-of-sale (POS) devices, and other devices such as 3D Space Mice, Scanners, Signature Pads and so on.

**Note:**

Double-hop USB is not supported for desktop hosted application sessions.

USB redirection is available for the following:

- Windows
- Linux
- Mac

By default, USB redirection is allowed for certain classes of USB devices, and denied for others. You can restrict the types of USB devices made available to a virtual desktop by updating the list of USB devices supported for redirection. More information is provided later in this section.

**Tip**

In environments where security separation between the user device and server is needed, Citrix recommends that users are informed about the types of USB devices to avoid.

Optimized virtual channels are available to redirect most popular USB devices, and provide superior performance and bandwidth efficiency over a WAN. Optimized virtual channels are usually the best option, especially in high latency environments.

**Note:**

For USB redirection purposes, Citrix Workspace app for Mac handles a SMART board the same as a mouse.

The product supports optimized virtual channels with USB 3.0 devices and USB 3.0 ports. For example, a CDM virtual channel is used to view files on a camera or to provide audio to a headset. The product also supports Generic USB Redirection of USB 3.0 devices connected to a USB 2.0 port.

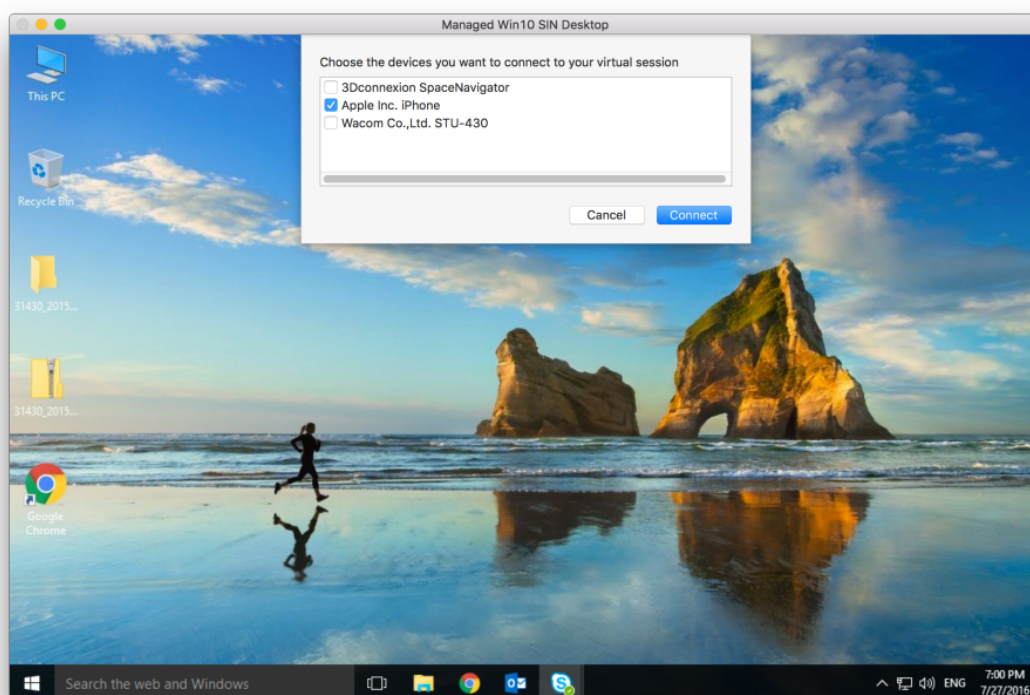
Some advanced device-specific features, such as Human Interface Device (HID) buttons on a webcam, might not work as expected with the optimized virtual channel. If this is an issue, use the Generic USB virtual channel.

Certain devices are not redirected by default, and are only available to the local session. For example, it would not be appropriate to redirect a NIC that is directly attached via internal USB.

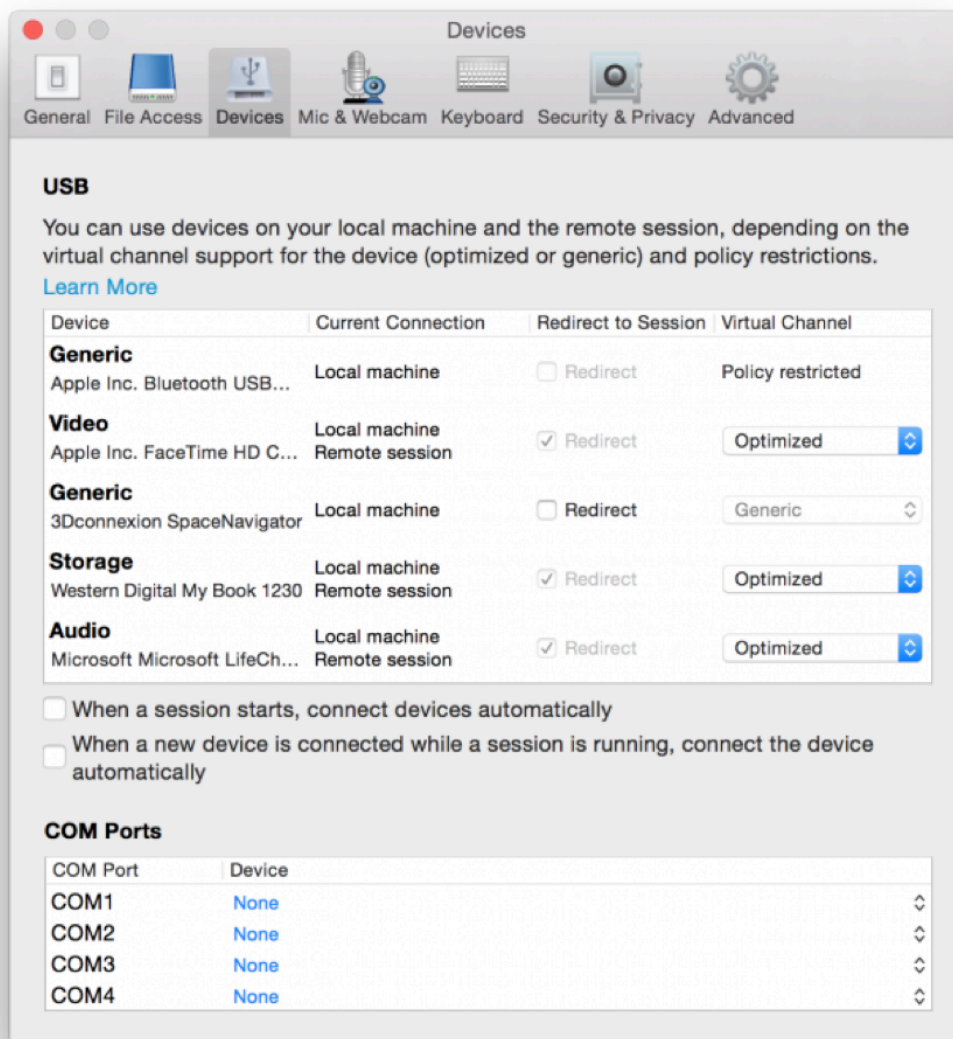
To use USB redirection:

1. Connect the USB device to the device where Citrix Workspace app for Mac is installed.
2. You are prompted to select the available USB devices on your local system.

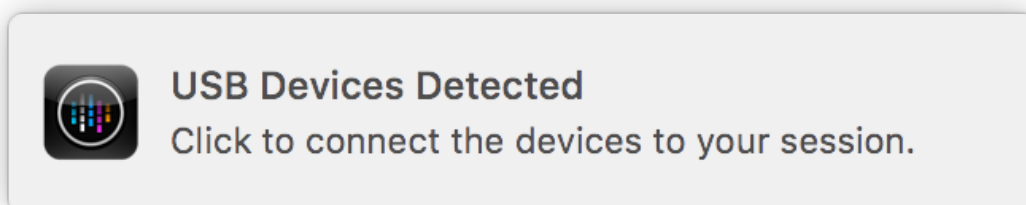




3. Select the device you want to connect and click **Connect**. If the connection fails, an error message appears.
4. In the **Preferences** window **Devices** tab, the connected USB device is listed in the USB panel:



5. Select the type of virtual channel (Generic or Optimized) for the USB device.
6. A message is displayed. Click to connect the USB device to your session:



## Use and remove USB devices

Users can connect a USB device before or after starting a virtual session. When using Citrix Workspace app for Mac, the following apply:

- Devices connected after a session starts immediately appear in the USB menu of the Desktop Viewer.
- If a USB device is not redirecting properly, sometimes you can resolve the problem by waiting to connect the device until after the virtual session has started.
- To avoid data loss, use the **Windows Safe** removal menu before removing the USB device.

## Enlightened Data Transport (EDT)

By default, EDT is enabled in Citrix Workspace app for Mac.

Citrix Workspace app for Mac reads the **EDT** settings as set in the default.ica file and applies it accordingly.

To disable EDT, run the following command in a terminal:

```
defaults write com.citrix.receiver.nomas HDXOverUDPAAllowed -bool NO
```

## Session reliability and auto client reconnect

Session reliability keeps sessions active and on the user's screen when network connectivity is interrupted. Users continue to see the application that they are using until network connectivity resumes.

With session reliability, the session remains active on the server. To indicate that connectivity is lost, the user's display freezes until connectivity resumes on the other side of the tunnel. The user continues to access the display during the interruption and can resume interacting with the application when the network connection is restored. Session reliability reconnects users without reauthentication prompts.

### Important

- Citrix Workspace app for Mac users cannot override the server setting.
- If Session Reliability is enabled, the default port used for session communication switches from 1494 to 2598.

You can use session reliability with Transport Layer Security (TLS).

### Note

TLS encrypts only the data sent between the user device and Citrix Gateway.

## Using session reliability policies

The **session reliability connections** policy setting allows or prevents session reliability.

The **session reliability timeout** policy setting has a default of 180 seconds, or three minutes. Though you can extend the time the session reliability keeps a session open, this feature is convenient to the user. Therefore, it does not prompt the user for reauthentication.

### Tip

As you extend the amount of time a session is kept open, a user might get distracted and walk away from the user device. This potentially leaves the session accessible to unauthorized users.

Incoming session reliability connections use port 2598, unless you change the port number defined in the session reliability port number policy setting.

If you do not want users to be able to reconnect to interrupted sessions without having to reauthenticate, use the Auto Client Reconnect feature. You can configure the **Auto client reconnect authentication policy** setting to prompt users to reauthenticate when reconnecting to interrupted sessions.

If you use both session reliability and auto client reconnect, the two features work in sequence. Session reliability closes, or disconnects, the user session after the amount of time you specify in the **Session reliability timeout policy** setting. After that, the auto client reconnect policy settings take effect, attempting to reconnect the user to the disconnected session.

### Note

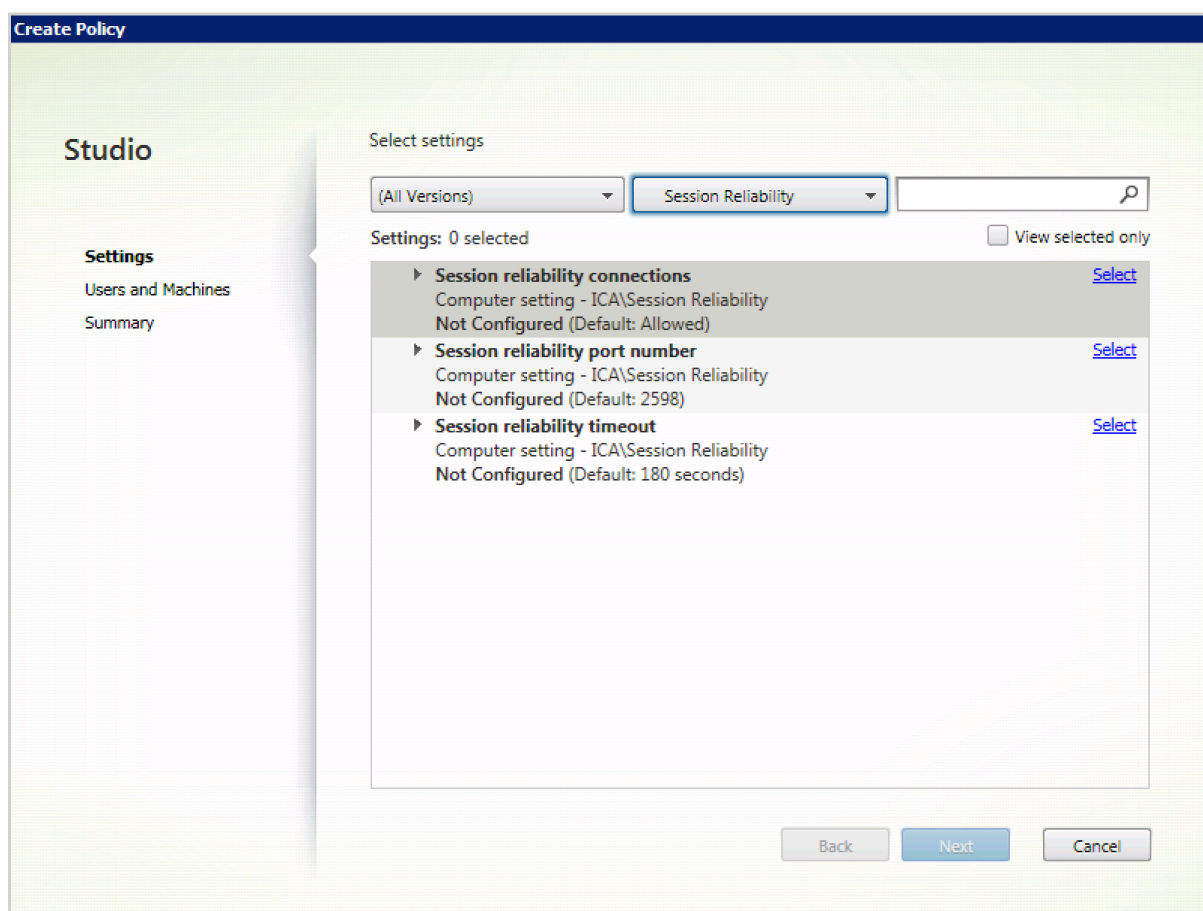
Session reliability is enabled by default at the server. To disable this feature, configure the policy managed by the server.

## Configuring session reliability from Citrix Studio

By default, session reliability is enabled.

To disable session reliability:

1. Launch Citrix Studio.
2. Open the **Session Reliability connections** policy.
3. Set the policy to **Prohibited**.



## Configuring session reliability timeout

By default, the session reliability timeout is set to 180 seconds.

### Note:

Session reliability timeout policy can be configured only with XenApp and XenDesktop 7.11 and later.

### To modify session reliability timeout:

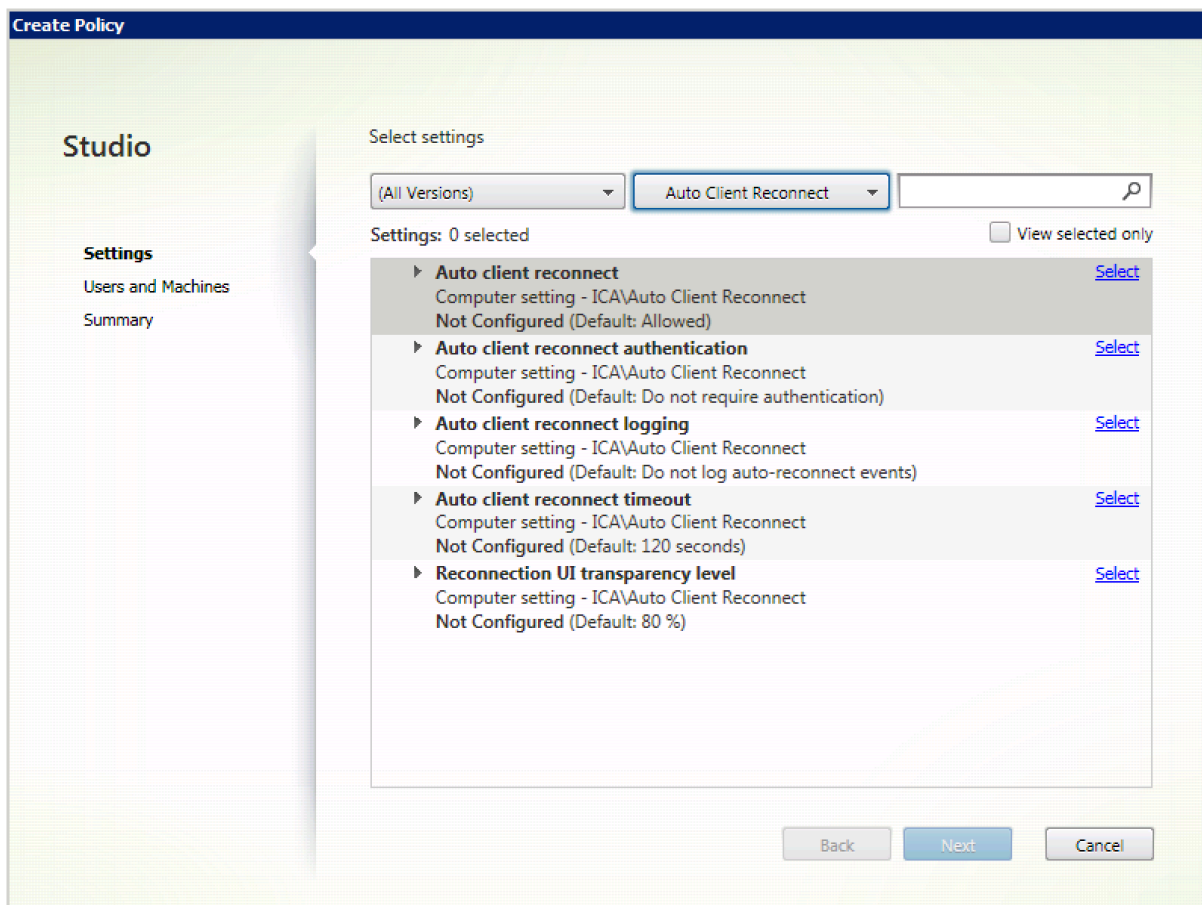
1. Launch Citrix Studio.
2. Open the **Session reliability timeout** policy.
3. Edit the timeout value.
4. Click **OK**.

## Configuring auto client reconnection using Citrix Studio

By default, auto client reconnection is enabled.

To disable auto client reconnection:

1. Launch Citrix Studio.
2. Open the **Auto client reconnect policy**.
3. Set the policy to **Prohibited**.



### Configuring Auto client reconnection timeout

By default, Auto client reconnection timeout is set to 120 seconds.

**Note:**

Auto client reconnect timeout policy can be configured only with XenApp and XenDesktop 7.11 and later.

To modify auto client, reconnect timeout:

1. Launch Citrix Studio.
2. Open the **Auto client reconnect** policy.
3. Edit the timeout value.
4. Click **OK**.

**Limitations:**

On a Terminal Server VDA, Citrix Workspace app for Mac uses 120 seconds as timeout value irrespective of the user settings.

### **Configuring the Reconnect user interface Transparency**

The Session User Interface is displayed during a session reliability and auto client reconnect attempts. The Transparency level of the user interface can be modified using Studio policy.

By default, Reconnect UI Transparency is set to 80%.

To modify Reconnect user interface Transparency level:

1. Launch Citrix Studio.
2. Open the **Reconnect UI Transparency level** policy.
3. Edit the value.
4. Click **OK**.

### **Auto client reconnect and session reliability interaction**

There are mobility challenges associated with switching between various access points, network disruptions, and display timeouts related to latency. These create challenging environments when trying to maintain link integrity for active Citrix Workspace app for Mac sessions. To resolve this issue, Citrix enhanced session reliability and auto reconnection technologies are present in this version of Workspace app for Mac.

Auto client reconnection, along with session reliability, allows users to automatically reconnect to their Citrix Workspace app for Mac sessions after recovering from network disruptions. These features, enabled by policies in Citrix Studio, can be used to vastly improve the user experience.

**Note:**

Auto client reconnection and session reliability timeout values can be modified using the **default.ica** file in StoreFront.

### **Auto client reconnection**

Auto client reconnection can be enabled or disabled using Citrix Studio policies. By default, this feature is enabled. For information about modifying this policy, see the auto client reconnection section earlier in this article.

Use the default.ica file in StoreFront to modify the connection timeout for AutoClientreconnect. By default, this timeout is set to 120 seconds (or two minutes).

Setting	Example	Default
TransportReconnectRetryMaxT!	TransportReconnectRetryMaxT!	120

### Session reliability

Session reliability can be enabled or disabled using Citrix Studio policies. By default, this feature is enabled.

Use the **default.ica** file in StoreFront to modify the connection timeout for session reliability. By default, this timeout is set to 180 seconds (or three minutes).

Setting	Example	Default
SessionReliabilityTTL	SessionReliabilityTTL=120	180

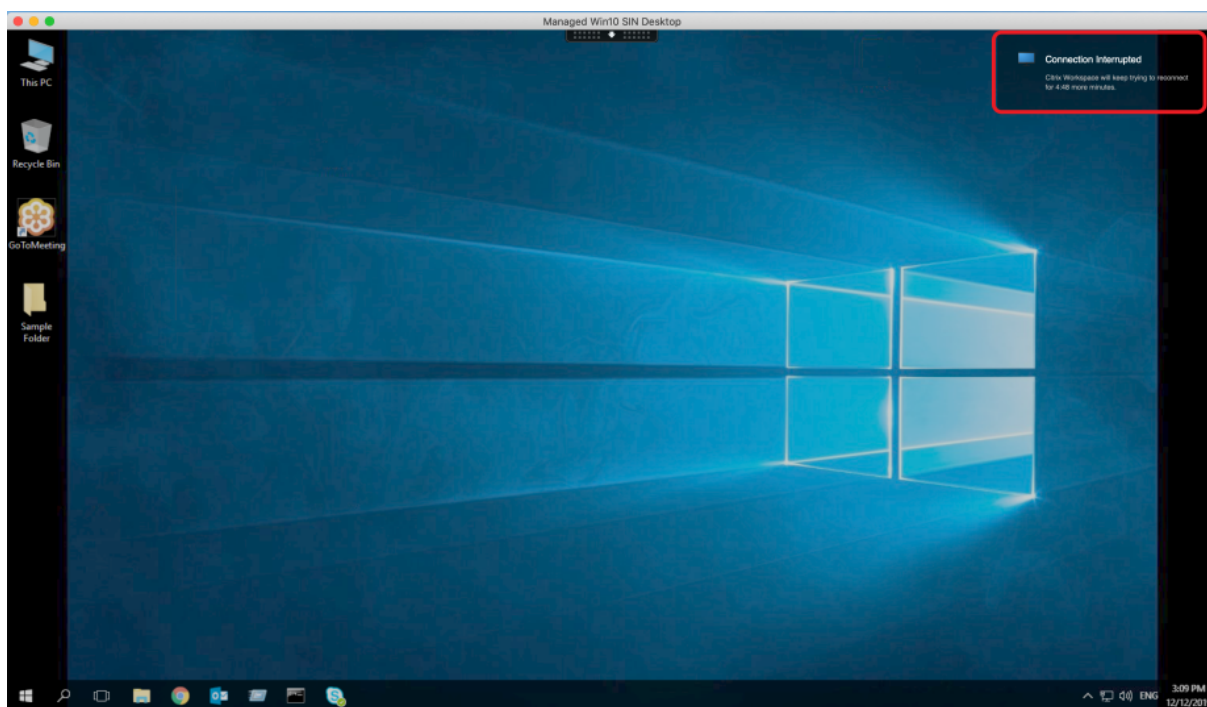
### How auto client reconnection and session reliability work

When auto client reconnection and session reliability are enabled for a Citrix Workspace app for Mac, consider the following:

- A session window is grayed out when a reconnection is in progress. A countdown timer displays the amount of time remaining before the session is reconnected. Once a session is timed out, it is disconnected.

By default, the reconnect countdown notification starts at 5 minutes. This timer value represents the combined default values for each of the timers (auto client reconnection and session reliability), 2 and 3 minutes respectively. The following image illustrates the countdown notification which appears in the upper right portion of the session interface:



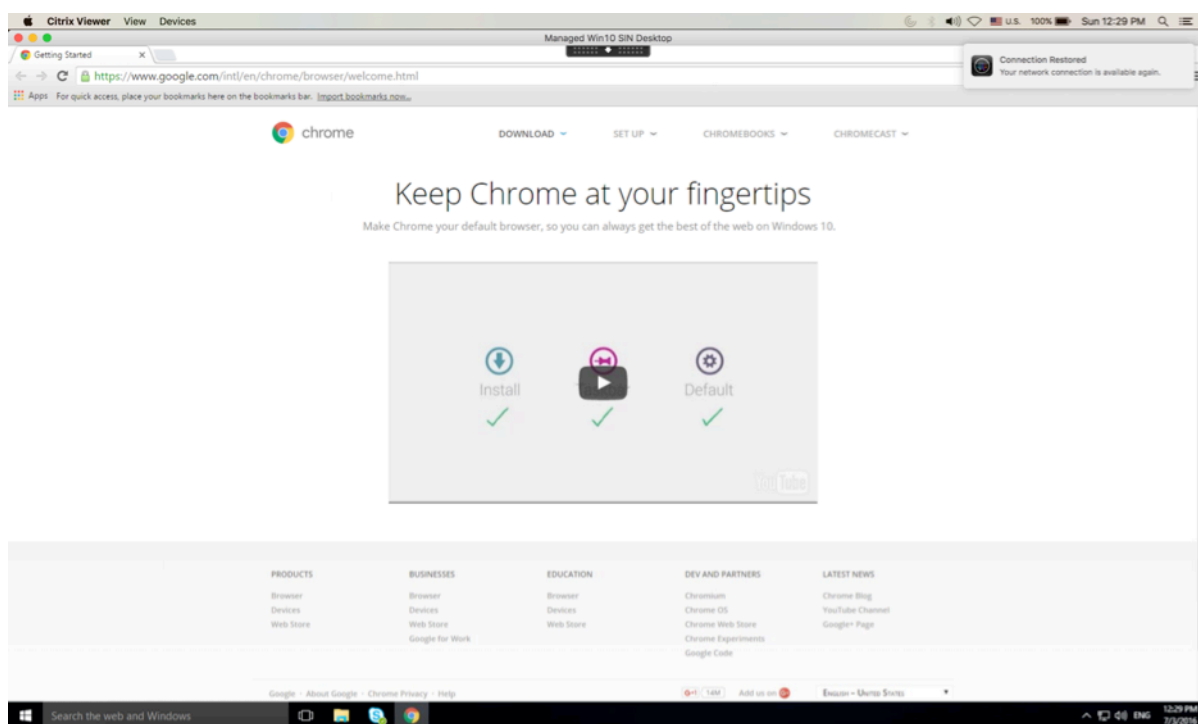


### Tip

You can alter the grayscale brightness used for an inactive session using a command prompt. For example, defaults write com.citrix.receiver.nomas NetDisruptBrightness 80. By default, this value is set to 80. The maximum value cannot exceed 100 (indicates a transparent window) and the minimum value can be set to 0 (a fully blacked out screen).

- Users are notified when a session successfully reconnects (or when a session is disconnected). This notification appears in the upper right portion of the session interface:

## Citrix Workspace app for Mac



- A session window which is under auto client reconnect and session reliability control provides an informational message indicating the state of the session connection. Click **Cancel Reconnection** to move back to an active session.

### Customer Experience Improvement Program (CEIP)

Data Collected	Description	What we Use it for
Configuration and usage data	The Citrix Customer Experience Improvement Program (CEIP) gathers configuration and usage data from Workspace app for Mac and automatically sends the data to Citrix and Google Analytics.	This data helps Citrix improve the quality, reliability, and performance of Workspace app.

### Additional Information

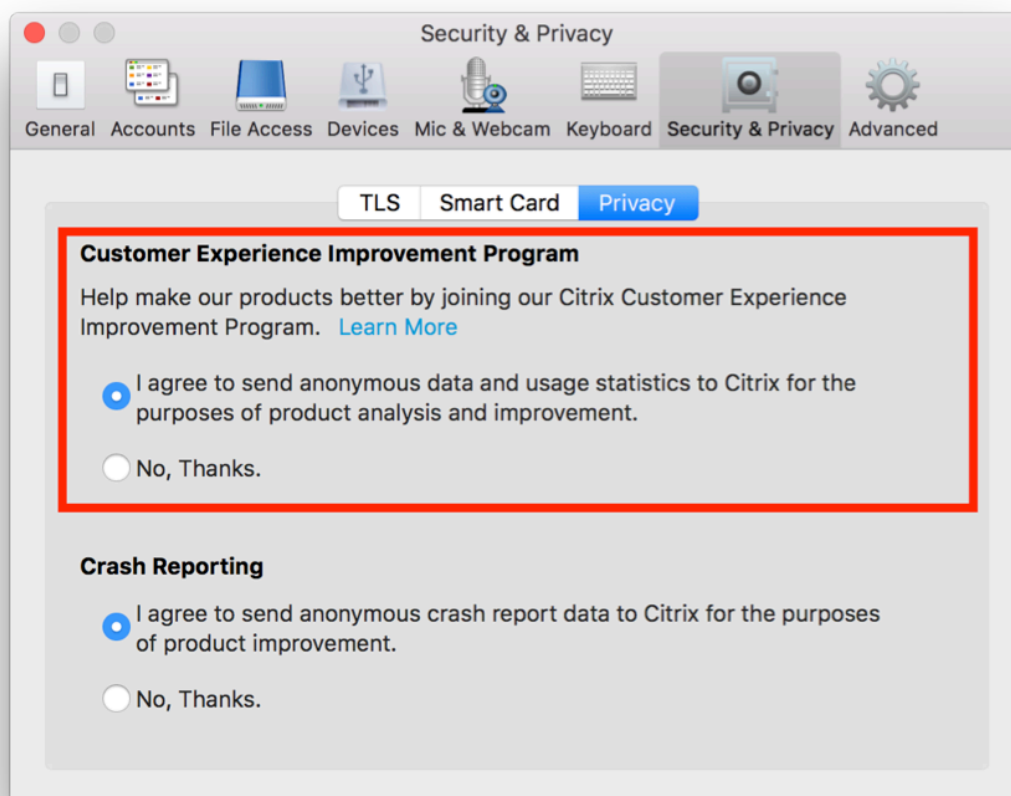
Citrix will handle your data in accordance with the terms of your contract with Citrix, and protect it as specified in the [Citrix Services Security Exhibit](#) available on the [Citrix Trust Center](#).

Citrix uses Google Analytics to collect certain data from Citrix Workspace app as part of CEIP. Please

review how Google [handles data collected for Google Analytics](#).

You may turn off sending CEIP data to Citrix and Google Analytics. To do this:

1. In the **Preferences** window, select **Security and Privacy**.
2. Select the **Privacy** tab.
3. Select **No, Thanks** to disable CEIP or to forego participation.
4. Click **OK**.



Alternatively, you can disable CEIP by running the terminal command:

```
defaults write com.citrix.receiver.nomas "CEIPEnabled"-bool NO
```

The specific data elements collected by Google Analytics are:

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Operating System Version	Session Launch	Generic USB Redirection Usage
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## **Application delivery**

When delivering applications with Citrix Virtual Apps and Desktops, consider the following options to enhance the experience for your users when they access their applications:

### **Web access mode**

Without any configuration, Citrix Workspace app for Mac provides web access mode: browser-based access to applications and desktops. Users simply open a browser to a Workspace for Web or Web Interface site and select and use the applications that they want. In web access mode, no app shortcuts are placed in the App Folder on your user's device.

### **Self-service mode**

Add a StoreFront account to Citrix Workspace app for Mac or configuring Citrix Workspace app for Mac to point to a StoreFront site. Then, you can configure self-service mode, which enables your users to subscribe to applications through Citrix Workspace app for Mac. This enhanced user experience is similar to that of a mobile app store. In self-service mode you can configure mandatory, auto-provisioned, and featured app keyword settings as needed. When one of your users selects an application, a shortcut to that application is placed in the App Folder on the user device.

When they access a StoreFront 3.0 site, your users see the Citrix Workspace app for Mac preview.

When publishing applications on your Citrix Virtual Apps farms, you can enhance the experience for users accessing those applications through StoreFront stores. To do this, ensure that you include meaningful descriptions for published applications. The descriptions are visible to your users through Citrix Workspace app for Mac.

### **Configure self-service mode**

As mentioned previously, you can add a StoreFront account to Citrix Workspace app for Mac or configure Citrix Workspace app for Mac to point to a StoreFront site. Thus, you can configure the self-service mode, which allows users to subscribe to applications from the Citrix Workspace app for Mac user interface. This enhanced user experience is similar to that of a mobile app store.

In self-service mode, you can configure mandatory, auto-provisioned, and featured app keyword settings as needed.

- Automatically subscribe all users of a store to an application by appending the string KEYWORDS:Auto to the description you provide when you publish the application in Citrix Virtual Apps. When users log on to the store, the application is automatically provisioned without the need for manual subscription to the application.

- Advertise applications to users or make commonly used applications easier to find by listing them in the Citrix Workspace app for Mac Featured list. To do this, append the string `KEYWORDS:Featured` to the application description.

For more information, see the [StoreFront](#) documentation.

If the Web Interface of your Citrix Virtual Apps deployment does not have a Site, create a Site. The name of the site and how you create the site depends on the version of the Web Interface you have installed. For more information, see the [Web Interface](#) documentation.

## Citrix Workspace Updates

### Configuring using the GUI

An individual user can override the **Citrix Workspace Updates** setting using the **Preferences** dialog. This is a per-user configuration and the settings apply only to the current user.

1. Go to the **Preferences** dialog in Citrix Workspace app for Mac.
2. In the **Advanced** pane, click **Updates**. The Citrix Workspace Updates dialog appears.
3. Select one of the following options:
  - Yes, notify me
  - No, don't notify me
  - Use administrator specified settings
4. Close the dialog box to save the changes.

### Configuring Citrix Workspace Updates using StoreFront

Administrators can configure Citrix Workspace Updates using StoreFront. Citrix Workspace app for Mac only uses this configuration for users who have selected “Use administrator specified settings.” To manually configure it, follow these steps.

1. Use a text editor to open the web.config file. The default location is `C:\inetpub\wwwroot\Citrix\Roaming\web.config`
2. Locate the user account element in the file (Store is the account name of your deployment)  
For example: `<account id=... name="Store">`  
Before the `</account>` tag, navigate to the properties of that user account:  
`<properties>`  
`<clear />`  
`</properties>`
3. Add the auto-update tag after `<clear />` tag.

### **auto-update-Check**

This determines that Citrix Workspace app for Mac can detect if updates are available.

#### **Valid values:**

- Auto – Use this option to get notifications when updates are available.
- Manual – Use this option to not get any notification when updates are available. Users must check manually for updates by selecting **Check for Updates**.
- Disabled – Use this option to disable Citrix Workspace Updates.

### **auto-update-DeferUpdate-Count**

This determines the number of times the user is notified to upgrade before they are forced to update to the latest version of Citrix Workspace app for Mac. By default, this value is 7.

#### **Valid values:**

- -1 – The user has the option of getting reminded later when an update is available.
- 0 – The user is forced to update to the latest version of Citrix Workspace app for Mac when the update is available.
- Positive integer – The user is reminded these many times before being forced to update. Citrix recommends not to set this value higher than 7.

### **auto-update-Rollout-Priority**

This determines how quickly a device sees that an update is available.

#### **Valid values:**

- Auto – The Citrix Workspace Updates system decides when available updates are rolled out to users.
- Fast – Available updates are rolled out to users on high priority as determined by Citrix Workspace app for Mac.
- Medium – Available updates are rolled out to users on medium priority as determined by Citrix Workspace app for Mac.
- Slow – Available updates are rolled out to users on low priority as determined by Citrix Workspace app for Mac.

### **Keyboard layout synchronization**

Keyboard layout synchronization enables users to switch among preferred keyboard layouts on the client device when using a Windows or Linux VDA. This feature is disabled by default.

To enable keyboard layout synchronization, go to **Preferences > Keyboard** and select “Use local keyboard layout, rather than the remote server keyboard layout.”

**Note:**

1. Using the local keyboard layout option activates the client IME (Input Method Editor). Users working in Japanese, Chinese, or Korean can use the server IME. They must disable the local keyboard layout option by clearing the option in **Preferences > Keyboard**. The session will revert to the keyboard layout provided by the remote server when they connect to the next session.
2. The feature works in the session only when the toggle in the client is turned on and the corresponding feature enabled on the VDA. A menu item, “**Use Client Keyboard Layout,**” in **Devices > Keyboard > International** is added to show the enabled state.

**Limitations**

- Using the keyboard layouts listed in “**Supported Keyboard Layouts in Mac**” works while using this feature. When you change the client keyboard layout to a non-compatible layout, the layout might be synced on the VDA side, but functionality cannot be confirmed.
- Remote applications that run with elevated privileges (for example, running applications as an administrator) can’t be synchronized with the client keyboard layout. To work around this issue, manually change the keyboard layout on the VDA or disable UAC.
- When RDP is deployed as an application and the user is working within an RDP session, it is not possible to change the keyboard layout using the Alt + Shift shortcuts. To work around this issue, users can use the language bar in the RDP session to switch the keyboard layout.





## Keyboard layout support for Windows VDA

Supported keyboard layouts on Mac	
Language on Mac	Input source on Mac
English	US.
	U.S. International - PC
	Dvorak
	Dvorak - Left
	Dvorak - Right
	British
	British - PC
	Canadian English
	Australian
	Irish
French	French
	French - Numerical
	Canadian French - CSA
	Swiss French
	French - PC
German	German
	Austrian
	Swiss German
Spanish	Spanish
	Spanish - ISO
Bulgarian	Bulgarian
Swedish	Swedish
Czech	Czech
Danish	Danish
Finnish	Finnish
Hungarian	Hungarian
Italian	Italian
Greek	Greek
	Dutch
Romanian	Romanian - Standard
	Russian - PC
Croatian	Croatian - PC
Slovak	Slovak
	Slovak - QWERTY
Turkish	Turkish
	Turkish - QWERTY PC
Portuguese	Brazilian
	Brazilian - ABNT2
	Portuguese
Ukrainian	Ukrainian - PC
Belarusian	Belarusian
Slovenian	Slovenian
Estonian	Estonian
Latvian	Latvian
Polish	Polish Pro
Icelandic	Icelandic
Norwegian	Norwegian
Japanese	Hiragana
	Katakana
	Romaji
Korean	2-Set Korean
	3-Set Korean
Chinese, Simplified	
Chinese, Traditional	



**Keyboard layout support for Linux VDA**

Language in MAC	Input Source in MAC
English	US.
	U.S. International - PC
	Dvorak
	Dvorak - Left
	Dvorak - Reft
	British
	British - PC
	Candian English
	Australian
	Irish
French	French
	French - Numerical
	Canadian French - CSA
	Swiss French
	French - PC
German	German
	Austrian
	Swiss German
Spanish	Spanish
	Spanish - ISO
Swedish	Swedish
Czech	Czech
Danish	Danish
Finnish	Finnish
Hungarian	Hungarian
Italian	Italian
Greek	Greek
Dutch	Belgian
	Dutch
Russian	Russian - PC
Croatian	Croatian - PC
Slovak	Slovak
	Slovak - QWERTY
Turkish	Turkish
	Turkish - QWERTY PC
Portuguese	Brazilian
	Brazilian - ABNT2
	Portuguese
Ukrainian	Ukrainian - PC
Belarusian	Belarusian
Slovenian	Slovenian
Estonian	Estonian
Polish	Polish Pro
Icelandic	Icelandic
Norwegian	Norwegian
Japanese	Hiragana
	Katakana
	Romaji
Korean	2-Set Korean
	3-Set Korean
Chinese, Simplified	Pinyin -Simplified
Chinese, Traditional	Pinyin - Traditional

The enhanced client depends on the keyboard layout synchronization feature. By default, the enhanced feature is enabled when the keyboard layout synchronization feature is turned on. To control this feature alone, open the **Config** file in the `~/Library/Application Support/Citrix Workspace/` folder, locate the “**EnableIMEEnhancement**” setting and turn the feature on or off by setting the value to “true” or “false,” respectively.

**Note:**

The setting change takes effect after restarting the session.

### Language bar

You can choose to show or hide the remote language bar in an application session using the GUI. The language bar displays the preferred input language in a session. In earlier releases, you might change this setting using only the registry keys on the VDA. Starting with Citrix Workspace for Mac version 1808, you can change the settings using the **Preferences** dialog. The language bar appears in a session by default.

**Note:**

This feature is available in sessions running on VDA 7.17 and later.

### Configure showing or hiding the remote language bar

1. Open Preferences.
2. Click Keyboard.
3. Click or unclick Show the remote language bar for the published applications.

**Note:**

The setting changes take effect immediately. You can change the settings in an active session. The remote language bar does not appear in a session if there is only one input language.

### Citrix Casting

Citrix Casting is used to cast your Mac screen to nearby Citrix Ready workspace hub devices. Citrix Workspace app for Mac supports Citrix Casting to mirror your Mac screen to workspace hub connected monitors.

For more information, see the [Citrix Ready workspace hub](#) documentation.

### Prerequisites

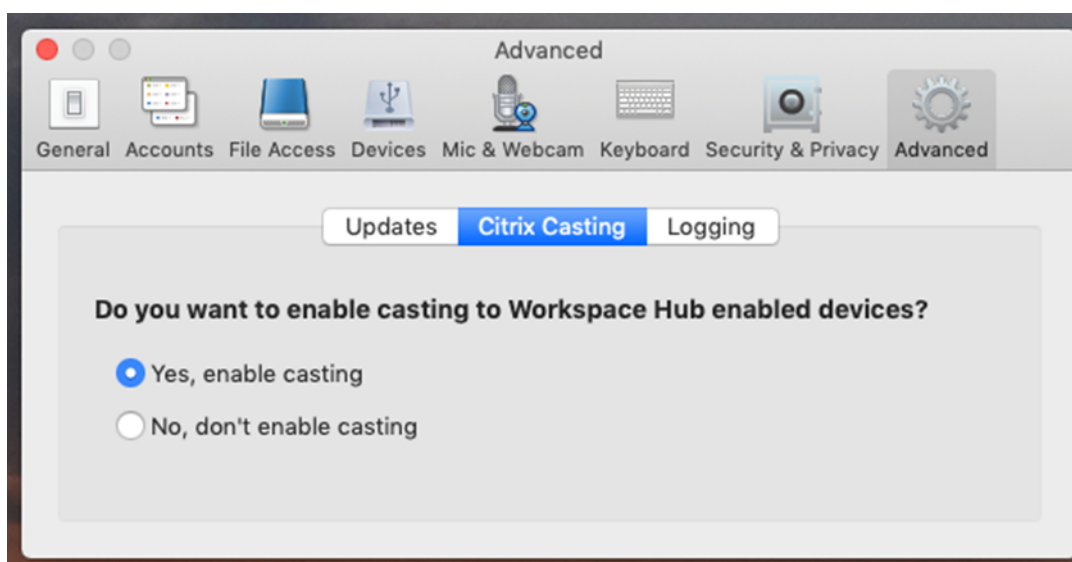
- Citrix Workspace app 1812 for Mac or later.

- Bluetooth enabled on the device for hub discovery.
- Both Citrix Ready workspace hub and Citrix Workspace app must be on the same network.
- Ensure Port 55555 isn't blocked between the device running Citrix Workspace app and the Citrix Ready workspace hub.
- Port 55556 is the default port for SSL connections between mobile devices and the Citrix Ready workspace hub. You can configure a different SSL port on the Raspberry Pi's settings page. If the SSL port is blocked, users cannot establish SSL connections to the workspace hub.
- For Citrix Casting, ensure port 1494 isn't blocked.

### Enable Citrix Casting

Citrix Casting is disabled by default. To enable Citrix Casting using Citrix Workspace app for Mac:

1. Go to **Preferences**.
2. Select **Advanced** in the panel and then choose **Citrix Casting**.
3. Select **Yes, enable casting**.



A notification appears when Citrix Casting is launched and a Citrix Casting icon appears in the menu bar.

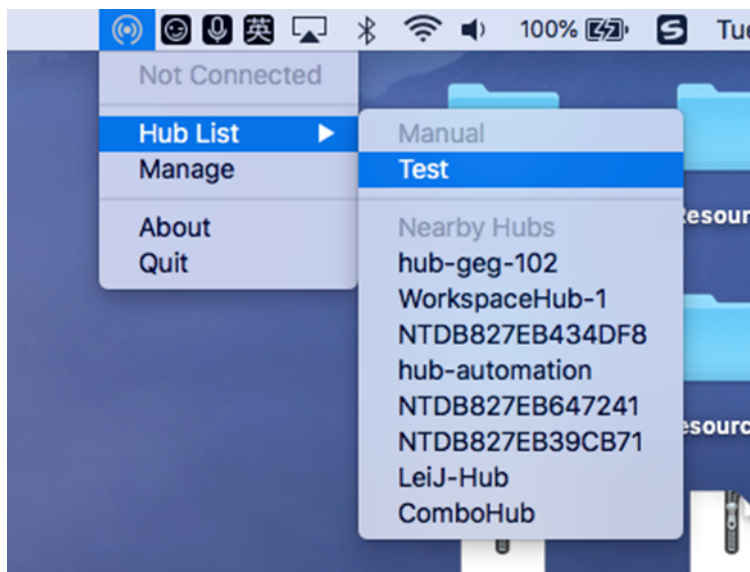
#### Note:

After enabling, Citrix Casting launches with Citrix Workspace app for Mac automatically every time until you disable it by selecting **No, don't enable casting** in **Preferences > Advanced > Citrix Casting**.

### Discover workspace hub devices automatically

To connect to workspace hubs automatically:

1. On your Mac, sign in to Citrix Workspace app and ensure that Bluetooth is turned on. Bluetooth is used to discover nearby workspace hubs.
2. Select the **Citrix Casting** icon in the menu bar. All Citrix Casting functions are operated through this menu.
3. The **Hub List** submenu shows all nearby workspace hubs on the same network. Hubs are listed in descending order by their proximity to your Mac and display their workspace hub configured names. All automatically discovered hubs display under **Nearby Hubs**.
4. Choose the hub you want to connect to by selecting its name.



To cancel selection of a workspace hub during connection, select **Cancel**. You can also use **Cancel** if the network connection is poor and connecting is taking longer than usual.

**Note:**

Occasionally, your chosen hub might not appear in the menu. Check the **Hub List** menu again after a few moments or add your hub manually. Citrix Casting receives the workspace hub's broadcasting periodically.

### Discover workspace hub devices manually

If you cannot find the Citrix Ready workspace hub device in the **Hub List** menu, add the workspace hub's IP address to access it manually. To add a workspace hub:

1. On your Mac, sign in to Citrix Workspace app and ensure that Bluetooth is turned on. Bluetooth is used to discover nearby workspace hubs.
2. Select the **Citrix Casting** icon in the menu bar.
3. Select **Manage** in the menu. The **Manage hubs** window appears.
4. Click **Add new** to enter the IP address of your hub.

5. After successfully adding the device, the **Hub name** column displays the hub's friendly name. Use this name to identify the hub in the **Manual** section of the **Hub List** submenu.

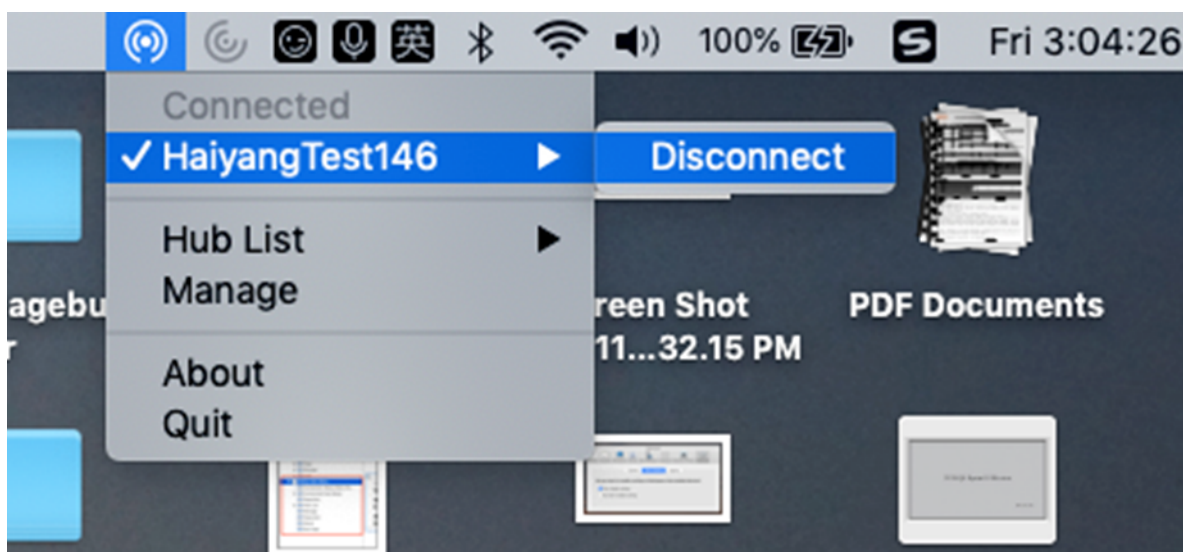
**Note:**

Currently, only **Mirror** mode is supported. **Mirror** is the only available choice in the **Display Mode** column.

### Disconnect the workspace hub device

You can disconnect your current session and exit the Citrix Ready workspace hub automatically or manually.

- To disconnect the screen casting session automatically, close your laptop.
- To disconnect the screen casting session manually:
  1. Select the **Citrix Casting** icon.
  2. In the list of hubs, select the name of your workspace hub. The **Disconnect** option appears to the right.
  3. Select **Disconnect** to exit the hub.



### Known issues

- There are small latency issues when viewing the mirrored screen. In poor network conditions, latency might be even longer.
- When SSL is enabled in a Citrix Ready workspace hub and the hub's certificate is not trusted, an alert window appears. To solve the issue, add the certificate to your trusted certificate list with the Keychain tool.

## Client-side microphone input

Citrix Workspace app for Mac supports multiple client-side microphone inputs. Locally installed microphones can be used for:

- Live events, such as softphone calls and Web conferences.
- Hosted recording applications, such as dictation programs.
- Video and audio recordings.

Digital dictation support is available with Citrix Workspace app for Mac.

You can use microphones attached to your user device in sessions by choosing one of the following options from the Mic & Webcam tab in **Citrix Workspace app for Mac > Preferences**:

- Use my microphone and webcam
- Don't use my microphone and webcam
- Ask me each time

If you select **Ask me each time**, a dialog box appears each time you connect asking whether you want to use your microphone in that session.

## Windows special keys

Citrix Workspace app for Mac provides several options and easier ways to substitute special keys such as function keys in Windows applications with Mac keys. Use the **Keyboard** tab to configure the options you want to use, as follows:

- “Send Control character using” lets you choose whether to send Command-character keystroke combinations as Ctrl+character key combinations in a session. Select “Command or Control” from the pop-up menu to send familiar Command-character or Ctrl-character keystroke combinations on the Mac as Ctrl+character key combinations to the PC. If you select Control, you must use Ctrl-character keystroke combinations.
- “Send Alt character using” lets you choose how to replicate the Alt key within a session. If you select Command-Option, you can send Command-Option and keystroke combinations as Alt+key combinations within a session. Alternatively, if you select Command, you can use the Command key as the Alt key.
- “Send Windows logo key using Command (right)”. Lets you send the Windows logo key to your remote desktops and applications when you press the Command key on the right side of the keyboard. If this option is disabled, the right Command key has the same behavior as the left Command key according to the above two settings in the preferences panel. However, you can still send the Windows logo key using the Keyboard menu; choose **Keyboard > Send Windows Shortcut > Start**.
- “Send special keys unchanged” lets you disable the conversion of special keys. For example, the combination Option-1 (on the numeric keypad) is equivalent to the special key F1. You can



change this behavior and set this special key to represent 1 (the number one on the keypad) in the session. To do this, select the “Send special keys unchanged” check box. By default, this check box is not selected so Option-1 is sent to the session as F1.

You send the function and other special keys to a session using the **Keyboard** menu.

If your keyboard includes a numeric keypad, you can also use the following keystrokes:

PC key or action	Mac options
INSERT	0 (the number zero) on the numeric keypad. Num Lock must be off; you can turn this on and off using the <b>Clear</b> key; Option-Help
DELETE	Decimal point on the numeric keypad. Num Lock must be off; you can turn this on and off using the <b>Clear</b> key; Clear
F1 to F9	Option-1 to -9 (the numbers one to nine) on the numeric keypad
F10	Option-0 (the number zero) on the numeric keypad
F11	Option-Minus Sign on the numeric keypad
F12	Option-Plus Sign on the numeric keypad

## Windows shortcuts and key combinations

Remote sessions recognize most Mac keyboard combinations for text input, such as Option-G to input the copyright symbol ©. Some keystrokes you make during a session, however, do not appear on the remote application or desktop. The Mac operating system interprets them. This can result in keys triggering Mac responses instead.

You might also want to use certain Windows keys, such as Insert, that many Mac keyboards do not have. Similarly, some Windows 8 keyboard shortcuts display charms and app commands, and snap and switch apps. Mac keyboards do not mimic these shortcuts. However, these can be sent to the remote desktop or application using the **Keyboard** menu.

Keyboards and the ways keys are configured can differ widely between machines. Citrix Workspace app for Mac therefore offers several choices to ensure that keystrokes can be forwarded correctly to hosted applications and desktops. These keystrokes are listed in the table. The default behavior is described. If you adjust the defaults (using Citrix Workspace app for Mac or other preferences), different keystroke combinations might be forwarded and other behavior might be observed on the Remote PC Access.

**Important**

Certain key combinations listed in the table are not available when using newer Mac keyboards. In most of these cases, keyboard input can be sent to the session using the Keyboard menu.

Conventions used in the table:

- Letter keys are capitalized and do not imply that the Shift key must be pressed simultaneously.
- Hyphens between keystrokes indicate that keys must be pressed together (for example, Control-C).
- Character keys are those that create text input and include all letters, numbers, and punctuation marks. Special keys are those that do not create input by themselves but act as modifiers or Controllers. Special keys include Control, Alt, Shift, Command, Option, arrow keys, and function keys.
- Menu instructions relate to the menus in the session.
- Depending on the configuration of the user device, some key combinations might not work as expected, and alternative combinations are listed.
- Fn refers to the Fn (Function) key on a Mac keyboard. Function key refers to F1 to F12 on either a PC or Mac keyboard.

Windows key or key combination	Mac equivalents
Alt+character key	Command-Option-character key (for example, to send Alt-C, use Command-Option-C)
Alt+special key	Option-special key (for example, Option-Tab); Command-Option-special key (for example, Command-Option-Tab)
Ctrl+character key	Command-character key (for example, Command-C); Control-character key (for example, Control-C)
Ctrl+special key	Control-special key (for example, Control-F4); Command-special key (for example, Command-F4)
Ctrl/Alt/Shift/Windows logo + function key	Choose Keyboard > Send Function key > Control/Alt/Shift/Command-Function key
Ctrl+Alt	Control-Option-Command
Ctrl+Alt+Delete	Control-Option-Fn-Command-Delete; Choose Keyboard > Send Ctrl-Alt-Del

Windows key or key combination	Mac equivalents
Delete	Delete; Choose Keyboard > Send Key > Delete; Fn-Backspace (Fn-Delete on some US keyboards)
End	End; Fn-Right Arrow
Esc	Escape; Choose Keyboard > Send Key > Escape
F1 to F12	F1 to F12; Choose Keyboard > Send Function Key > F1 to F12
Home	Home; Fn-Left Arrow
Insert	Choose Keyboard > Send Key > Insert
Num Lock	Clear
Page Down	Page Down; Fn-Down Arrow
Page Up	Page Up; Fn-Up Arrow
Spacebar	Choose Keyboard > Send Key > Space
Tab	Choose Keyboard > Send Key > Tab
Windows logo	Right Command key (a keyboard preference, enabled by default); Choose Keyboard > Send Windows Shortcut > Start
Key combination to display charms	Choose Keyboard > Send Windows Shortcut > Charms
Key combination to display app commands	Choose Keyboard > Send Windows Shortcut > App Commands
Key combination to snap apps	Choose Keyboard > Send Windows Shortcut > Snap
Key combination to switch apps	Choose Keyboard > Send Windows Shortcut > Switch Apps

### Use Input Method Editors (IME) and international keyboard layouts

Citrix Workspace app for Mac allows you to use an Input Method Editor (IME) on either the user device or on the server.

When client-side IME is enabled, users can compose text at the insertion point rather than in a separate window.

Citrix Workspace app for Mac also allows users to specify the keyboard layout they want to use.

### To enable client-side IME

1. From the Citrix Viewer menu bar, choose **Keyboard > International > Use Client IME**.
2. Ensure that the server-side IME is set to direct input or alphanumeric mode.
3. Use the Mac IME to compose text.

### To indicate explicitly the starting point when composing text

- From the Citrix Viewer menu bar, choose **Keyboard > International > Use Composing Mark**.

### To use server-side IME

- Ensure that the client-side IME is set to alphanumeric mode.

### Mapped server-side IME input mode keys

Citrix Workspace app for Mac provides keyboard mappings for server-side Windows IME input mode keys that are not available on Mac keyboards. On Mac keyboards, the Option key is mapped to the following server-side IME input mode keys, depending on the server-side locale:

Server-side system locale	Server-side IME input mode key
Japanese	Kanji key (Alt + Hankaku/Zenkaku in Japanese keyboard)
Korean	Right-Alt key (Hangul/English toggle on Korean keyboard)

### To use international keyboard layouts

- Ensure both client-side and server-side keyboard layouts are set to the same locale as the default server-side input language.

### Multiple monitors

Users can set Citrix Workspace app for Mac to work in full-screen mode across multiple monitors.

1. Select the Desktop Viewer and click the down arrow.
2. Select **Window**.

3. Drag the Citrix Virtual Desktops screen between the monitors. Ensure that about half the screen is present in each monitor.
4. From the Citrix Virtual Desktop toolbar, select **Full-screen**.

The screen is now extended to all monitors.

### Known Limitations

- Full-screen mode is only supported on one monitor or all monitors, which are configurable through a menu item.
- Citrix recommends using a maximum of 2 monitors. Using more than 2 monitors might degrade session performance or cause usability issues.

### Desktop toolbar

Users can now access the **Desktop** Toolbar in both windowed and full-screen mode. Previously, the toolbar was only visible in full-screen mode. Other toolbar changes include:

- The **Home** button has been removed from the toolbar. This function can be run by using the following commands:
  - Cmd-Tab to switch to the previous active application.
  - Ctrl-Left Arrow to switch to the previous Space.
  - Using the built-in trackpad or Magic Mouse gestures to switch to a different Space.
  - Moving the cursor to the edge of screen while in full-screen mode displays a Dock where you can choose which applications to make active.
- The **Windowed** button has been removed from the toolbar. Leaving full-screen mode for windowed mode can be run by the following methods:
  - For OS X 10.10, clicking the green window button on the drop-down menu bar.
  - For OS X 10.9, clicking the blue menu button on the drop-down menu bar.
  - For all versions of OS X, selecting **Exit Full Screen** from the **View** menu of the drop-down menu bar.
- The toolbar drag behavior is updated to support dragging between windows in full screen with multiple monitors.


### Workspace Control

Workspace Control lets desktops and applications follow users as they move between devices. This enables, for example, clinicians in hospitals to move from workstation to workstation without having to restart their desktops and applications on each device.

Policies and client drive mappings change appropriately when you move to a new user device. Policies and mappings are applied according to the user device where you are currently logged on to

the session. For example, a healthcare worker logs off from a user device in the emergency room of a hospital and then logs on to a workstation in the hospital's X-ray laboratory. The policies, printer mappings, and client drive mappings appropriate for the session in the X-ray laboratory go into effect for the session when the user logs on to the user device in the X-ray laboratory.

### To configure workspace Control settings

1. Click the down arrow icon  in the Citrix Workspace app for Mac window and choose **Preferences**.
2. Click **General** tab.
3. Choose one of the following:
  - Reconnect apps when I start Citrix Workspace app. Allows users to reconnect to disconnected apps when they start Citrix Workspace app.
  - Reconnect apps when I start or refresh apps. Allows users to reconnect to disconnected apps either when they start apps or when they select Refresh Apps from the Citrix Workspace app for Mac menu.


### Mapping client drives

Client drive mapping allows you to access local drives on the user device, for example, CD-ROM drives, DVDs, and USB memory sticks, during sessions. When a server is configured to allow client drive mapping, users can access their locally stored files, work with them during sessions, and then save them either on a local drive or on a drive on the server.

Citrix Workspace app for Mac monitors the directories in which hardware devices such as CD-ROMs, DVDs, and USB memory sticks are typically mounted on the user device and automatically maps any new ones that appear during a session to the next available drive letter on the server.

You can configure the level of read and write access for mapped drives using Citrix Workspace app for Mac preferences.

### To configure read and write access for mapped drives

1. On the Citrix Workspace app for Mac home page, click the down arrow icon , and then click **Preferences**.
2. Click **File Access**.
3. Select the level of read and write access for mapped drives from the following options:
  - Read and Write
  - Read only
  - No access
  - Ask me each time

4. Log off from any open sessions and reconnect to apply the changes.

## Authenticate

July 1, 2020

### Smart card

Citrix Workspace app for Mac supports smart card authentication in the following configurations:

- Smart card authentication to Workspace for Web or StoreFront 2.x and later
- Citrix Virtual Apps and Desktops 7 1808 and later
- XenDesktop 7.1 and later or XenApp 6.5 and later
- Smart card-enabled applications, such as Microsoft Outlook and Microsoft Office. These allow users to digitally sign or encrypt documents available in virtual desktop or application sessions.
- Citrix Workspace app for Mac supports using multiple certificates with a single smart card or with multiple smart cards. When your user inserts a smart card into a card reader, the certificates are available to all applications running on the device, including Citrix Workspace app for Mac.
- For double-hop sessions, a further connection is established between Citrix Workspace app for Mac and your user's virtual desktop.

### About smart card authentication to Citrix Gateway

There are multiple usable certificates when you use a smart card to authenticate a connection. Citrix Workspace app for Mac prompts you to select a certificate. After you select a certificate, Citrix Workspace app for Mac prompts you to enter the smart card password. Once authenticated, the session launches.

If there is only one suitable certificate on the smart card, Citrix Workspace app for Mac uses that certificate and does not prompt you to select it. However, you must still enter the password associated with the smart card to authenticate the connection and to start the session.

### Specifying a PKCS#11 module for smart card authentication

**Note:**

Installing the PKCS#11 module is not mandatory. This section only applies to ICA sessions. It does not apply to Citrix Workspace access to Citrix Gateway or StoreFront where a smart card is

required.

To specify the PKCS#11 module for smart card authentication:

1. In Citrix Workspace app for Mac, select **Preferences**.
2. Click **Security & Privacy**.
3. In the **Security & Privacy** section, click **Smart Card**.
4. In the **PKCS#11** field, select the appropriate module. Click **Other** to browse to the location of the PKCS#11 module if the desired one is not listed.
5. After selecting the appropriate module, click **Add**.

### **Supported readers, middleware, and smart card profiles**

Citrix Workspace app for Mac supports most macOS-compatible smart card readers and cryptographic middleware. Citrix has validated the operation with the following.

Supported readers:

- Common USB connect smart card readers

Supported middleware:

- Clarify
- ActivIdentity client version
- Charismathics client version

Supported smart cards:

- PIV cards
- Common Access Card (CAC)
- Gemalto .NET cards

Follow the instructions provided by your vendor's macOS-compatible smart card reader and cryptographic middleware for configuring user devices.

### **Restrictions**

- Certificates must be stored on a smart card, not on the user device.
- Citrix Workspace app for Mac does not save the user certificate choice.
- Citrix Workspace app for Mac does not store or save the user's smart card PIN. OS handles the PIN acquisitions, which might have its own caching mechanism.
- Citrix Workspace app for Mac does not reconnect sessions when a smart card is inserted.
- To use VPN tunnels with smart card authentication, you must install the Citrix Gateway Plug-in and log on through a webpage. Use your smart cards and PINs to authenticate at each step. Pass-through authentication to StoreFront with the Citrix Gateway Plug-in is not available for smart card users.



## Secure communications

November 5, 2020

To secure the communication between your Site and Citrix Workspace app for Mac, you can integrate your connections with a range of security technologies, including Citrix Gateway. For information about configuring Citrix Gateway with Citrix StoreFront, see the [StoreFront](#) documentation.

### Note:

Citrix recommends using Citrix Gateway to secure communications between StoreFront servers and users' devices.

- A SOCKS proxy server or secure proxy server (also known as security proxy server, HTTPS proxy server). You can use proxy servers to limit access to and from your network and to handle connections between Citrix Workspace and servers. Citrix Workspace app for Mac supports SOCKS and secure proxy protocols.
- Citrix Secure Web Gateway. You can use Citrix Secure Web Gateway with the Web Interface to provide a single, secure, encrypted point of access through the Internet to servers on internal corporate networks.
- SSL Relay solutions with Transport Layer Security (TLS) protocols
- A firewall. Network firewalls can allow or block packets based on the destination address and port. If you are using Citrix Workspace app for Mac through a network firewall that maps the server's internal network IP address to an external Internet address (that is, network address translation, or NAT), configure the external address.

### Note:

Starting with macOS Catalina, Apple has enforced extra requirements for root CA certificates and intermediate certificates which administrators must configure. For more information, see Apple Support article [HT210176](#).

## Citrix Gateway

To enable remote users to connect to your XenMobile deployment through Citrix Gateway, you can configure Citrix Gateway to support StoreFront. The method for enabling access depends on the edition of XenMobile in your deployment.

If you deploy XenMobile in your network, allow connections from internal or remote users to StoreFront through Citrix Gateway by integrating Citrix Gateway with StoreFront. This deployment allows users to connect to StoreFront to access published applications from XenApp and virtual desktops from XenDesktop. Users connect through Citrix Workspace app for Mac.

## Connecting with the Citrix Secure Web Gateway

This topic applies only to deployments using the Web Interface.

Use the Citrix Secure Web Gateway in either Normal mode or Relay mode to provide a secure channel for communication between Citrix Workspace app for Mac and the server. No configuration of Citrix Workspace app for Mac is required if you are using the Citrix Secure Web Gateway in Normal mode and users are connecting through the Web Interface.

Citrix Workspace app for Mac uses settings that are configured remotely on the Web Interface server to connect to servers running the Citrix Secure Web Gateway. For more information about configuring proxy server settings for Citrix Workspace app for Mac, see the [Web Interface](#) documentation.

If the Citrix Secure Web Gateway Proxy is installed on a server in the secure network, you can use the Citrix Secure Web Gateway Proxy in Relay mode. For more information about Relay mode, see the [XenApp and Citrix Secure Web Gateway](#) documentation.

If you are using Relay mode, the Citrix Secure Web Gateway server functions as a proxy and you must configure Citrix Workspace app for Mac to use:

- The fully qualified domain name (FQDN) of the Citrix Secure Web Gateway server.
- The port number of the Citrix Secure Web Gateway server. Citrix Secure Web Gateway Version 2.0 does not support Relay mode.

The FQDN must list, in sequence, the following three components:

- Host name
- Intermediate domain
- Top-level domain

For example, `my_computer.example.com` is an FQDN, because it lists, in sequence, a host name (`my_computer`), an intermediate domain (`example`), and a top-level domain (`com`). The combination of intermediate and top-level domain (`example.com`) is referred to as the domain name.

## Connecting through a proxy server

Proxy servers are used to limit access to and from your network, and to handle connections between Citrix Workspace app for Mac and servers. Citrix Workspace app for Mac supports both SOCKS and secure proxy protocols.

When communicating with the XenApp or XenDesktop server, Citrix Workspace app for Mac uses proxy server settings that are configured remotely on the Web Interface server. For information about configuring proxy server settings for Citrix Workspace, see the [Web Interface](#) documentation.

When Citrix Workspace app for Mac communicates with the Web server, it uses the proxy server settings that are configured for the default web browser on the user device. Configure the proxy server settings for the default Web browser on the user device accordingly.

## Connecting through a firewall

Network firewalls can allow or block packets based on the destination address and port. Citrix Workspace app for Mac must be able to communicate through the firewall with both the Web server and Citrix server. The firewall must permit HTTP traffic (often over the standard HTTP port 80 or 443 for a secure Web server) for user device to Web server communication. For Citrix Workspace to Citrix server communication, the firewall must permit inbound ICA traffic on ports 1494 and 2598.

If the firewall is configured for Network Address Translation (NAT), you can use the Web Interface to define mappings from internal addresses to external addresses and ports. For example, if your XenApp or XenDesktop server is not configured with an alternate address, you can configure the Web Interface to provide an alternate address to Citrix Workspace app for Mac. Citrix Workspace app for Mac then connects to the server using the external address and port number. For more information, see the [Web Interface](#) documentation.

## TLS

Transport Layer Security (TLS) is the latest, standardized version of the TLS protocol. The Internet Engineering Taskforce (IETF) renamed it TLS when it took over responsibility for the development of TLS as an open standard.

TLS secures data communications by providing server authentication, encryption of the data stream, and message integrity checks. Some organizations, including U.S. government organizations, require the use of TLS to secure data communications. These organizations might also require the use of validated cryptography, such as Federal Information Processing Standard (FIPS) 140. FIPS 140 is a standard for cryptography.

Citrix Workspace app for Mac supports RSA keys of 1024, 2048, and 3072-bit lengths. Root certificates with RSA keys of 4096-bit length are also supported.

### Note

Citrix Workspace app for Mac uses platform (OS X) crypto for connections between Citrix Workspace app for Mac and StoreFront.

The following cipher suites are deprecated for enhanced security:

- Cipher suites with prefix “TLS\_RSA\_”
- Cipher suites RC4 and 3DES
- TLS\_RSA\_WITH\_AES\_256\_GCM\_SHA384 (0x009d)
- TLS\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (0x009c)
- TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA256 (0x003d)
- TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA (0x0035)
- TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA (0x002f)
- TLS\_RSA\_WITH\_RC4\_128\_SHA (0x0005)

- TLS\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA (0x000a)

Citrix Workspace app for Mac supports only the following cipher suites:

- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384 (0xc030)
- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA384 (0xc028)
- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (0xc013)

For DTLS 1.0 users, Citrix Workspace app for Mac 1910 and later supports only the following cipher suite:

- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (0xc013)

Upgrade your Citrix Gateway version to 12.1 or later if you want to use DTLS 1.0. Otherwise, it falls back to TLS based on the DDC policy.

The following matrices provide details of internal and external network connections:

Client cipher set	VDA cipher set	Direct connections								
		TLS			DTLS v1.0			DTLS v1.2		
		Open	FIPS	SP800-52	Open	FIPS	SP800-52	Open	FIPS	SP800-52
Any	ANY	Y	Y	Y	Y			Y		
	COM	Y	X	X	Y			Y		
	GOV	Y	Y	Y	Y			Y		
COM	ANY	Y	X	X	Y					
	COM	Y	X	X	Y					
	GOV	Y	X	X	Y					
GOV	ANY	Y	Y	Y	X			Y		
	COM	X	X	X	X			X		
	GOV	Y	Y	Y	X			Y		

Client cipher set	VDA cipher set	External connections with Citrix Gateway								
		TLS			DTLS v1.0			DTLS v1.2		
		Open	FIPS	SP800-52	Open	FIPS	SP800-52	Open	FIPS	SP800-52
Any	ANY	Y	Y	Y	Y			X		
	COM	Y	X	X	Y			X		
	GOV	Y	Y	Y	Y			X		
COM	ANY	Y	X	X	Y			X		
	COM	Y	X	X	Y			X		
	GOV	Y	X	X	Y			X		
GOV	ANY	Y	Y	Y	X			X		
	COM	X	X	X	X			X		
	GOV	Y	Y	Y	X			X		

**Note:**

- Use Citrix Gateway 12.1 or later for EDT to work properly. Older versions do not support ECDHE cipher suites in DTLS mode.
- Citrix Gateway does not support DTLS 1.2. So, TLS\_ECDHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384 and TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA384 are not supported. Citrix Gateway must be configured to use TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA to work properly in DTLS 1.0.

### **Configuring and enabling Citrix Workspace app for TLS**

There are two main steps involved in setting up TLS:

1. Set up SSL Relay on your XenApp or XenDesktop server and your Web Interface server and obtain and install the necessary server certificate.
2. Install the equivalent root certificate on the user device.

### **Installing root certificates on user devices**

To use TLS to secure communications between TLS-enabled Citrix Workspace app for Mac and the server farm, you need a root certificate on the user device. This root certificate verifies the signature of the Certificate Authority on the server certificate.

macOS X comes with about 100 commercial root certificates already installed. However, if you want to use another certificate, you can obtain one from the Certificate Authority and install it on each user device.

Depending on your organization's policies and procedures, you might want to install the root certificate on each user device instead of directing users to install it. The easiest and safest way is to add root certificates to the macOS X keychain.

### **To add a root certificate to the keychain**

1. Double-click the file containing the certificate. This automatically starts the Keychain Access application.
2. In the Add Certificates dialog box, choose one of the following from the Keychain pop-up menu:
  - login (The certificate applies only to the current user.)
  - System (The certificate applies to all users of a device.)
3. Click OK.
4. Type your password in the Authenticate dialog box and then click OK.

The root certificate is installed and can be used by TLS-enabled clients and by any other application using TLS.

## About TLS policies

This section provides information for configuring security policies for ICA sessions over TLS in Citrix Workspace app for Mac. You can configure certain TLS settings used for ICA connections in Citrix Workspace app for Mac. These settings are not exposed in the user interface. Changing them requires running a command on the device running Citrix Workspace app for Mac.

### Note

TLS policies can be managed in other ways, such as when devices are controlled by OS X server or another mobile device management solution.

TLS policies include the following settings:

**SecurityComplianceMode.** Sets the security compliance mode for the policy. If you don't configure SecurityComplianceMode, FIPS is used as the default value. Applicable values for this setting include:

- **None.** No compliance mode is enforced
- **FIPS.** FIPS cryptographic modules are used
- **SP800-52.** NIST SP800-52r1 compliance is enforced

```
defaults write com.citrix.receiver.nomas SecurityComplianceMode SP800-52
```

**SecurityAllowedTLSVersions.** This setting specifies the TLS protocol versions that are accepted during protocol negotiation. This information is represented as an array and any combination of the possible values is supported. When this setting is not configured, the values TLS10, TLS11, and TLS12 are used as the default values. Applicable values for this setting include:

- **TLS10.** Specifies that the TLS 1.0 protocol is allowed.
- **TLS11.** Specifies that the TLS 1.1 protocol is allowed.
- **TLS12.** Specifies that the TLS 1.2 protocol is allowed.

```
defaults write com.citrix.receiver.nomas SecurityAllowedTLSVersions -array  
TLS11 TLS12
```

**SSLCertificateRevocationCheckPolicy.** This feature improves the cryptographic authentication of the Citrix server and improves the overall security of the SSL/TLS connections between a client and a server. This setting governs how a given trusted root certificate authority is treated during an attempt to open a remote session through SSL when using the client for OS X.

When you enable this setting, the client checks whether the server's certificate is revoked. There are several levels of certificate revocation list checking. For example, the client can be configured to check only its local certificate list, or to check the local and network certificate lists. In addition, certificate checking can be configured to allow users to log on only if all Certificate Revocation lists are verified.

Certificate Revocation List (CRL) checking is an advanced feature supported by some certificate issuers. It allows an administrator to revoke security certificates (invalidated before their expiry date) in

the case of cryptographic compromise of the certificate private key, or simply an unexpected change in DNS name.

Applicable values for this setting include:

- **NoCheck.** No Certificate Revocation List check is performed.
- **CheckWithNoNetworkAccess.** Certificate revocation list check is performed. Only local certificate revocation list stores are used. All distribution points are ignored. Finding a Certificate Revocation List is not critical for verification of the server certificate presented by the target SSL Relay or Citrix Secure Web Gateway server.
- **FullAccessCheck.** Certificate Revocation List check is performed. Local Certificate Revocation List stores and all distribution points are used. Finding a Certificate Revocation List is not critical for verification of the server certificate presented by the target SSL Relay or Citrix Secure Web Gateway server.
- **FullAccessCheckAndCRLRequired.** Certificate Revocation List check is performed, excluding the root Certificate Authority. Local Certificate Revocation List stores and all distribution points are used. Finding all required Certificate Revocation Lists is critical for verification.
- **FullAccessCheckAndCRLRequiredAll.** Certificate Revocation List check is performed, including the root CA. Local Certificate Revocation List stores and all distribution points are used. Finding all required Certificate Revocation Lists is critical for verification.

#### Note

If you don't set `SSLCertificateRevocationCheckPolicy`, `FullAccessCheck` is used as the default value.

```
defaults write com.citrix.receiver.nomas SSLCertificateRevocationCheckPolicy  
FullAccessCheckAndCRLRequired
```

## Configuring TLS policies

To configure TLS settings on an unmanaged computer, run the **defaults** command in Terminal.app.

**defaults** is a command line application that you can use to add, edit, and delete app settings in an OS X preferences list file.

To change settings:

1. Open **Applications > Utilities \> Terminal**.
2. In Terminal, run the command:

```
defaults write com.citrix.receiver.nomas <name> <type> <value>
```

Where:

**<name>**: The name of the setting as described above.



**<type>**: A switch identifying the type of the setting, either `-string` or `-array`. If the setting type is a string, this can be omitted.

**<value>**: The value for the setting. If the value is an array and you are specifying multiple values, the values must be separated by a space.

```
defaults write com.citrix.receiver.nomas SecurityAllowedTLSVersions -array  
TLS11 TLS12
```

### Reverting to the default configuration

To reset a setting back to its default:

1. Open **Applications > Utilities \ > Terminal**.
2. In Terminal, run the command:

```
defaults delete com.citrix.receiver.nomas <name>
```

Where:

**<name>**: The name of the setting as described earlier.

```
defaults delete com.citrix.receiver.nomas SecurityAllowedTLSVersions
```

### Security settings

Numerous security improvements and enhancements were introduced with Citrix Receiver for Mac version 12.3, including:

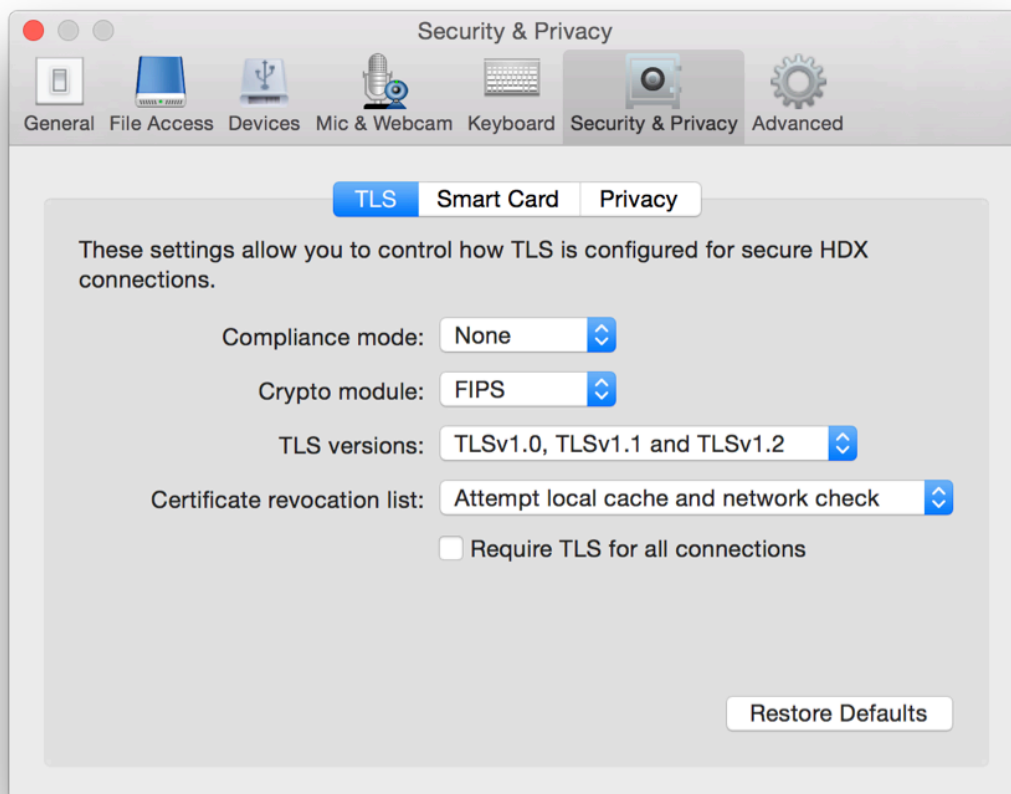
- improved security configuration user interface. In previous releases, the command line was the preferred method to make security-related changes. Configuration settings related to session security are now simple and accessible from the UI, which improves the user experience while creating a seamless method for the adoption of security-related preferences.
- view TLS connections. You can verify connections made to servers that are using a specific TLS version, encryption algorithm used for the connection, mode, key size, and SecureICA status. In addition, you can view the server certificate for TLS connections.

The improved **Security and Privacy** screen includes the following new options in the **TLS** tab:

- set the compliance mode
- configure the crypto module
- select the appropriate TLS version
- select the certificate revocation list
- enable settings for all TLS connections

The following image illustrates the **Security and Privacy** settings accessible from the UI:





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