Citrix Workspace app for Mac

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About this release

September 13, 2023

Learn about new features, enhancements, fixed issues, and known issues for Citrix Workspace app for Mac.

A list of features in Technical Preview is maintained in Features in Technical Preview section, so you can find them in one place. Explore our preview features and share your feedback using the attached Podio form link.

> **Note:**
>
> The auto-update service is not supported on Citrix Workspace app for Mac versions 2301 and earlier. In case you are on a version that does not support auto-update service, you can manually install Citrix Workspace app 2301.1 or later versions for Mac by downloading the file from the Citrix website at Downloads.

Native support for Mac with Apple Silicon (M1 and M2 Series) Universal architecture

Citrix Workspace app for macOS now natively supports Macs with Apple silicon (M1 and M2 Series) by way of a universal architecture. With the universal architecture, the Citrix Workspace app runs natively on both Apple silicon and Intel-based Mac computers without Rosetta emulation. The build runs natively on Macs with Apple silicon (M1 and M2 Series) and it must be installed and tested on Macs using M1 and M2 Series.

> **Note:**
>
> Citrix continues to support Intel-based Macs that use the Rosetta 2 dynamic binary translator. However, Citrix will soon deprecate the Citrix Workspace app for Mac that uses Rosetta emulation. Keep a look out for an announcement in the Deprecation section.

You can now download either the Universal Architecture build or Intel build from the **Citrix Workspace App for macOS (Apple silicon)** section at Downloads. If you're using Citrix Workspace app on a Mac running Mac with Apple silicon (M1 and M2 Series), you must upgrade the HDX RealTime Optimization Pack (RTOP). This ensures that the audio-video conferencing and Voice over Internet Protocol enterprise telephony through Microsoft Skype for Business is optimized. You can install the HDX RealTime Media Engine 2.9.500 for Mac from the Citrix website at Downloads.

If your organization uses any third-party plug-ins or virtual channels, you must ensure that these plug-ins are compatible with Macs running Apple silicon. If the plug-ins are developed in-house then you must rebuild these plug-ins before installing the universal architecture build.

For more information such as uninstalling the universal architecture build or using the Custom Virtual Channel SDK (VCSDK), see Native support Apple silicon section.

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What's new in 2307

Native support for Macs with M2 chips

Starting with the 2307 release, Citrix Workspace app for macOS supports M2 series (along with M1 series that was previously supported) of Apple silicon natively. For more information, see Native support Apple silicon.

Citrix Workspace app for Mac on macOS Sonoma Beta

Citrix Workspace app 2307 for Mac has been tested on macOS Sonoma Public Beta 1 Version 23A5286i. Use this setup in a test environment and provide your feedback.

> **Caution:**
>
> Do not use Citrix Workspace app for Mac on macOS Sonoma Beta versions in production environments.

Deprecating support for macOS version Catalina

As announced in the 2304 release, support for macOS version Catalina (10.15) is deprecated in the 2307 release and will be removed for future releases. For more information, see Deprecation.

Support for authentication using FIDO2 when connecting to cloud store

Starting with the 2307 release, users can authenticate using FIDO2 based password-less authentication when connecting to cloud store. FIDO2 security keys provide a seamless way for enterprise employees to authenticate to apps or desktops that support FIDO2 without entering a user name or password. This feature currently supports roaming authenticators (USB only) with PIN code and touchID. This feature is supported on macOS 12 and later versions. For more information, see FIDO2 based authentication when connecting to cloud store.

Support for authentication using FIDO2 within an HDX session

Starting with the 2307 release, users can authenticate using FIDO2 based password-less authentication within an HDX session. FIDO2 security keys provide a seamless way for enterprise employees to authenticate to apps or websites that support FIDO2 without entering a user name or password. This feature currently supports roaming authenticators (USB only) with PIN code. This feature is supported on macOS 12 and later versions. For more information, see FIDO2 based authentication within an HDX session.

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> **Note:**
>
> This release supports only one passkey in a FIDO2 supported device. If your FIDO2 supported device has multiple passkeys then the first passkey is used to authenticate the HDX session.

Auto-update version control

Administrators can now manage the auto-updated version of Citrix Workspace app for the devices in the organization.
Administrators can control the version by setting the range in the maximumAllowedVersion and minimumAllowedVersion properties in the Global App Config Service.

Example JSON file in Global App Config Service:

```
{

  "serviceURL": {

    "url": "https://serviceURL:443"
   }
 ,
  "settings": {

    "name": "Version Control for Citrix Workspace",
    "description": "Provides admin ability to Version Control for
       Citrix Workspace",
    "useForAppConfig": true,
    "appSettings": {

      "macos": [
        {

          "category": "AutoUpdate",
          "userOverride": false,
          "assignedTo": [
            "AllUsersNoAuthentication"
          ],
          "settings": [
            {

              "name": "Auto update plugins settings",
              "value": [
                {

                  "pluginName": "Citrix Workspace",
```

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```
                    "pluginId": "D99C3E77-FBF5-4B97-8EDA-4E381A1E0826",
                    "pluginSettings": {

                      "deploymentMode": "Update",
                      "upgradeToLatest": false,
                      "minimumAllowedVersion": "23.07.0.63",
                      "maximumAllowedVersion": "23.07.0.63",
                      "delayGroup": "Medium",
                      "detectRule": ""
                     }

                  }

                ]
               }

            ]
           }

        ]
       }

    }

 }


<!--NeedCopy-->
```

When the range is set, Citrix Workspace app on the user's device is automatically updated to the highest available version that falls between the mentioned range.

If you want to auto-update Citrix Workspace app to a specific version, enter the same version in the maximumAllowedVersion and minimumAllowedVersion properties in the Global App Config Service. For more information, see Auto-update version control.

> **Note:**
>
> - To achieve auto-update version control, upgradeToLatest setting in the Global App Config Service must be set to false. If this is true, maximumAllowedVersion and minimumAllowedVersion will be ignored.
> - Do not modify the pluginId as this is mapped to Citrix Workspace app.
> - If the administrator hasn't configured the version in the Global App Config Service, Citrix Workspace app is updated to the latest available version by default.

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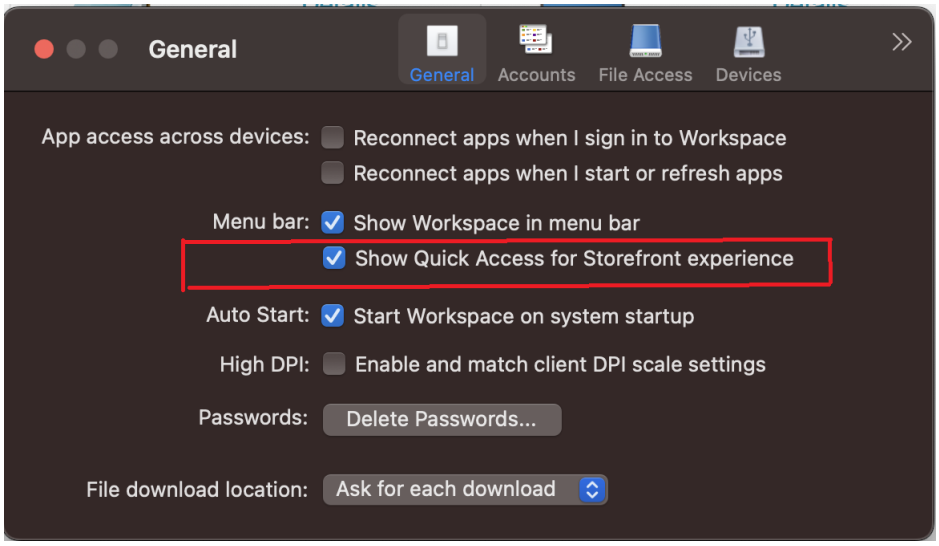
> - You can only use the version ranges that are set to update Citrix Workspace app. However, downgrade is not supported.
> - This feature is supported from release 2307 onwards.

Quick access menu for StoreFront

Starting with the 2307 release, you can navigate to your favorite apps and desktops quickly and easily using the quick access feature for on-premises stores. To enable quick access, right-click **Citrix Workspace** in the toolbar, navigate to **Preferences > General**, and then select **Show Quick Access for Storefront experience**. This feature allows you to see your favorite data directly from the Mac menu bar.

You can enable the quick access feature by using **Preferences**.



Administrators can enable or disable the quick access feature by using the Mobile Device Management (MDM) or Global App Config Service (GACS) methods. For more information, see Quick access menu for StoreFront.

Enabling or disabling quick access using MDM

To enable quick access through MDM, administrators must use the following setting:

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```
<key>ShowQuickAccessForStoreFront</key>
<false/>
```

Enabling or disabling quick access using GACS

To enable quick access through GACS, administrators must use the following setting:

`enableQuickAccessForStoreFront`

Store-based configuration of microphone and webcam access

Starting with the 2307 release, the per-store microphone and webcam access are included as part of the client-selective trust feature. This enhancement allows you to provide access to a microphone and webcam on a per-store basis.

To enable microphone and webcam access for a store, you must select **Preferences > Mic & Webcam**. In the **Mic & Webcam** tab, select the store and the type of access required for that store.

Send feedback on Citrix Workspace app

The Send feedback option allows you to inform Citrix about any issues you might encounter while using the Citrix Workspace app. You can also send suggestions to help us improve your Citrix Workspace app experience.

You must select **Help > Send feedback** to view and fill the issue details in the Send feedback form. You can add details like the examples provided in the form.

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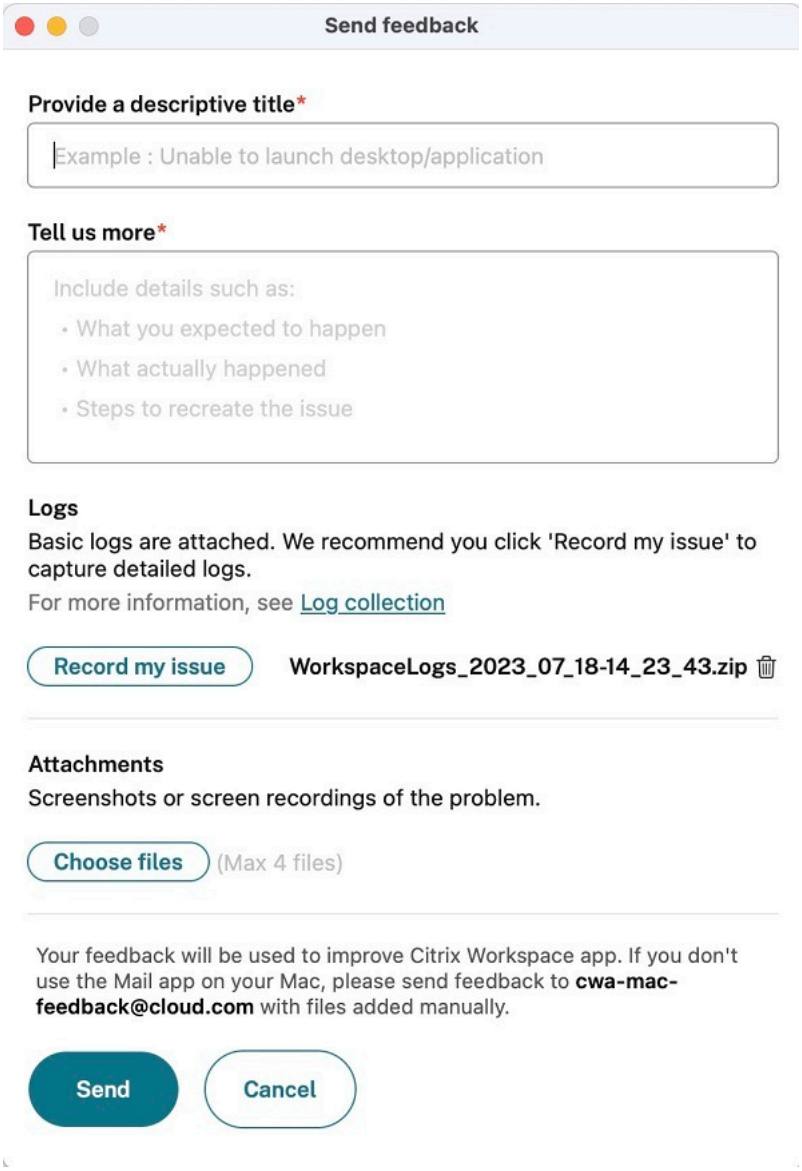

You can attach the existing log files or generate new log files. To generate log files, click **Record my issue > Start Recording** and then reproduce the issue. After the issue is reproduced, click **Stop Recording**. The log file is saved automatically and replaces the existing logs with the reproduced logs.

> **Note:**
>
> Citrix does not collect any Personally Identifiable Information (PII) from the logs.

You can attach screenshots or screen recordings describing the issue to help us understand what you're experiencing. Click **Choose files** and add the attachments such as screenshots or screen recordings. You can attach a maximum of four files.

Once you've entered the necessary information, click **Send** to have a new email automatically created in your Mail app with the information you added. From there, click the **Send button** to share the feedback with Citrix. For more information, see Send feedback on Citrix Workspace app.

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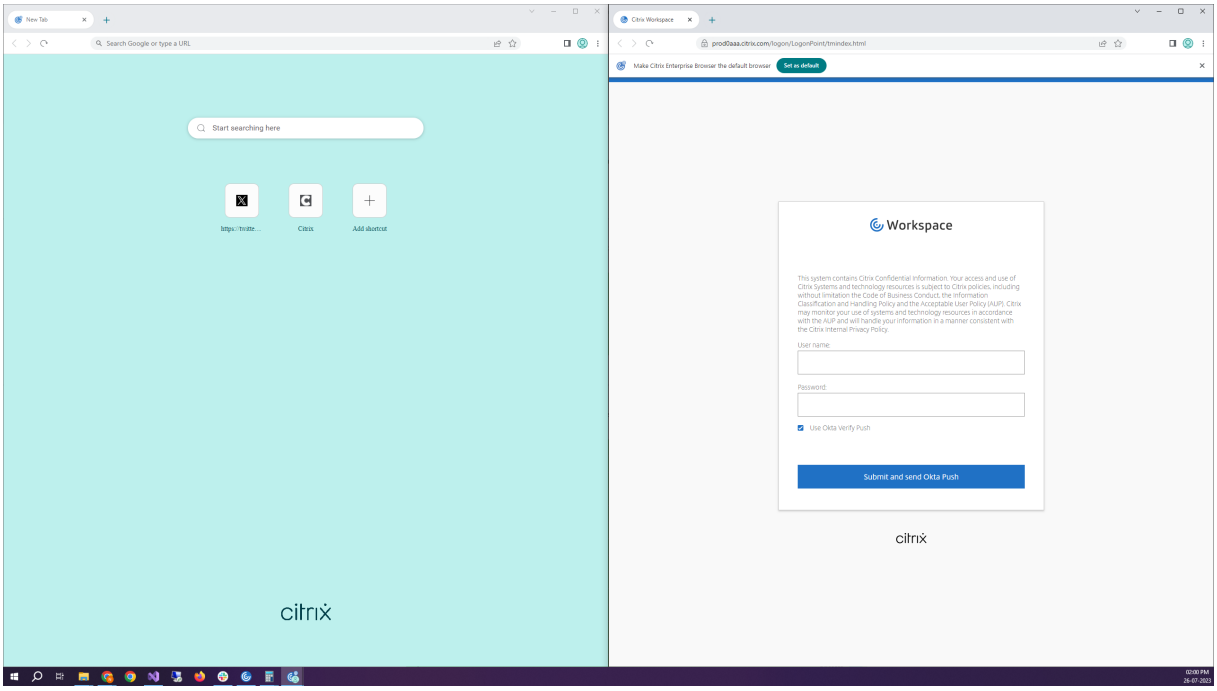
> **Note**
>
> If you aren't using the default Mail app, then send feedback to cwa-mac-feedback@cloud.com from your mail client. Add the issue details, log files, screenshots, or screen recordings to the email manually.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 113.1.1.34, based on Chromium version 113. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Split view support

Citrix Enterprise Browser on macOS supports split view for ease of multitasking. With split view, you can use Citrix Enterprise Browser and another window adjacent to each other, without having to manually move and resize windows. For more information, see Apple's support article.



Citrix Enterprise Browser shortcut

Starting with Citrix Workspace app for Mac 2307 version, an administrator can configure and control the presence of Citrix Enterprise Browser shortcut on launch pad.

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> **Note:**
>
> By default, this feature isn't configured.

Configuration

An IT administrator can configure the presence of Citrix Enterprise Browser shortcut in one of the following ways:

- Mobile Device Management (MDM)
- Global Admin Configuration service (GACS)
- web.config file.

> **Note:**
>
> - All the configuration methods have equal priority. Enabling any one of them enables the shortcut.
> - If you haven't configured the shortcut but have one or more Workspace stores, the shortcut gets automatically enabled.
> - For end users, the Citrix Enterprise Browser shortcut appears if the user makes it as a favorite app irrespective of the configuration.
> - To disable this feature for Workspace stores, administrators must apply one of the following settings:
> - set the CEBShortcutEnabled attribute to false in MDM or web.config file.
> - disable the Enable Citrix Enterprise Browser shortcut property in GACS.

Mobile Device Management (MDM)

Administrators can push the settings **CEBShortcutEnabled** set as **true** to the user's device.

For more information on how to use MDM, see Mobile Device Management (MDM).

> **Note:**
>
> This way of configuration is applicable on Workspace and StoreFront.

Global Admin Configuration service (GACS)

Navigate to **Workspace Configuration > App Configuration > Citrix Enterprise Browser** and enable **Enable Citrix Enterprise Browser shortcut** property.

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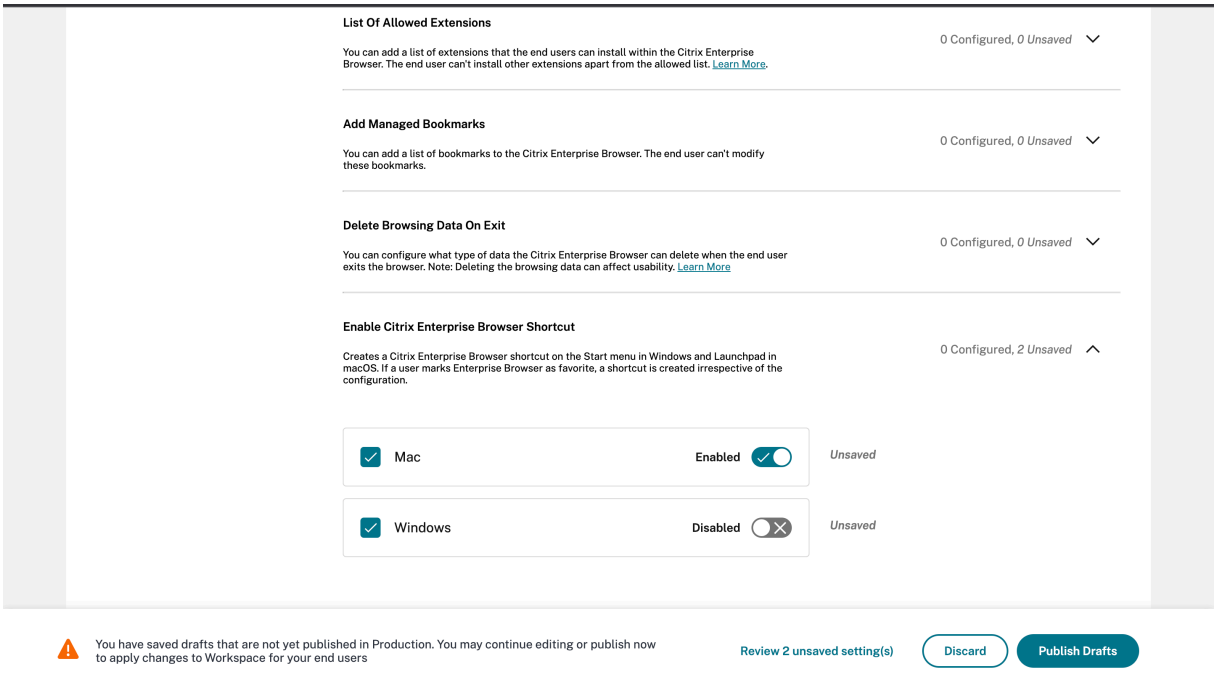

For more information about how to use the GACS UI, see User interface article in the Citrix Enterprise Browser documentation.

> **Note:**
>
> This way of configuration is applicable on Workspace and StoreFront.

web.config file

Enable the attribute **CEBShortcutEnabled** under the properties.

```
                        <properties>
                            <property name="CEBShortcutEnabled" value="
                               True" />
                        </properties>


<!--NeedCopy-->
```

> **Note:**
>
> This way of configuration is applicable on StoreFront.

Using web.config

To enable Citrix Enterprise Browser shortcut, do the following:

1. Use a text editor to open the web.config file, which is typically at `C:\inetpub\wwwroot\Citrix\Roaming directory`.

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2. Locate the user account element in the file (Store is the account name of your deployment).

   For example: `<account id=... name="Store">`

3. Before the </account> tag, navigate to the properties of that user account and add the following:

```
                    <properties>
                        <property name="CEBShortcutEnabled" value=
                            "True" />
                    </properties>

<!--NeedCopy-->
```

Following is an example of web.config file:

```
<account>
    <clear />
    <account id="d1197d2c-ac82-4f13-9346-2ee14d4b0202" name="F84Store"
      description="" published="true" updaterType="Citrix"
          remoteAccessType="None">
      <annotatedServices>
        <clear />
        <annotatedServiceRecord serviceRef="1__Citrix_F84Store">
          <metadata>
            <plugins>
              <clear />
            </plugins>
            <trustSettings>
              <clear />
            </trustSettings>
            <properties>
                  <property name="CEBShortcutEnabled" value="True" />
            </properties>
          </metadata>
        </annotatedServiceRecord>
      </annotatedServices>
      <metadata>
        <plugins>
          <clear />
        </plugins>
        <trustSettings>
          <clear />
        </trustSettings>
        <properties>
          <clear />
        </properties>
```

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```
      </metadata>
    </account>

<!--NeedCopy-->
```

How to configure using web.config

1. Use a text editor to open the web.config file, which is typically at C:\inetpub\wwwroot\Citrix\Roaming directory.
2. Locate the user account element in the file (Store is the account name of your deployment).

   For example: `<account id=... name="Store">`
3. Before the </account> tag, navigate to the properties of that user account and add the following:

```
                    <properties>
                        <property name="CEBShortcutEnabled" value=
                            "True" />
                    </properties>


<!--NeedCopy-->
```

Technical Preview

- Keyboard accessibility support for the toolbar on the Virtual Desktop

For a complete list of Technical Preview features, see Features in Technical Preview page.

Fixed issues

- While launching the published app through the browser, the app does not launch directly but downloads an ICA file. The user might have to open the downloaded ICA file manually to launch the app. [CVADHELP-20835]
- Attempts to start a session might fail if the StoreFront keyword is set to “KEYWORDS:LogoffOnClose=true PromptMessage=”Do you want to Log off?””. [CVADHELP-23170]
- You might not be able to select the required gateway from the list of options provided when using Citrix Workspace app for Mac. [CVADHELP-22777]

Known issues

No new issues have been observed in this release.

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Earlier releases

This section lists features in previous releases along with their fixed and known issues. Releases reach End of Life (EOL) 18 months after the release date. For details about lifecycle dates for the supported versions, see Lifecycle Milestones for Citrix Workspace app and Citrix Receiver.

2306

What's new

Log traceability and user activity

Starting with the 2306 release, when a user reports an issue, the administrators can go through the log files to view the basic information such as macOS version, Citrix Workspace app version, details about the previous upgrade, number of stores added, and so on. Administrators can now view the following activities in Citrix Workspace app for Mac:

- The app launched along with the macOS version, number of stores, and other metadata.
- The store addition and deletion operation and the metadata that is required to add an account.
- The session start time and launch status.
- Auto update activation and status.
- System events such as moving the app to the background, sleep mode, or quitting.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 112.1.1.23, based on Chromium version 112. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Fixed issues

- After upgrading Citrix Workspace app for Mac to version 2305, certain third-party virtual apps that have pop-up dialogs for entering username and password might become unresponsive upon opening. [CVADHELP-23032]

Known issues

No new issues have been observed in this release.

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2305

What's new

Support for horizontal scroll

Previously, Citrix Workspace app for Mac supported only vertical scroll on a trackpad. Starting with the 2305 release, a horizontal scroll is also supported. For more information, see Support for horizontal scroll.

Improved audio echo cancellation support

Citrix Workspace app now supports echo cancellation in adaptive audio and legacy audio codecs. This feature is designed for real time audio use cases, and it improves the user experience. Citrix recommends using adaptive audio. For more information, see Improved audio echo cancellation support.

Improved graphics performance [Technical Preview]

Starting with the 2305 release, the performance of graphics is significantly improved for seamless sessions. This feature also reduces the load on CPU usage.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Support for Certificate-based authentication

Starting with the 2305 release, Workspace administrators can configure and enforce Azure Active Directory conditional access policies for users authenticating to Citrix Workspace app.

The following methods can be used to enable the authentication using conditional access:

- Mobile Device Management (MDM)
- Global App Config Service (GACS)

The flag values read by Citrix Workspace app take precedence in the following order:

- Mobile Device Management (MDM)
- Global App Config Service (GACS)

For more information, see Support for Certificate-based authentication.

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Channel support for Global App Configuration Service

The Global App Configuration Service for Citrix Workspace allows a Citrix administrator to deliver Workspace service URLs and Workspace App settings through a centrally managed service. Global App Configuration service now allows administrators to test the settings before rolling it out to all users. This feature allows to resolve any issues before applying the global app configurations to the entire user base. For more information, see Channel support for Global App Configuration Service.

Improved auto-update experience

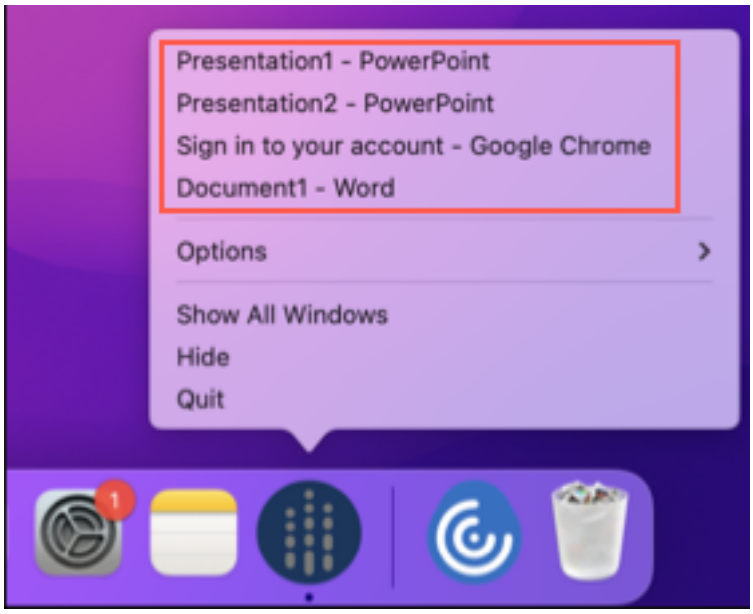
The auto-update feature automatically updates the Citrix Workspace app to the latest version without the need for any user intervention.

Citrix Workspace app periodically checks and downloads the latest available version of the app. Citrix Workspace app determines the best time to install based on user activity not to cause any disruptions.

For more information, see Improved auto-update experience.

Opened apps appear in the dock with native app icons

Previously, clicking virtual apps in the Citrix Workspace app triggered the **Citrix Viewer** where these apps would be available. If you open many apps, the apps or its instances are opened in the **Citrix Viewer**. You can view the open apps by right-clicking the **Citrix Viewer** icon.



Starting with the 2305 release, when you open virtual apps, they appear in the Dock (bottom-right corner of the screen) with their respective icons and are easily identifiable. You can then access the virtual app from the dock itself. If you open multiple instances of an app, these instances are not duplicates in the Dock but are grouped within one instance in the Dock.

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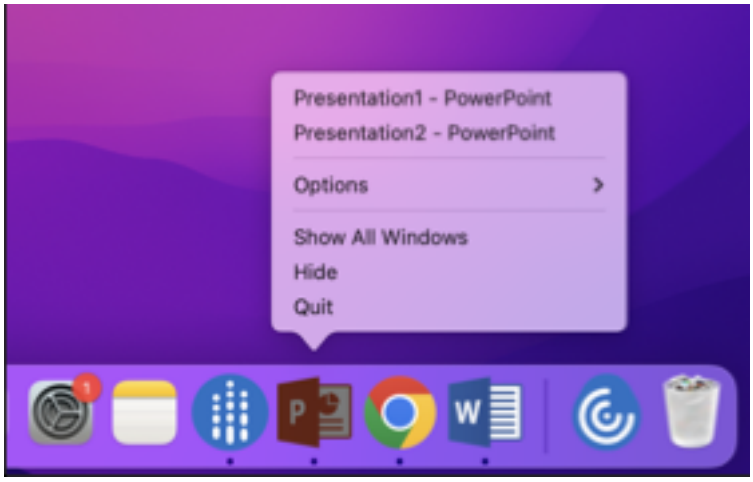
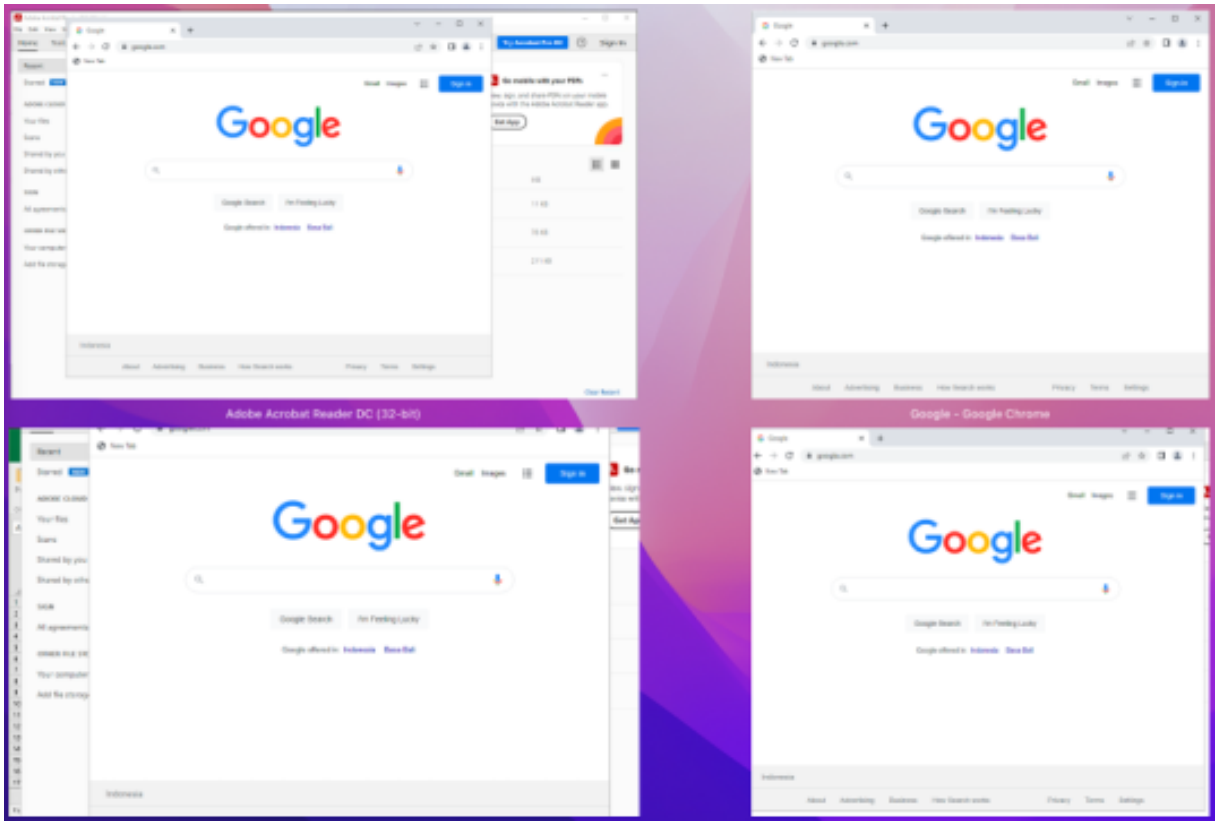


For more information, see Opened apps appear in the dock with native app icons.

Improved Mission Control and App Expose experience

Previously, using the **Mission Control** or **App Expose** feature in a virtual app session resulted in the overlapping of many windows that were opened.



Starting with the 2305 release, when you use the **Mission Control** or **App Expose** feature in a virtual app session and open many windows, the windows do not overlap, and you can easily choose from among them.

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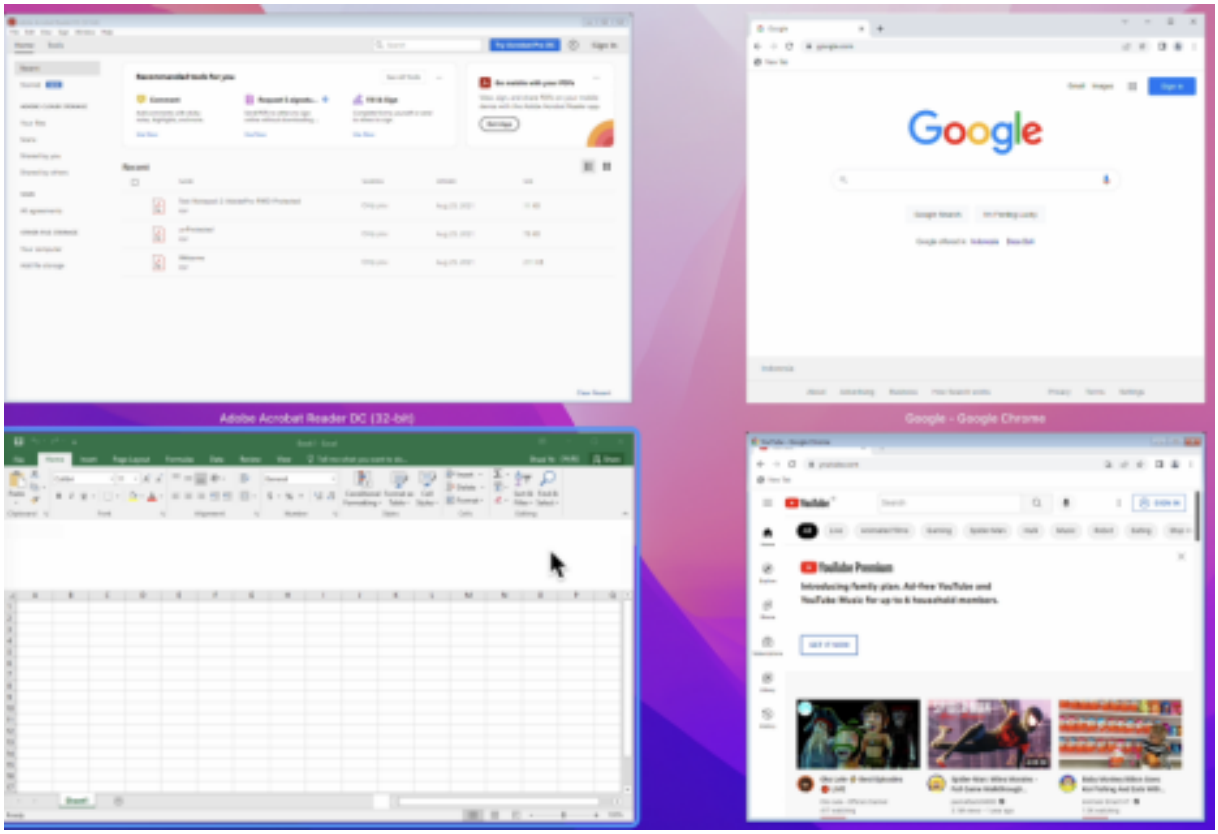

For more information, see Improved Mission Control and App Expose experience.

Enhancement to sleep mode for optimized Microsoft Teams call

Previously, when you are in an optimized Microsoft Teams meeting, if there is no mouse or keyboard interaction, Citrix Workspace app or the optimized Microsoft Teams screen might go to sleep mode.

Starting with the 2305 release, Citrix Workspace app or the optimized Microsoft Teams screen doesn't go to sleep mode even if there is no mouse or keyboard interaction during an optimized Microsoft Teams meeting.

For more information, see Enhancement to sleep mode for optimized Microsoft Teams call.

Support for continuity camera

With the Continuity Camera, you can now use iPhone as your webcam. For a seamless connection, mount your iPhone such that its camera is available to the Mac device. You must select **Webcam > Automatic Camera Selection** for the iPhone to appear automatically on the Mac device as an external camera. You can switch to any other camera manually, for example by selecting **Webcam > FaceTime HD Camera**. The Continuity Camera works wired or wirelessly and provides a high-quality image. For more information, see Support for continuity camera.

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Increase in the number of supported virtual channels [Technical Preview]

In earlier versions of the client, sessions supported up to 32 virtual channels. Starting with 2305 release, you can use up to 64 virtual channels in a session.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Store-based configuration of microphone and webcam access levels [Technical Preview]

Starting with the 2305 release, the per-store microphone and webcam access are included as a part of client-selective trust feature. This enhancement allows you to change the settings based on a per-store basis. You can click a store to enable the required microphone or camera access. The selected setting for microphone or camera access is applied on a per-store basis.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Support for authentication using FIDO2 when connecting to cloud stores [Technical Preview]

Starting with the 2305 release, users can authenticate using passwordless FIDO2 security keys when connecting to Citrix Workspace app for Mac. Users can sign into the cloud stores using the FIDO2 security keys. The security keys support different types of security inputs such as security pins, biometrics, card swipe, smart card, Public Key Certificates. This feature is supported on macOS 12 and later versions. For more information about FIDO2 see FIDO2 Authentication.

Citrix Workspace app uses the user's default browser for FIDO2 authentication (Webauthn). Administrators can configure the type of browser to authenticate to Citrix Workspace app. The configured setting can be pushed using the Mobile Device Management (MDM), Global App Config Service (GACS), or the command line interface methods. The FIDO2 feature is currently not supported for on-premises stores. For more information on the web browser settings, see Global App Configuration Service documentation.

The following settings allow you to select the type of browser used for authenticating an end user into Citrix Workspace app:

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Embedded: Allows you to authenticate within Citrix Workspace app. Citrix Workspace app saves the session data or cookies for single sign-on (for example, SaaS apps) when the enhanced single sign-on feature is enabled. This authentication method does not support passwordless authentications such as FIDO2.

EmbeddedWithPrivateSession: This setting is similar to the **Embedded** setting. Single sign-on is not supported as session data or cookies are not present in Citrix Workspace app.

System: Allows you to use the user's default browser for authentication (for example, Safari or Chrome). Authentication occurs outside Citrix Workspace app. Use this setting to support passwordless authentication. This setting tries to use the existing user session from the user's browser.

SystemWithPrivateSession: This setting is like the **System** setting. Citrix Workspace app uses a private session in the browser for authentication. The browser doesn't save authentication cookies or data. Single sign-on is not supported in this option.

Enabling authentication using MDM

To enable authentication through MDM, administrators must use the following setting:

```
<key>WebBrowserForAuthentication</key>
<string>System</string>
```

Enabling authentication using GACS

To enable authentication through GACS, administrators must use the following setting:

```
{

    "serviceURL": {

      "url": "https://serviceURL:443"
     }
 ,
    "settings": {

      "name": "Productivity Apps",
      "description": "Provides access to MS Office and other basic apps
         ",
      "useForAppConfig": true,
      "appSettings": {

        "macos": [
          {
```

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```
17
18              "assignedTo": [
19                "AllUsersNoAuthentication"
20              ],
21              "category": "authentication",
22              "settings": [
23                {
24
25                  "name": "web browser for authentication",
26                  "value": "SystemWithPrivateSession"
27                 }
28
29              ],
30              "userOverride": false
31             }
32
33           ]
34         }
35
36       }
37
38     }
39
40
41 <!--NeedCopy-->
```

Enabling authentication using the command-line interface

To enable authentication using the command-line interface, administrators must run the following command:

```
defaults write com.citrix.receiver.nomas WebBrowserForAuthentication System
```

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Citrix Enterprise Browser

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This release includes Citrix Enterprise Browser version 112.1.1.23, based on Chromium version 112. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Modification in SPA policy implementation on internal Web and SaaS apps

This feature enhances the security policies implementation on Web and SaaS apps. When a webpage and iframes within the webpage have different policies, we now have a stricter policy implementation where a union of all policies are applied on the entire webpage, including the iframes. However, the watermark is applied to the webpage only.

Support for browser extensions

You can add extensions that are provided by your administrator to the Citrix Enterprise Browser in a secure way. An administrator can deploy, manage, and control the extensions. End users can view and use the extension under citrixbrowser://extensions as required. For more settings, see Global App Configuration Service.

For information on how to configure, see Support for browser extensions documentation.

Use GACS to manage Citrix Enterprise Browser

The administrator can use the Global App Configuration service (GACS) for Citrix Workspace to deliver Citrix Enterprise Browser settings through a centrally managed service.

The GACS is designed for administrators to easily configure Citrix Workspace and manage the Citrix Workspace app settings. This feature allows admins to use GACS to apply various settings or system policies to the Citrix Enterprise Browser on a particular store. The administrator can now configure and manage the following Citrix Enterprise Browser settings using APIs or the GACS Admin UI:

- “Enable CEB for all apps” - Makes the Citrix Enterprise Browser the default browser for opening web and SaaS apps from the Citrix Workspace app.
- “Enable save passwords” - Allow or deny end users the ability to save passwords.
- “Enable incognito mode” - Enable or disable incognito mode.
- “Managed Bookmarks” - Allow administrator to push bookmarks to the Citrix Enterprise Browser.
- “Enable developer tools” - Enable or disable developer tools within the Enterprise Browser.
- “Delete browsing data on exit” - Allow the administrator to configure what data the Citrix Enterprise Browser deletes on exit.
- “Extension Install Force list” - Allow the administrator to install extensions in the Citrix Enterprise Browser.

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- “Extension Install Allow list” - Allow the administrator to configure an allowed list of extensions that users can add to the Citrix Enterprise Browser. This list leverages the Chrome Web Store.

For more information, see Use Global App Configuration service to manage Citrix Enterprise Browser.

> **Notes:**
>
> - The name and value pair are case-sensitive.
> - All the browser settings in Global App Configuration Service are under the following category:

```
{

    "category": "browser",
    "userOverride": false,
    "assignedTo": [
    "AllUsersNoAuthentication"
    ]
 }


<!--NeedCopy-->
```

> - The administrator can apply the settings to unmanaged devices as well. For more information, see Global App Configuration Service documentation.

User interface

To configure Citrix Enterprise Browser through the GACS Admin UI, do the following:

1. Sign in to citrix.cloud.com with your credentials.

   > **Note:**
   >
   > - Refer to the Sign Up for Citrix Cloud article for step-by-step instructions to create a Citrix Cloud account.

2. Upon authentication, click the menu button in the top left corner and select **Workspace Configuration**.

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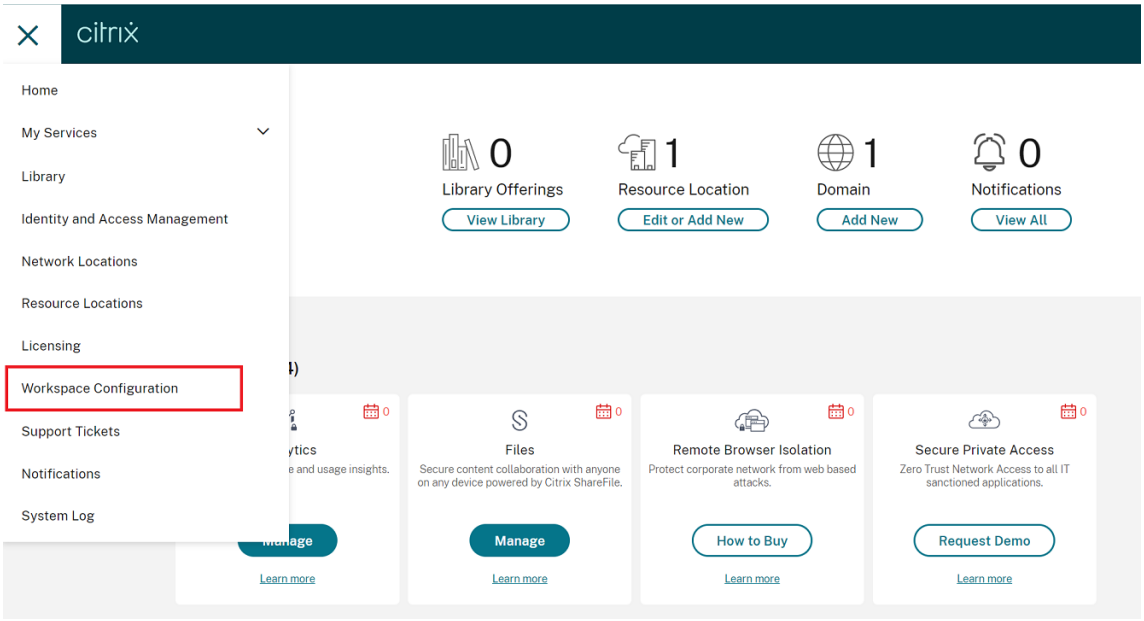

The **Workspace Configuration** screen appears.

3. Click **App Configuration** > **Citrix Enterprise Browser**.

   You can now configure, modify, and publish Citrix Enterprise Browser feature settings.

For more information, see Use Global App Configuration service to manage Citrix Enterprise Browser.

Technical Preview

- Client APP Management

For a complete list of Technical Preview features, see Features in Technical Preview page.

Fixed issues

- With this enhancement, the location data can be collected and sent to Microsoft Teams to support the dynamic emergency calling feature. [CVADHELP-21117]
- When you scroll in a MacBook using a touchpad in a user session that is opened through Citrix Workspace app for Mac, the scroll experience might not be smooth. [CVADHELP-21427]
- When using Citrix Workspace app for Mac, external users might get disconnected from the sessions intermittently. [CVADHELP-22191]
- Attempts to add a store URL that contains a query parameter might fail in Citrix Workspace app for Mac with this error message:

  This store doesn't exist. Please retry or contact support.

  [CVADHELP-22445]

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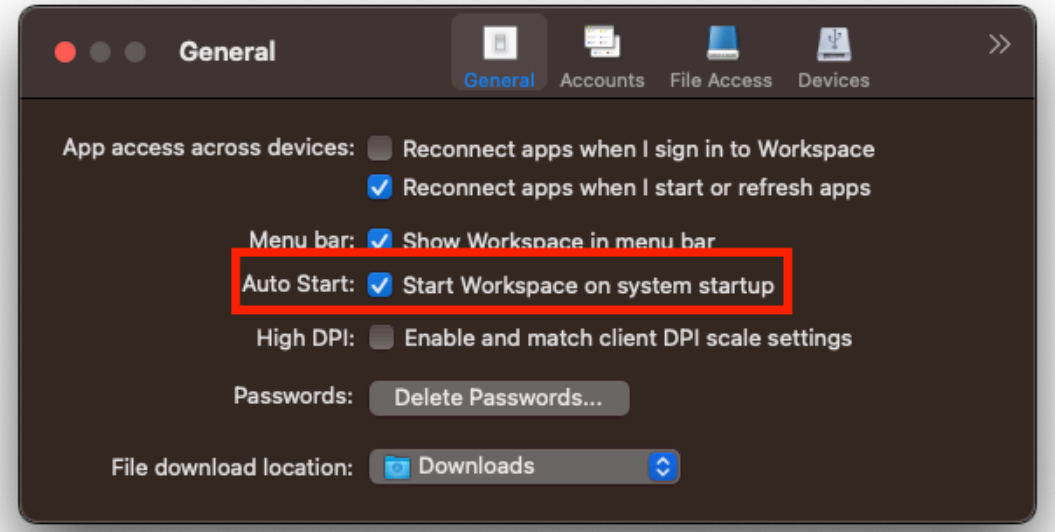
- On an on-premises store, when you attempt to open Citrix Workspace app from the **Menu** bar, you might experience an indefinite wait time. [CVADHELP-22688]

2304

What's new

Enhanced auto start experience

Previously, Citrix Workspace app for Mac used to start automatically whenever a computer was turned on. Starting with the 2304 release, you can choose to disable or enable the auto start feature on Citrix Workspace app for Mac by navigating to **Preferences > General > Start Workspace** on system startup. The auto start setting is enabled by default.



For more information, see Enhanced auto start experience.

Improved experience for optimized Microsoft Teams video conference calls

Starting with 2304 release, by default simulcast support is enabled for optimized Microsoft Teams video conference calls. With this support, the quality and experience of video conference calls across different endpoints are improved by adapting to the proper resolution for the best call experience for all callers.

With this improved experience, each user might deliver multiple video streams in different resolutions (for example, 720p, 360p, and so on) depending on several factors including endpoint capability, net-

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work conditions, and so on The receiving endpoint then requests the maximum quality resolution that it can handle thereby giving all users the optimum video experience.

> **Note:**
>
> This feature is available only after the roll-out of an update from Microsoft Teams. For information on ETA, go to https://www.microsoft.com/ and search for Microsoft 365 roadmap. When the update is rolled-out by Microsoft, you can check CTX253754 for the documentation update and the announcement.

For more information see,
Improved experience for optimized Microsoft Teams video conference calls.

Support for Certificate-based authentication [Technical Preview]

Starting with the 2304 release, Workspace administrators can configure and enforce Azure Active Directory conditional access policies for users authenticating to Citrix Workspace app.

The following methods can be used to enable the authentication using conditional access:

- Mobile Device Management (MDM)
- Global App Config Service (GACS)

The flag values read by Citrix Workspace app take precedence in the following order:

- Mobile Device Management (MDM)
- Global App Config Service (GACS)

For more information, see Support for Certificate-based authentication.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Force login prompt for Federated identity provider

Citrix Workspace app now honors Federated Identity Provider Sessions setting. For more information, see Citrix Knowledge Center article CTX253779.

You no longer need to use the Store authentication tokens policy to force the login prompt. For more information, see Force login prompt for Federated identity provider.

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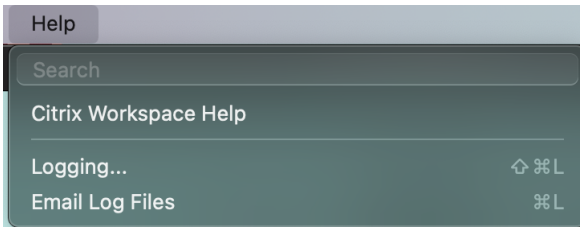
Support for non-English-language Input Method Editors (IME) keyboard layouts

Support for non-English language IME keyboard layouts continues to work uninterrupted after the Carbon APIs are deprecated with the Cocoa APIs. For more information, see Support for non-English-language Input Method Editors (IME) keyboard layouts.

Log collection

Log collection simplifies the process of collecting logs for Citrix Workspace app. The logs help Citrix to troubleshoot, and, in cases of complicated issues, facilitate support. Users can now collect logs quickly by using the new option provided in the **Help** menu by navigating to **Help** and selecting the **Logging...** or **Email Log Files** option. This feature improves the user experience during the log collection process.



- **Logging...** - clicking this option directs you to **Preferences > Advanced > Logging**
- **Email Log Files** – clicking this option allows collecting the latest logs.

For more information, see Log collection.

Support synchronization for more keyboard layouts

Starting with the 2304 release, Citrix Workspace app for Mac supports keyboard layout synchronization for the following layouts or Input Method Editors (IMEs):

- English ABC
- English ABC - India
- Chinese, Traditional: Zhuyin - Traditional
- Chinese, Traditional: Sucheng - Traditional
- Google Japanese IME
- Sougou Chinese IME

For more information, see Support synchronization for more keyboard layouts.

Microsoft Teams enhancement

Configuring a preferred network interface

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You can now configure a preferred network interface for media traffic. Run the following command in a terminal:

```
defaults write com.citrix.HdxRtcEngine NetworkPreference -int <value>
```

Select one of the following values as required:

- 1: Ethernet
- 2: Wi-Fi
- 3: Cellular
- 4: Vpn
- 5: Loopback
- 6: Any

By default and if no value is set, the WebRTC media engine chooses the best available route.

For more information, see Configuring a preferred network interface.

Limiting video resolutions

Administrators who have users on lower-performance client endpoints can choose to limit incoming or outgoing video resolutions to decrease the impacts of encoding and decoding video on those endpoints. Starting from Citrix Workspace app 2304 for Mac, you can limit these resolutions using client configuration options.

For more information, see Limiting video resolutions.

Support for horizontal scroll [Technical Preview]

Previously, Citrix Workspace app for Mac supported only vertical scroll on a trackpad. Starting with the 2304 release, a horizontal scroll is also supported.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Keyboard input mode enhancements

Citrix Workspace app for Mac provides UI to configure the keyboard input mode.

To configure keyboard input mode by using the GUI, do the following:

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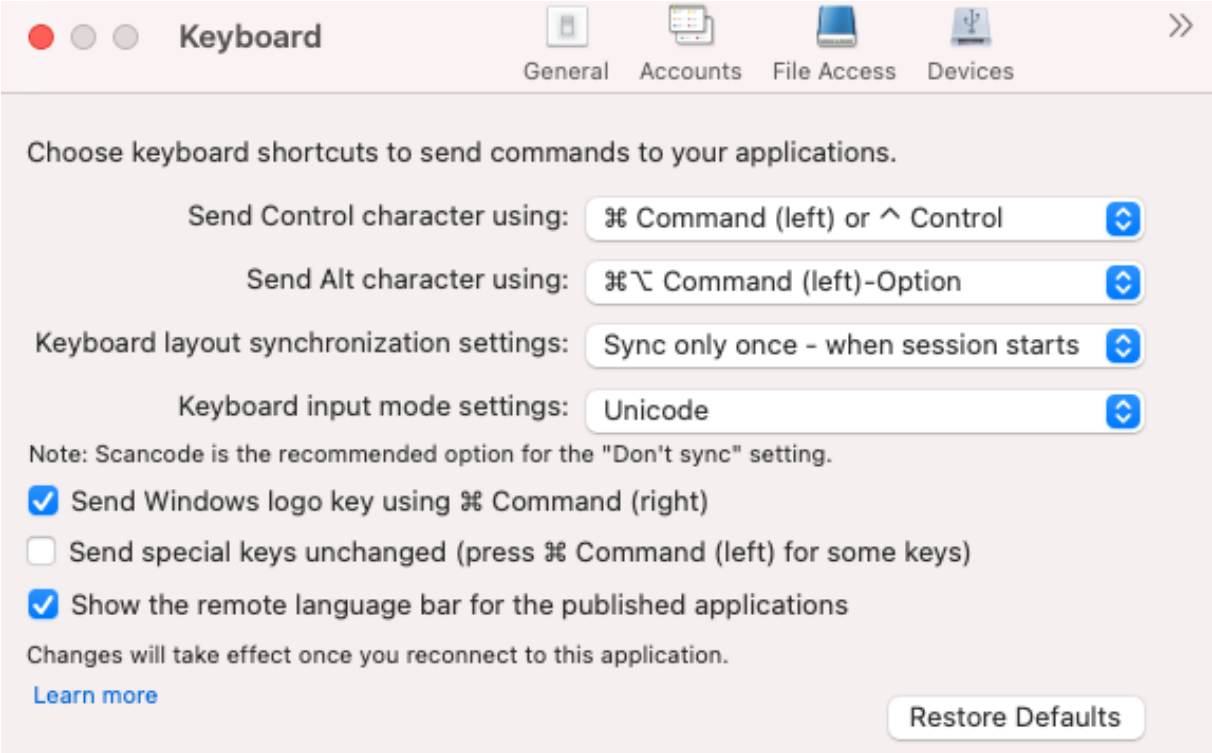
1. From the Citrix Workspace app icon in the menu bar, click the account icon in the top-right corner and navigate to **Preferences > Keyboard**.

   The Keyboard input mode settings appear

2. Select from one of the following options:

   - **Scancode** – Sends the key position from client-side keyboard to VDA and VDA generates the corresponding character. Applies server-side keyboard layout.
   - **Unicode** - Sends the key from the client-side keyboard to VDA and VDA generates the same character in VDA. Applies client-side keyboard layout.

This enhancement is enabled by default.



For example, consider a scenario where you're using a US international keyboard layout and the VDA is using the Russian keyboard layout. When you choose **Scancode** and type the key next to **Caps Lock**, the scancode "1E" is sent to the VDA. The VDA then uses "1E" to display the character "ф". If you choose **Unicode** and type the key next to **Caps Lock**, the character "a" is sent to the VDA. So, even if the VDA uses the Russian keyboard layout, the character "a" appears on the screen.

Citrix recommends the following keyboard input mode for the different keyboard layout sync options:

- Scancode mode for **Don't Sync** option.
- Unicode mode for **Allow dynamic sync** and **Sync only once - when session starts**

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> **Note:**
>
> The keyboard configuration changes take effect once you reconnect to the application.

You can change the configuration of Keyboard input mode in the Citrix Workspace app UI. However, for best performance, use the Citrix-recommended modes for different scenarios, physical keyboards, and client devices.

For more information on configuration details and limitations, see Keyboard input mode enhancements.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 109.1.1.31, based on Chromium version 109. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Technical Preview

- Rapid Scan
- Enhanced virtual apps and desktops launch experience
- Support for multiple audio devices

For a complete list of Technical Preview features, see Features in Technical Preview page.

Fixed issues

- When you create two XML files on a Mac local client, the VDA might open the incorrect XML file. For example, the VDA opens the Snapshot.xml file instead of opening the SnapshotPopup.xml file. [HDX-45326]
- When you change the active audio devices in the sound settings on the endpoint, Microsoft Teams might not receive any notification about the change. As a result, Microsoft Teams fails to pick the changes. [HDX-47080]
- The Citrix Viewer might quit occasionally when you close a VDA session. [HDX-45668, HDX-47138]
- The responder policy configured using Citrix ADC might fail to work with Citrix Workspace app for Mac. The issue occurs when the policy configured checks if the user agent sent has **CWAWEBVIEW**, **Citrix Receiver**, or **Citrix Workspace** as a substring, which does not match. As a result, users might be redirected to a different Citrix Gateway URL. [CVADHELP-20519]
- When you connect to Citrix Gateway Store and attempt to sign in to Citrix Workspace app for Mac, the sign-in might get stuck or take time with a spinning wheel. [CVADHELP-21323]

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- Citrix Workspace app for Mac might fail to start a session if the **File Type Association** is set for an app under **Application Settings** in Citrix Studio. [CVADHELP-21371]
- A sign-in window might appear automatically in Citrix Workspace app for Mac when you power on or restart your system. [CVADHELP-21484]
- Citrix Workspace app for Mac might quit unexpectedly when the Universal Windows Platform (UWP) apps within the VDI attempt to authenticate using the FIDO2 authentication. [CVADHELP-21576]
- Attempts to open the web resources might fail with this error message:

  Switch to another store with the necessary permissions. If the issue persists, contact your admin with error details.

  [CVADHELP-21787]
- Citrix Workspace app for Mac might use an incorrect user agent **CitrixReceiver** instead of **Citrix Workspace** as a substring. As a result, the authorization policies are not honored. [CVADHELP-21969]
- When using the notch screen feature, a part of the text might be cut. [CVADHELP-22134]
- When you open Citrix Enterprise Browser from the dock, instead of a new tab, it shows that the page is loading. As a workaround, enter the URL in the address bar or open another tab to continue browsing. [CTXBR-4706]
- When using Citrix Secure Private Access enabled store, an infinite loading spinner might appear while launching the published content. The issue occurs when Citrix Enterprise Browser is not running on the user device. As a result, you cannot view the published content. [CTXBR-4813]

2301.1

What's new

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

Fixed issues

- You might face issues when you add or authenticate a store, or start a resource (apps or desktops) using the native Citrix Workspace app. [CVADHELP-22372]
- The incoming video and screen sharing might not work during Microsoft Teams optimized video calls. [HDX-50059]

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2301

What's new

Background blurring and replacement for Citrix Optimized Teams

Citrix Optimized Teams in Citrix Workspace app for Mac now supports background blurring and background replacement. You can use this by selecting **More > Apply Background Effects** when you are in a meeting or a P2P call.

Auto-update version control [Technical Preview]

Administrators can now manage the auto-updated version of Citrix Workspace app for the devices in the organization.
Administrators can control the version by setting the range in the maximumAllowedVersion and minimumAllowedVersion properties in the Global App Config Service.

Example JSON file in Global App Config Service:

```
{

  "serviceURL": {

    "url": "https://serviceURL:443"
   }
 ,
  "settings": {

    "name": "Version Control for Citrix Workspace",
    "description": "Provides admin ability to Version Control for
       Citrix Workspace",
    "useForAppConfig": true,
    "appSettings": {

      "macos": [
        {

          "category": "AutoUpdate",
          "userOverride": false,
          "assignedTo": [
            "AllUsersNoAuthentication"
          ],
          "settings": [
            {

              "name": "Auto update plugins settings",
```

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```
                "value": [
                  {

                    "pluginName": "Citrix Workspace",
                    "pluginId": "D99C3E77-FBF5-4B97-8EDA-4E381A1E0826",
                    "pluginSettings": {

                      "deploymentMode": "Update",
                      "upgradeToLatest": false,
                      "minimumAllowedVersion": "23.04.0.36",
                      "maximumAllowedVersion": "23.04.0.36",
                      "delayGroup": "Medium",
                      "detectRule": ""
                     }

                   }

                ]
               }

            ]
           }

        ]
       }

    }

 }


<!--NeedCopy-->
```

When the range is set, Citrix Workspace app on the user's device is automatically updated to the highest available version that falls between the mentioned range.

If you want to auto-update Citrix Workspace app to a specific version, enter the same version in the maximumAllowedVersion and minimumAllowedVersion properties in the Global App Config Service.

> **Note:**
>
> - To achieve auto-update version control, upgradeToLatest setting in the Global App Config Service must be set to false. If this is true, maximumAllowedVersion and minimumAllowedVersion will be ignored.

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- Do not modify the pluginId as this is mapped to Citrix Workspace app.
- If the administrator hasn't configured the version in the Global App Config Service, Citrix Workspace app is updated to the latest available version by default.
- You can only use the version ranges that are set to update Citrix Workspace app. However, downgrade is not supported.
- This feature is supported from release 2301 onwards.

You can provide feedback for this technical preview by using the Podio form.

Note:

Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Improved auto-update experience [Technical Preview]

The automatic update feature automatically updates the Citrix Workspace app to the latest version, without any user intervention. Citrix Workspace app periodically checks for any latest updates and downloads the latest available version of the app. By default, automatic updates are enabled, unless it is explicitly disabled by your admin.

Installation starts when the Citrix Workspace app or the sessions are idle.

Note:

Citrix Workspace app cannot be accessed during the installation.

When you start the Citrix Workspace app, a notification appears to indicate the status of the installation.

You can disable the auto-update feature by navigating to **Preferences > Advanced > Updates** and unselecting the **Automatically keep Workspace app up to date** option.

You can provide feedback for this technical preview by using the Podio form.

Note:

Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta

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> builds not be deployed in production environments.

Enhanced notch screen support

Starting with 2301 release, Citrix Workspace app for Mac supports Macs with a notch display. Macs support native notch screen in full screen mode for retina and multi-monitor displays. The area of the session in notch screen is now much bigger and provides the customers with more screen space. This enhancement also supports high DPI scaling. The mouse position also appears accurate in all the external monitors connected.

> **Note:**
>
> Ensure not to select the **Scale to fit below built-in camera** option in the Citrix Viewer. This option is not selected by default and can be found only on Macs with notch display.

App Protection enhancement

Starting with 2301 release, App Protection is enhanced to protect the Citrix Workspace app. This enhancement includes protecting the authentication screen and the screen that you see after signing into the Workspace app. For more information, see App Protection enhancement.

Global App Configuration Service channel support [Technical Preview]

The Global App Configuration Service for Citrix Workspace allows a Citrix administrator to deliver Workspace service URLs and Workspace App settings through a centrally managed service. For more information, see Global App Configuration Service documentation.

Administrators can now use the Global App Config Service to define settings, which are applicable to specific user-groups. This ensures that some features or functionalities can be made available to only certain users as required, and not to others.

You can provide feedback for this technical preview by using the
Podio form.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

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Enhanced menu bar support

Starting with 2301 release, the CWA fully supports the **Automatically hide and show the menu bar in full screen** option in MacOS. For versions earlier than macOS 13, you must navigate to **System Preferences > Dock & Menu Bar** and uncheck the **Automatically hide and show the menu bar in full screen** option. For macOS 13 and later versions, you must navigate to System Preferences > Desktop & Dock and uncheck the Automatically hide and show the menu bar in full screen option. You have the provision to either enable or disable this option. This enhancement also supports high DPI scaling. The mouse position also appears accurate in all the external monitors connected.

The figure below illustrates a window where the menu bar is hidden

The figure below illustrates a window where the menu bar appears

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 107.1.1.13, based on Chromium version 107. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Set Citrix Enterprise Browser as the work browser

You can now configure Citrix Enterprise Browser as a work browser to open all work links. You can select an alternate browser to open non-work links.

A work link is a link that is associated with the web or SaaS apps that are configured by the administrator for the end user. When a user clicks any link within a native application, if it's a work link, it's opened through the Enterprise Browser. If not, it's opened through the alternate browser that the end-user selects.

For more information, see Set Citrix Enterprise Browser as the work browser.

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Fixed issues

- HTTP Live Streaming (HLS) protocol with High-Efficiency Advanced Audio Coding (AAC-HE) stream fails to playback audio on Citrix Enterprise Browser. [CTXBR-3899]
- When you click a hyperlink in the custom portal, an error message appears before opening the link. Later, the link opens in a system browser, for example, Google Chrome instead of Citrix Enterprise Browser. [CTXBR-4051]
- When using Citrix Workspace app for Mac with a custom web store URL, the versions of operating system and Citrix Workspace app might not be shown in the user agent string. [CVADHELP-21377]
- With this fix, certain third-party apps such as Epic or Kronos might not freeze when you start them. [HDX-46140]
- When you attempt to start a session using an ICA file from Citrix Workspace app 2301 for Mac Beta build for the first time, the session might quit unexpectedly. [HDX-47361]
- When you add the custom portal site to Citrix Workspace app for Mac, a blank page might appear. [RFMAC-12857]

2211.1

What's new

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

Fixed issues

- You might face issues when you add or authenticate a store, or start a resource (apps or desktops) using the native Citrix Workspace app. [CVADHELP-22372]
- The incoming video and screen sharing might not work during Microsoft Teams optimized video calls. [HDX-50059]

2211

What's new

Workspace apps appear in the Dock with native app icons when opened [Technical Preview]

Starting with 2211 release, this feature is disabled by default.

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

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Improved Mission Control and App Expose experience [Technical preview]

Starting with 2211 release, this feature is disabled by default.

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 105.2.1.40, based on Chromium version 105. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Fixed issues

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

2210

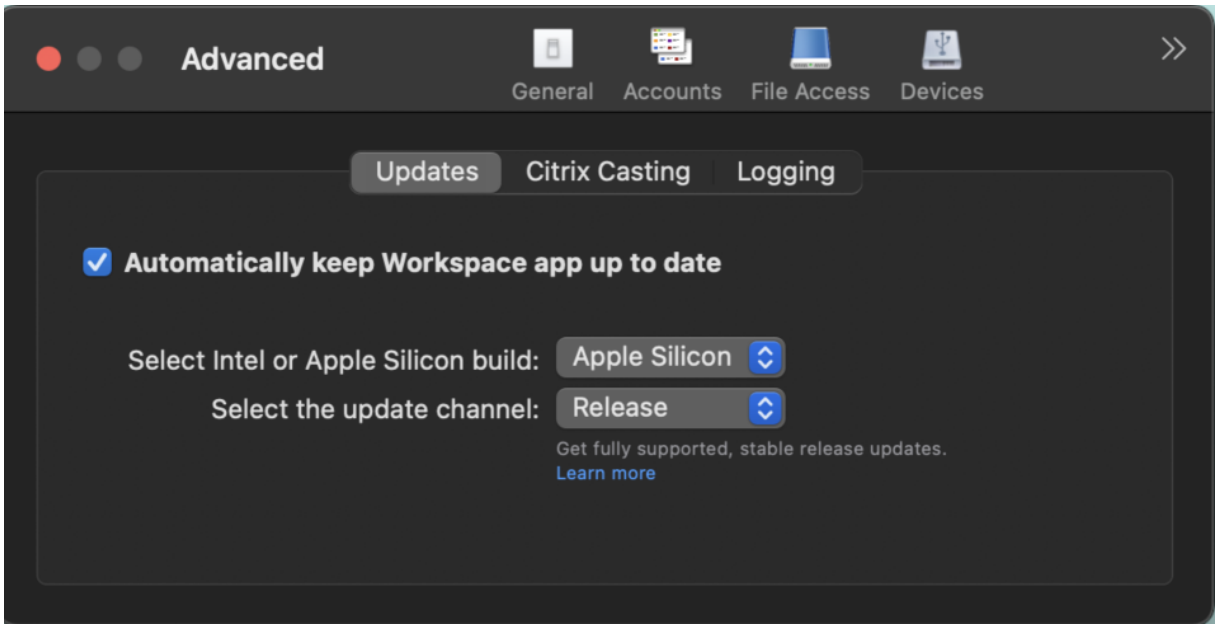
What's new

macOS 13 Ventura Support

Citrix Workspace app for Mac is supported on macOS 13 Ventura (13.0).

Improved automatic update experience on Mac with Apple Silicon (M1 Series)

Starting with this release, when you download the Universal Architecture build, you have the option to select between the Apple Silicon and Intel builds to support both, the Apple Silicon and Intel based Mac machines.



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On Apple Silicon machines, the users have the option to automatically update the Intel build even after having downloaded the Apple Silicon build. The option is provided in the **Preferences** tab.

Advanced configuration for automatic updates

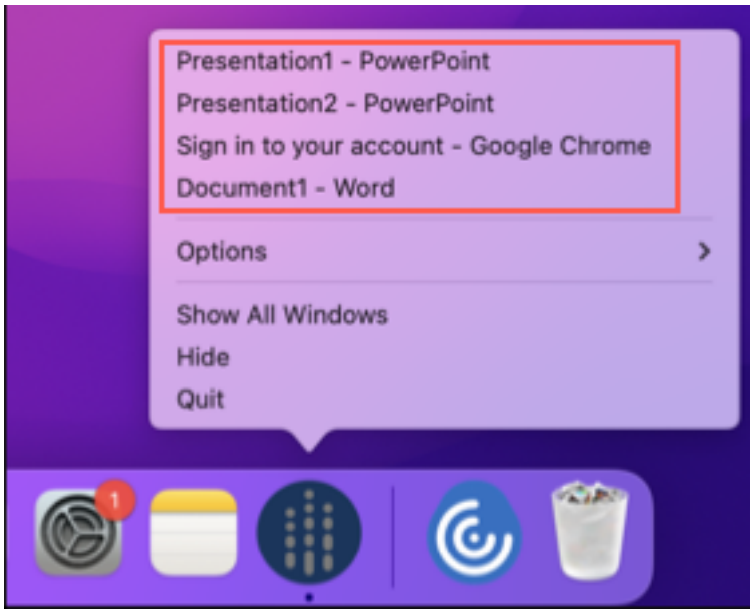
You can configure Citrix Workspace automatic updates on Mac with Apple silicon (M1 Series) using the following methods:

- Graphical user interface
- Global App Config Service (GACS)
- Mobile Device Management (MDM)
- StoreFront

For more information, see Advanced configuration for automatic updates.

Workspace apps appear in the Dock with native app icons when opened [Technical Preview]

Previously, clicking virtual apps in the Citrix Workspace app triggered the Citrix Viewer where these apps would be available. If you open many apps, the apps or its instances opened in the Citrix Viewer. You can view the open apps by right-clicking the Citrix Viewer icon.



Starting with this release, when you open virtual apps, they appear in the Dock with their respective icons and are easily identifiable. You can then access the virtual app from the dock itself. If you open multiple instances of an app, these instances are not duplicates in the Dock but are grouped within one instance in the Dock.

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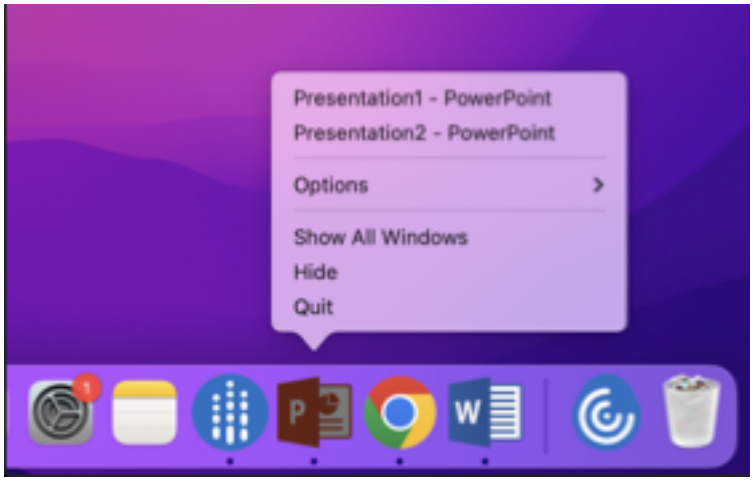

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Improved Mission Control and App Expose experience [Technical preview]

Previously, using the **Mission Control** or **App Expose** feature in a virtual app session resulted in the overlapping of many windows that were opened.

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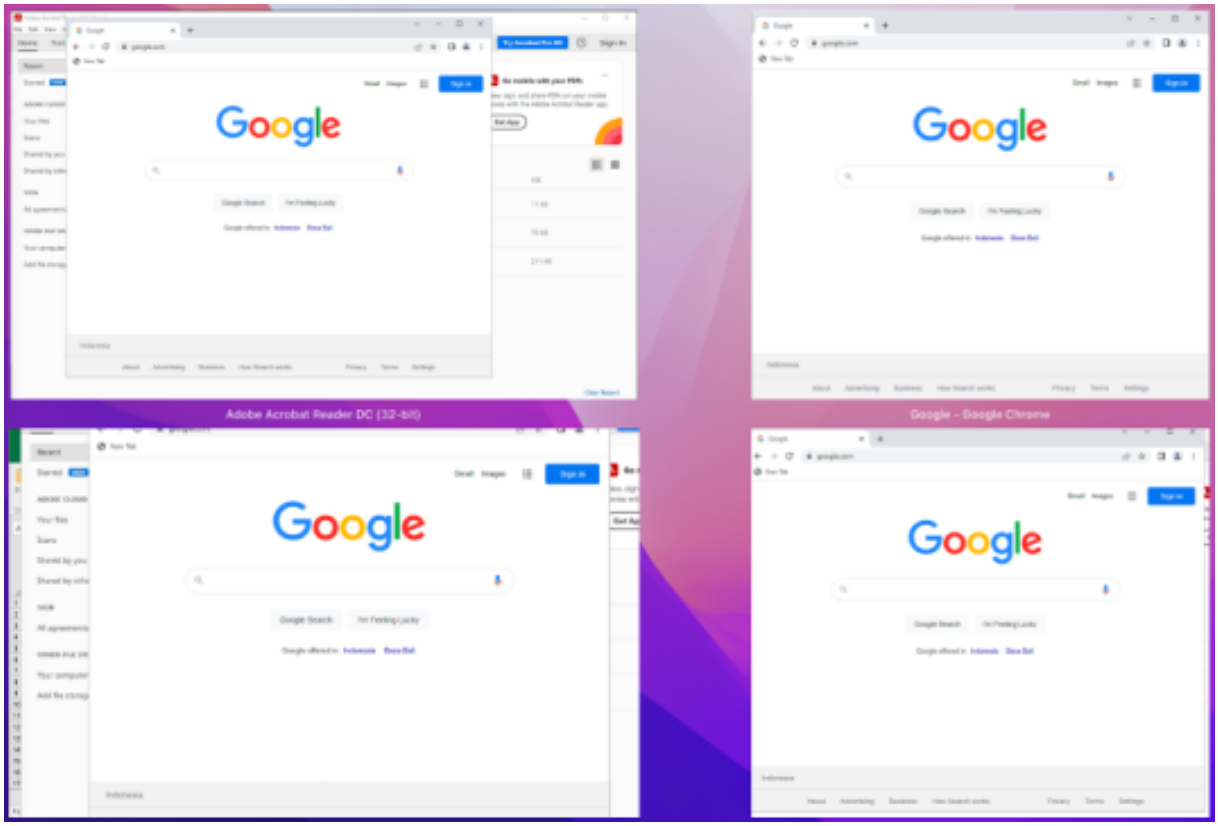

Starting with this release, when you use the **Mission Control** or **App Expose** feature in a virtual app session and open many windows, the windows do not overlap, and you can easily choose from among them.

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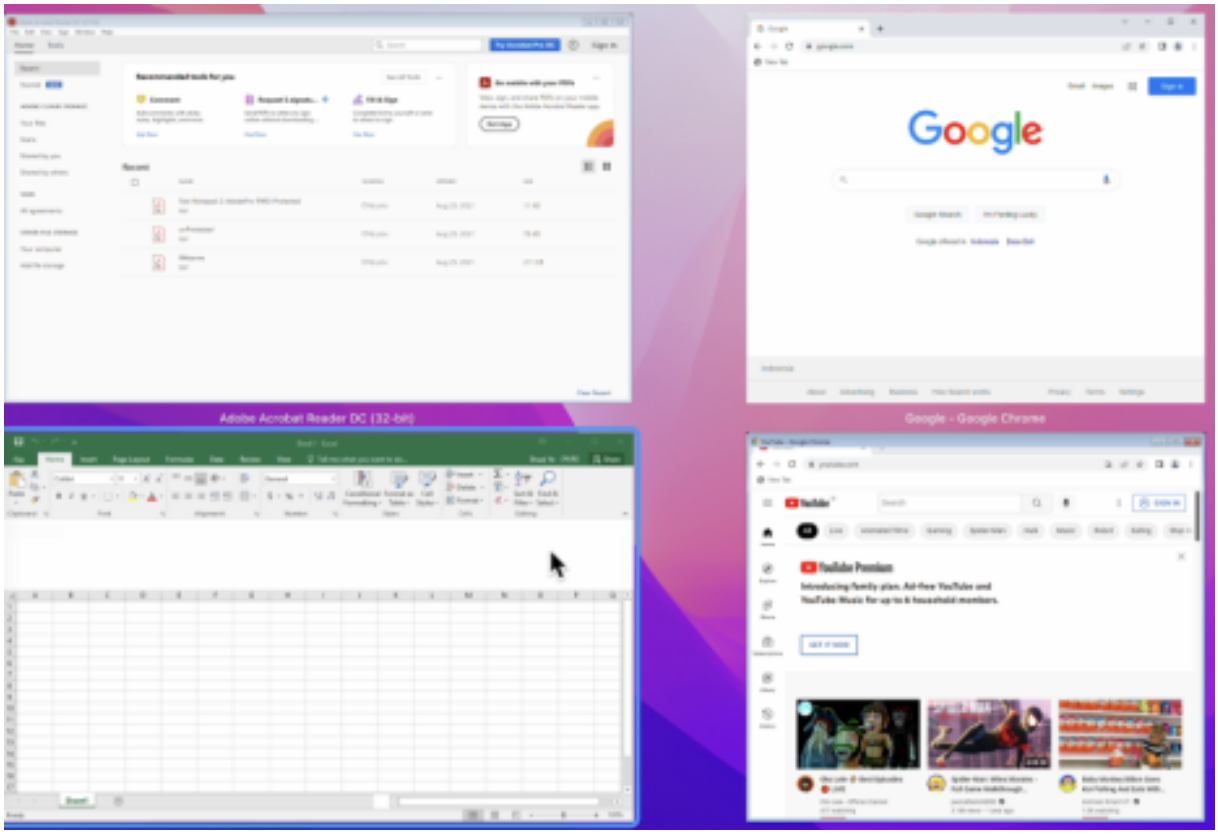

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Improved graphics performance [Technical preview]

With this release, the performance of graphics is significantly improved for desktop sessions.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Support for high DPI

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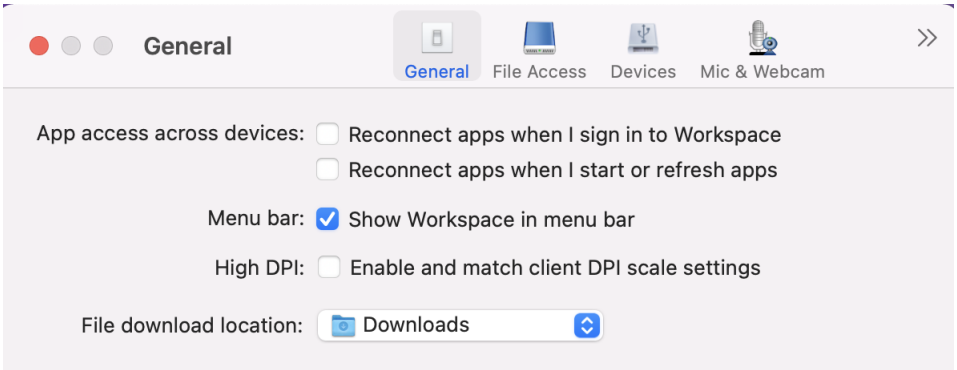
You can now enable and match the client DPI scale settings by launching the session toolbar and navigating to **Preferences > General > High DPI**. The High DPI option is disabled by default.



Support for admin configuration of user devices through MDM tool

Admins can now configure the following settings while deploying Citrix Workspace app through any MDM deployment tool such as Citrix Endpoint Management:

- **StoreURLs** – Configure store details so it's automatically added when the user opens the Citrix Workspace app, simplifying the sign-on experience.
  To add a store, provide the details for the **StoreURLs** setting. For example, `<string>https://myorg.com/Org/storename</string>`
- **BlockStoreAddition** – Prevent the user from adding stores.

  To block the user from adding a store, set the value of the **BlockStoreAddition** setting to **True**.

Support for certificate-based authentication [Technical Preview]

You can now authenticate to Citrix Workspace app (cloud stores) by using a client certificate.

Previously, Certificate based authentication was supported on on-premises setups and customers on cloud setups were unable to sign in to Citrix Workspace app. This feature is disabled by default and admins must contact Citrix help desk to enable this feature by filling this request form.

If your organization has configured Conditional Access with Azure Active Directory, then the user is prompted to select a Client Certificate for authentication while signing in. Certificate-based authentication adds another layer of security, ensuring that your device is compliant.

Once you add a store and enter valid credentials for that store, Citrix Workspace app displays a list of valid certificates available in your keychain for Client Authentication. If there's only one valid certificate in your keychain, it's selected by default.

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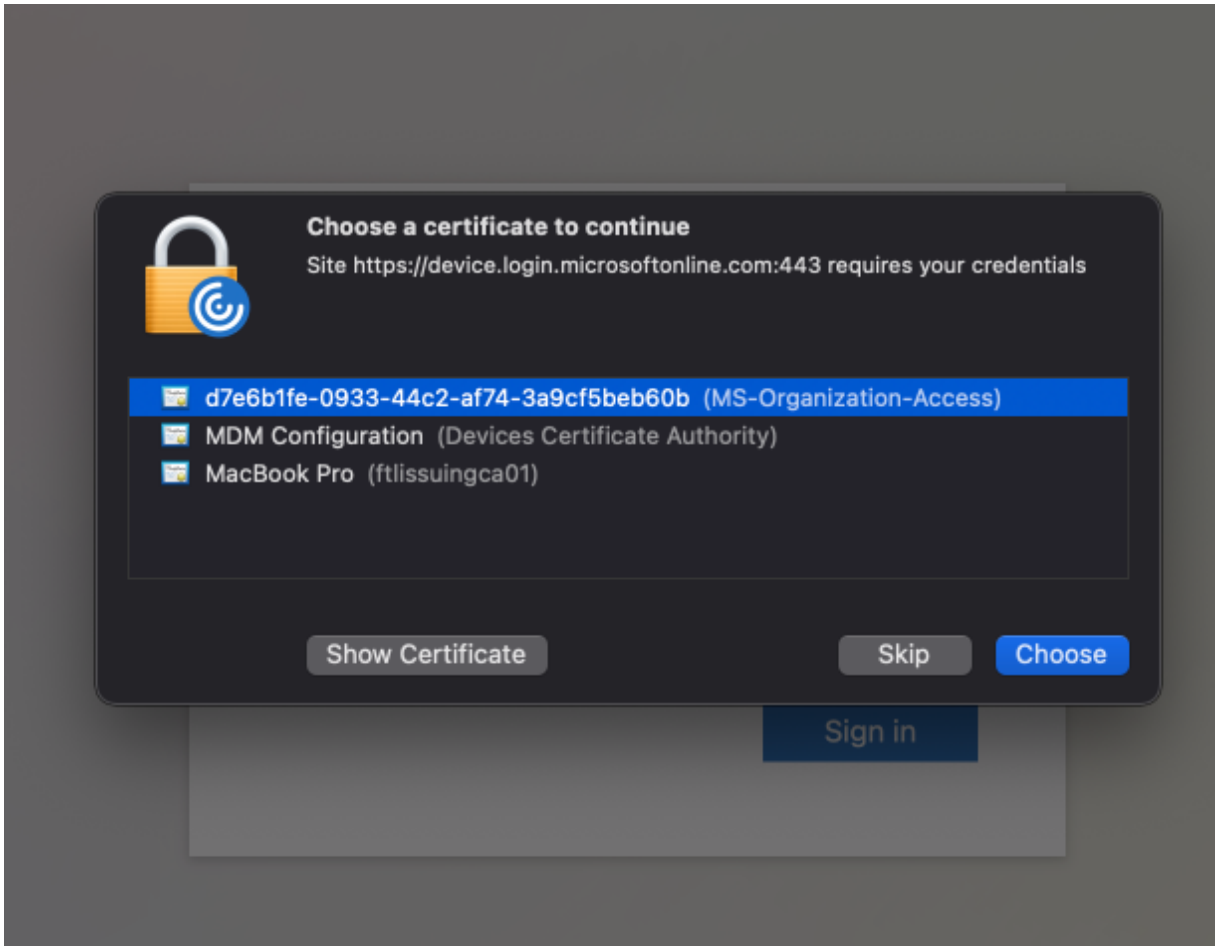

Once you choose a certificate, the identity provider validates it and the Workspace app store appears on successful validation.

> **Note:**
>
> - If there are no valid certificates in your keychain, the Citrix Workspace app performs the default handling for the certificate authentication request from the server.
>
> This might prevent the user from logging in.
> - If your organization has configured Conditional Access with Azure Active Directory and valid certificates are not found in your keychain, you can't log in to Citrix Workspace app.

If a previously selected certificate is no longer valid, an error message appears, prompting you to select a valid certificate or to contact your admin in the absence of one.

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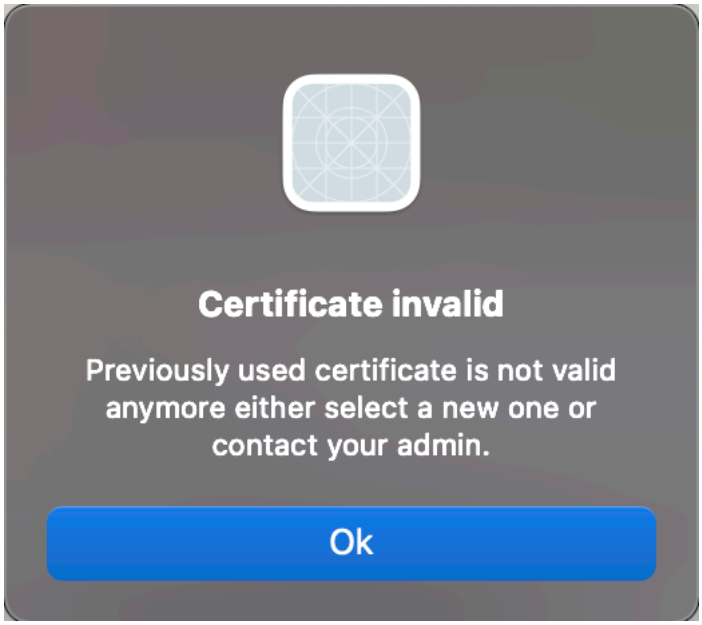

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Rebranding Citrix Workspace Browser

Citrix Workspace Browser is now Citrix Enterprise Browser. The custom scheme is now changed from citrixworkspace:// to citrixbrowser://.

Implementing this transition in our products and their documentation is an ongoing process. Your patience during this transition is appreciated.

- The product UI, in-product content, and the images and instructions in product documentation will be updated in the coming weeks.
- It is possible that some items (such as commands and MSIs) might continue to retain their former names to prevent breaking existing customer scripts.
- Related product documentation

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 105.1.1.19, based on Chromium version 105. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documenta-

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tion. and other resources (such as videos and blog posts) that are linked from this product documentation might still contain former names.

Make Citrix Enterprise Browser the work browser [Technical Preview]

You can now configure Citrix Enterprise Browser to open all work or enterprise links and apps configured by your administrator in the Citrix Workspace app. This feature provides a way for you to open only work links or web and SaaS apps in the Citrix Enterprise Browser.
You can select an alternate browser to open any other non-work links or apps.

Open all web and SaaS apps through the Citrix Enterprise Browser

From this release, all internal web apps and external SaaS apps available in the Citrix Workspace app open in Citrix Enterprise Browser.

Support for browser extensions [Technical Preview]

You can add extensions that are provided by your administrator to the Citrix Enterprise Browser in a secure way. An administrator can deploy, manage, and control the extensions. End users can view and use the extension under citrixbrowser://extensions as required. For more settings, see Global App Configuration Service.

> **Note:**
>
> This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

For information on how to configure, see Citrix Enterprise Browser documentation.

Use Global App Config service to manage Citrix Enterprise Browser [Technical Preview]

The administrator can use the Global App Configuration service for Citrix Workspace to deliver Citrix Enterprise Browser settings through a centrally managed service.

The Global App Configuration service is designed for administrators to easily configure Citrix Workspace and manage the Citrix Workspace app settings. This feature allows admins to use the Global App Configuration Service to apply various settings or system policies to the Citrix Enterprise Browser on a particular store. The administrator can now configure and manage the following Citrix Enterprise Browser settings using the Global App Configuration service:

- “Enable CEB for all apps” - Makes the Citrix Enterprise Browser the default browser for opening web and SaaS apps from the Citrix Workspace app.
- “Enable save passwords” - Allow or deny end users the ability to save passwords.
- “Enable incognito mode” - Enable or disable incognito mode.

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- “Managed Bookmarks” - Allow administrator to push bookmarks to the Citrix Enterprise Browser.
- “Enable developer tools” - Enable or disable developer tools within the Enterprise Browser.
- “Delete browsing data on exit” - Allow the administrator to configure what data the Citrix Enterprise Browser deletes on exit.
- “Extension Install Force list” - Allow the administrator to install extensions in the Citrix Enterprise Browser.
- “Extension Install Allow list” - Allow the administrator to configure an allowed list of extensions that users can add to the Citrix Enterprise Browser. This list leverages the Chrome Web Store.

> **Notes:**
>
> - This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.
> - Technical previews are available for customers to test in their non-production or limited production environments, and to give customers an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It’s advised that Beta builds aren’t deployed in production environments.
> - The name and value pair are case-sensitive.
> - All the browser settings in Global App Configuration Service are under the following category:

```
{

    "category": "browser",
    "userOverride": false,
    "assignedTo": [
    "AllUsersNoAuthentication"
    ]
 }


<!--NeedCopy-->
```

> - The administrator can apply the settings to unmanaged devices as well. For more information, see Global App Configuration Service documentation.

Technical Preview

- Upgraded version of WebRTC for the optimized Microsoft Teams

For a complete list of Technical Preview features, see Features in Technical Preview page.

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Fixed issues

- Citrix Workspace app might interrupt the restart or shutdown power action of a Mac device. [RFMAC-12530]
- Shift key might not work as expected in Citrix Workspace app for Mac version 2206. [CVADHELP-20674]

2209

What's new

Sign out of custom web store when you close Citrix Workspace app

When the **signoutCustomWebstoreOnExit** setting is set to **True**, closing the Citrix Workspace app window signs you out of the custom web store. When you reopen the Citrix Workspace app, the web store URL is loaded again. You can configure the **signoutCustomWebstoreOnExit** setting in the Global App Configuration service.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser (formerly Citrix Workspace Browser) version 103.2.1.10, based on Chromium version 103. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Fixed issues

- Citrix Workspace app for Mac might start automatically when you restart Citrix Workspace app for Mac or install Citrix Workspace app. [RFMAC-12392]
- The screen sharing feature in Optimized Microsoft Teams for certain third-party apps might fail on Citrix Workspace app for Mac. The issue occurs when the Thinwire codec policy is set to **For entire screen**. As a result, the app sharing feature is disabled and no options are available in the sharing panel. [CVADHELP-20853]

2208.1

What's new

View apps, desktops, and Citrix Enterprise Browser from menu bar through a quick access menu

You can now view your most recently used or favorite apps and desktops or open a Citrix Enterprise Browser window by clicking the Citrix Workspace icon in the menu bar. This feature provides easy access to some of your resources without having to open the Citrix Workspace app.

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> **Note:**
>
> This feature is not available on on-premises setups.

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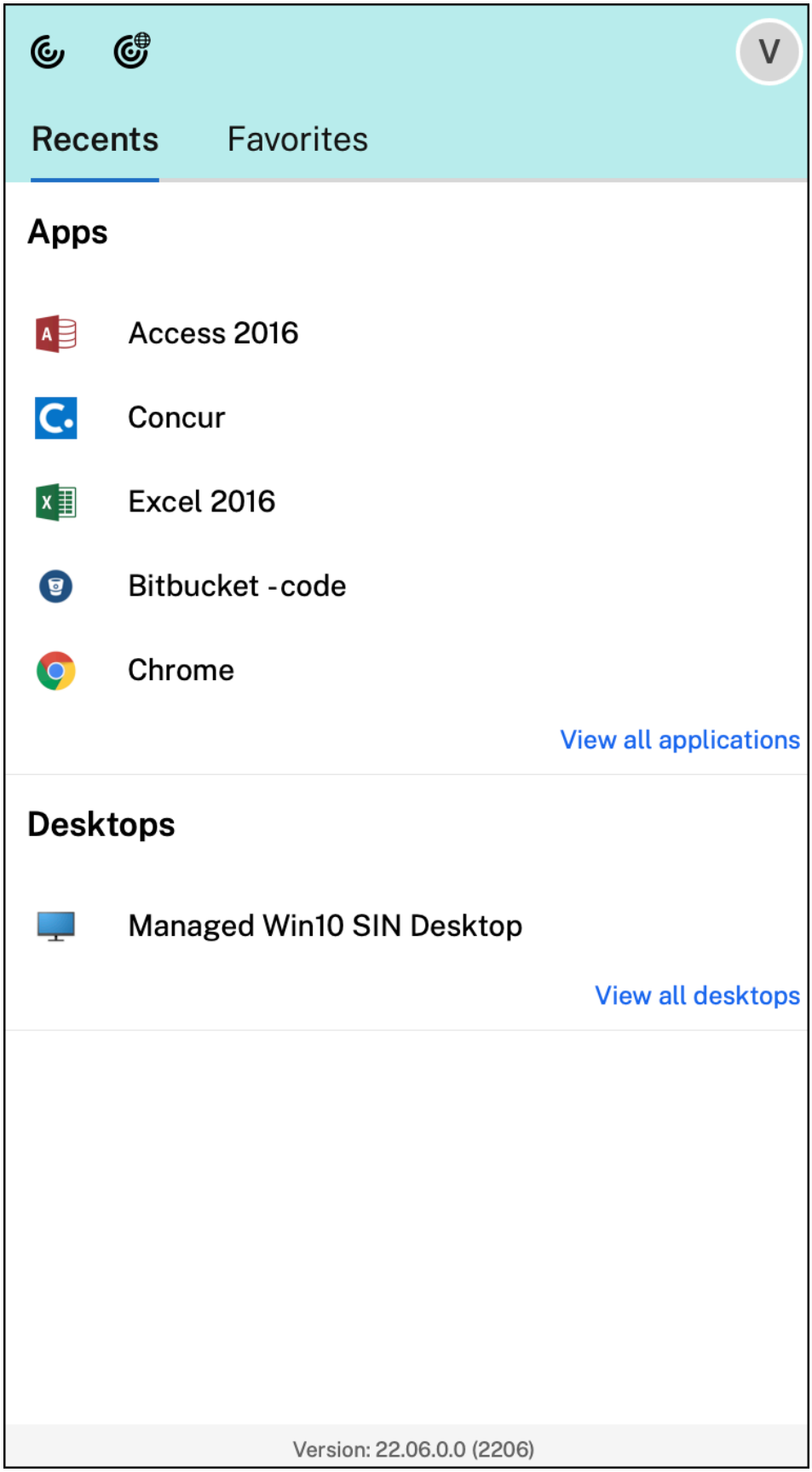

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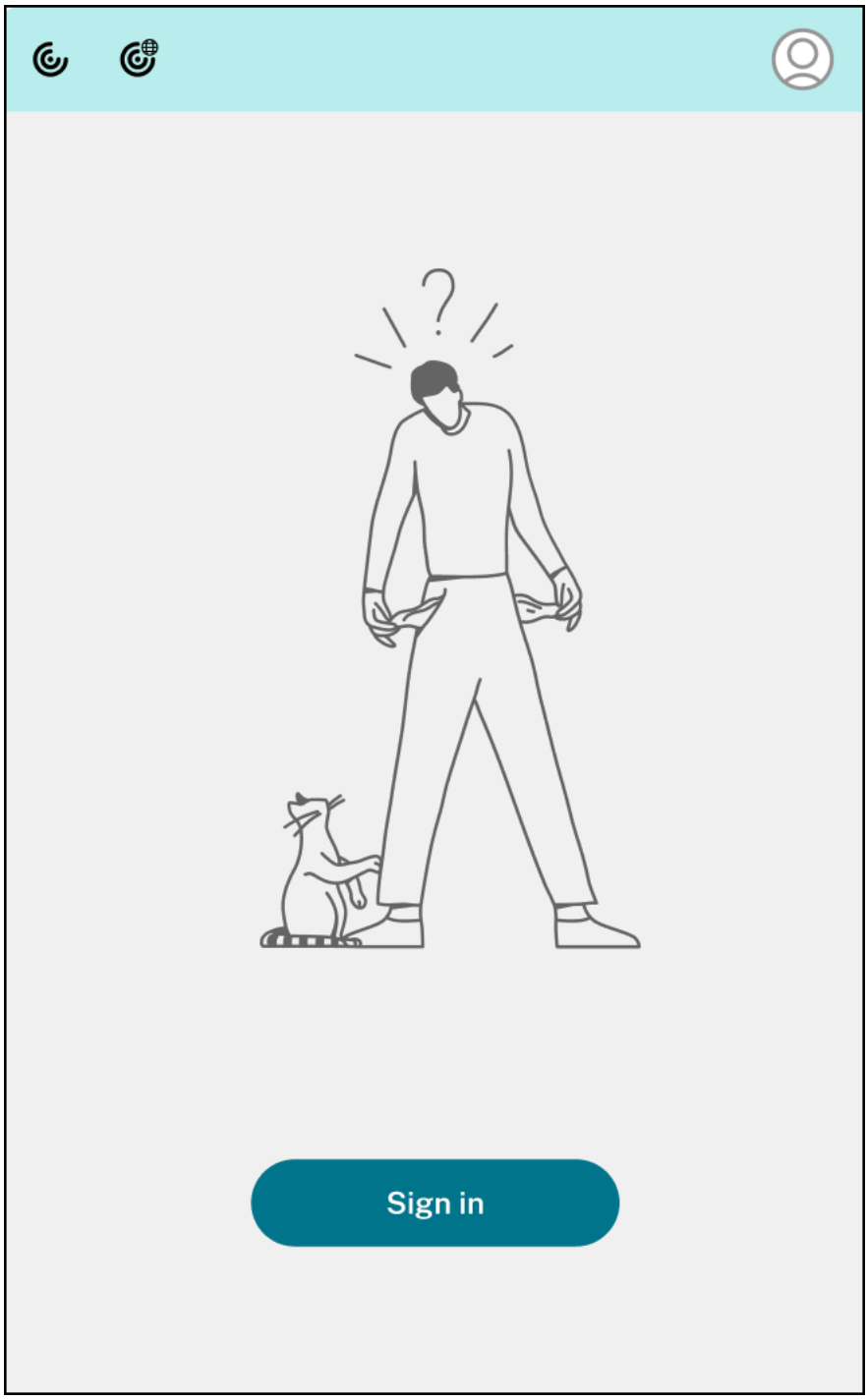
If you've not configured any accounts, a sign-in prompt appears.



A maximum of 5 of your recently used or favorite apps or desktops appear in the options under the **Recent** and **Favorites** tabs respectively. To view the other apps in the Citrix Workspace app, click **View all applications**. To view the other desktops in the Citrix Workspace app, click **View all desktops**.

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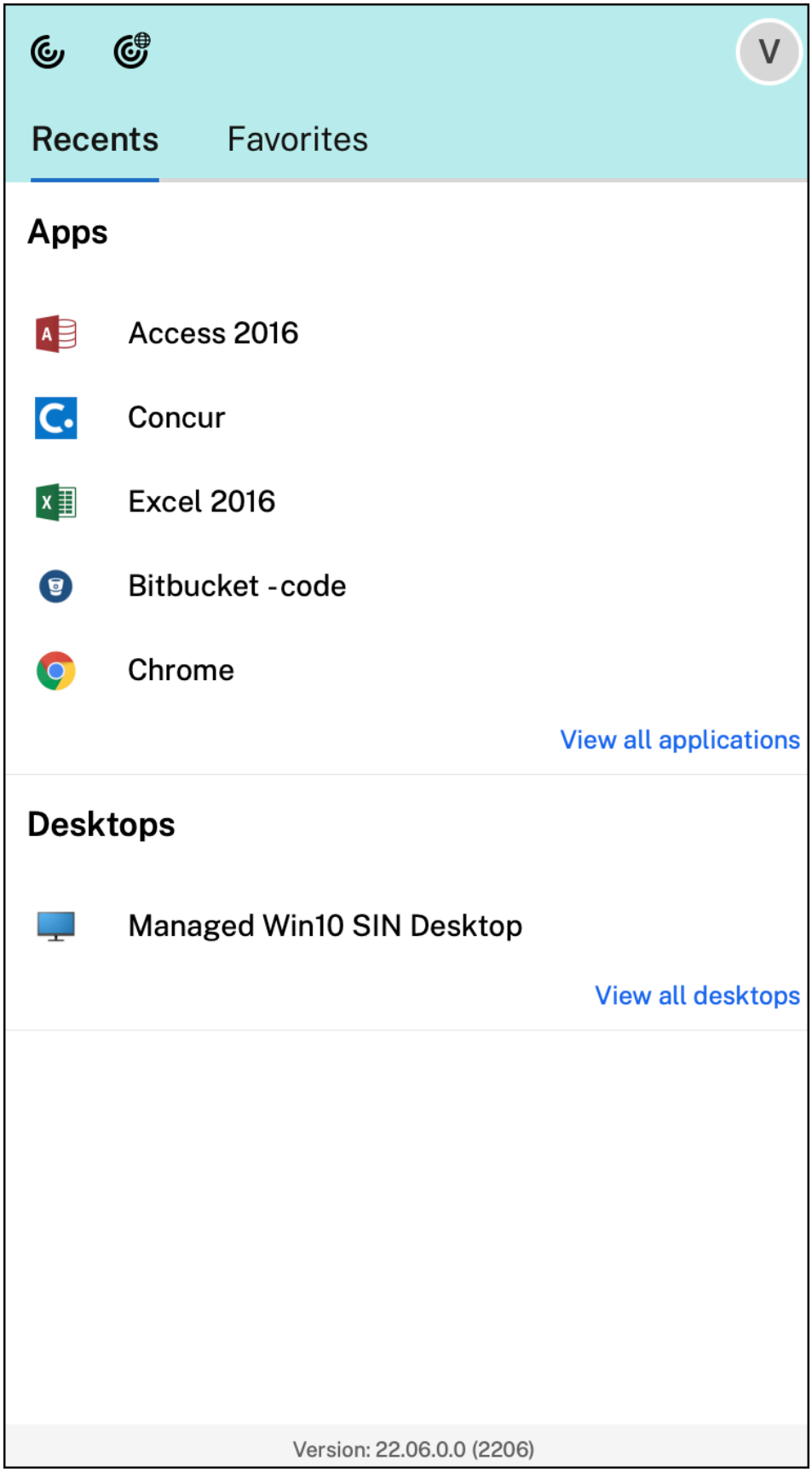

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You can open the Citrix Workspace UI by clicking the Citrix Workspace app icon.

You can open the Citrix Enterprise Browser, without opening a web or SaaS app by clicking the Citrix Enterprise Browser icon.

> **Note:**
>
> The Citrix Enterprise Browser is not available if the configured store doesn't have any web or SaaS apps. Further, it is available only if your admin has configured Citrix Secure Private Access.

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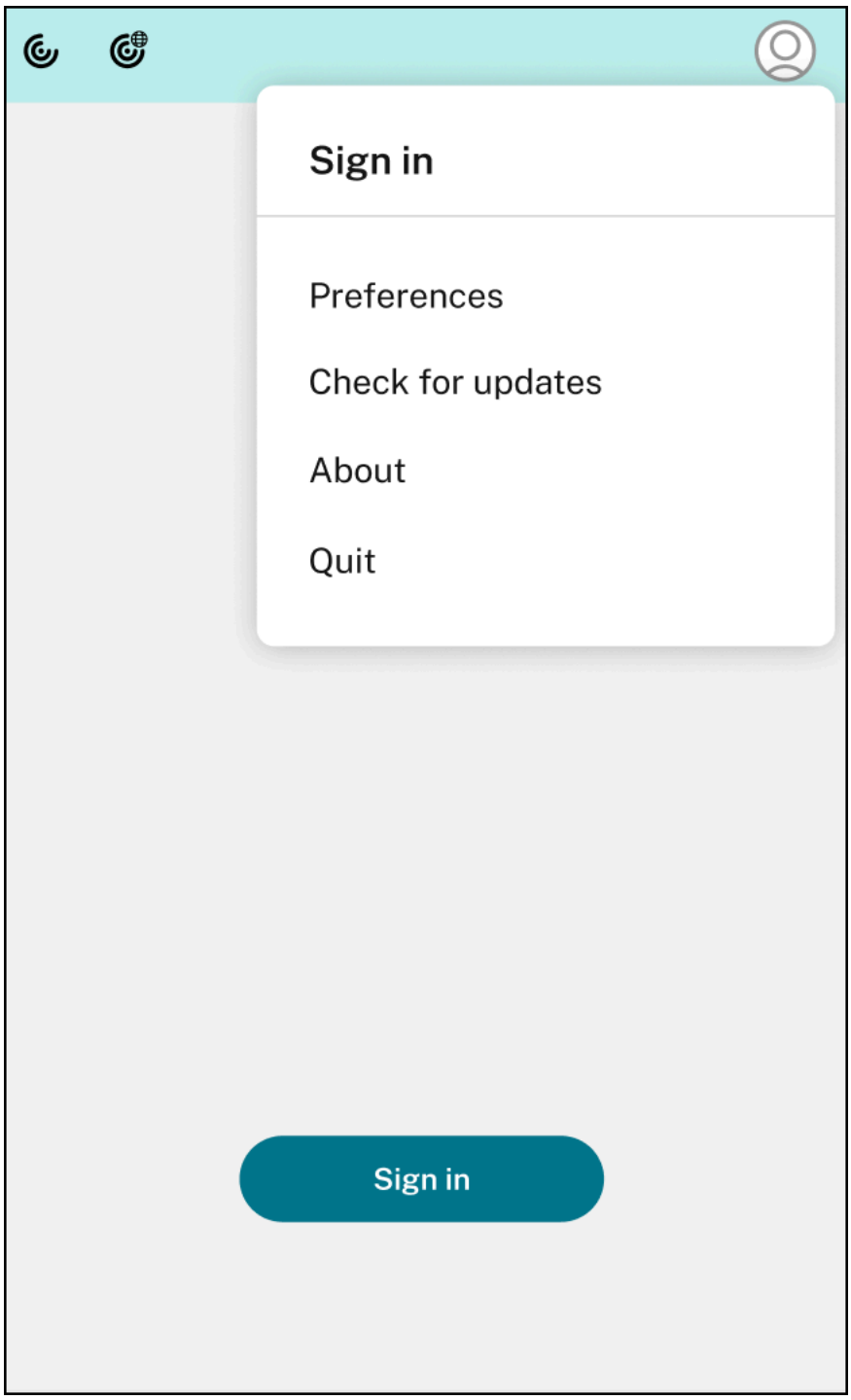

You can view the following options when you click the **Account** icon in the top-right corner:

- Preferences
- Check for updates
- About
- Quit

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Support for authentication using FIDO2 [Technical Preview]

With this release, users can authenticate within an HDX session using password-less FIDO2 security keys. FIDO2 security keys provide a seamless way for enterprise employees to authenticate to apps or desktops that support FIDO2 without entering a user name or password. For more information about FIDO2 see FIDO2 Authentication.

This feature currently supports roaming authenticators (USB only) with PIN code and touch capabilities. You can configure FIDO2 Security Keys based authentication. For information about the prerequisites and using this feature, see Local authorization and virtual authentication using FIDO2.

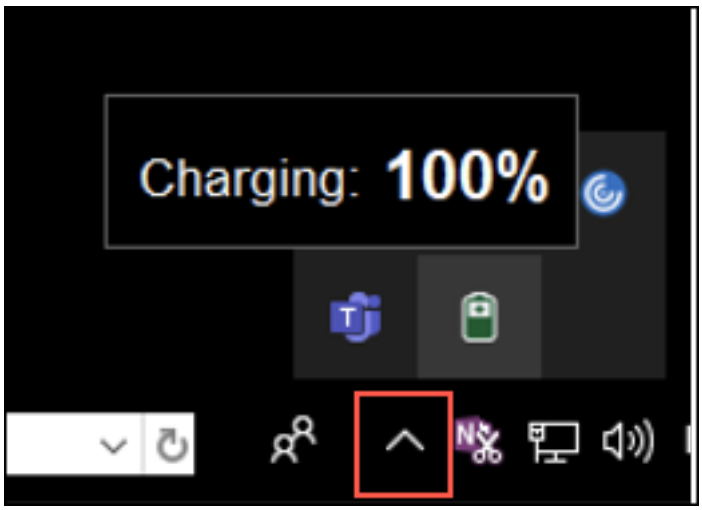
When you access an app or a website that supports FIDO2, a prompt appears, requesting access to the security key. If you've previously registered your security key with a PIN (a minimum of 4 and a maximum of 64 characters), then you must enter the PIN while signing in.

If you've registered your security key previously without a PIN, simply touch the security key to sign in.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Battery status indicator

The battery status of the device now appears in the notification area of a Citrix Desktop session. To view the battery status within the desktop session, click the **Show hidden icons** arrow in the taskbar.



> **Note:**

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> The battery status indicator does not appear for server VDAs.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 103.1.1.14, based on Chromium version 103. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Citrix Enterprise Browser Profiles

Profiles help you keep personal information such as history, bookmarks, passwords, and other settings separate for each of your Citrix Workspace accounts. Based your Workspace store, a profile is created, allowing you to have a unique and personalized browsing experience.

> **Note:**
>
> After you upgrade to version 103.1.1.14 and sign in to the device for the first time, only your previously saved passwords are removed. When you sign in to the device using a different store for the first time, all your previously saved data is lost.

Open all web and SaaS apps through the Citrix Enterprise Browser [Technical Preview]

From this release, all internal web apps and external SaaS apps available in the Citrix Workspace app open in Citrix Enterprise Browser. You can register for this technical preview by using this Podio form.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give customers an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds aren't deployed in production environments.

Fixed issues

- When the Citrix Workspace login prompt appears, clicking the Cancel button doesn't close the popup and it appears repeatedly. [CVADHELP-19919]
- If you're using Direct Workload Connection in Citrix Cloud to connect to VDAs directly, a black screen appears and you're disconnected from the VDA. This issue occurs when Network Location Service (NLS) is enabled. [HDX-40588]
- When you use a multi-touch gesture to swipe between full-screen apps, the Citrix Workspace desktop session window turns black for a moment. This issue occurs on Macs with a notch display. [HDX-42314]

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2206.1

What's new

Uninstall app by dragging the Citrix Workspace app icon to the bin

You can now simply drag or move the Citrix Workspace app icon into the bin to completely uninstall the app.

Previously, dragging the Workspace app icon into the bin would remove the app but leave behind certain system files on your Mac. With this release, the Citrix Workspace app and all its associated files are removed from your device when you drag the icon to the bin.

To uninstall the Citrix Workspace app by dragging it to the bin, do the following:

1. Close the Citrix Workspace app, if it's running.
2. Drag the Citrix Workspace app to the bin.
   Alternatively, you can right click on the Citrix Workspace app and select **Options** > **Move to Bin**.
3. Provide your system credentials when prompted.
4. Close all running apps (Citrix Workspace) and click **Continue** to confirm.
   The Citrix Workspace app and all its system files are deleted from your device.

Support for service continuity in the Safari browser

The Citrix Workspace service continuity feature is now supported for the Safari browser. Users must install Citrix Workspace app for Mac and the Citrix Workspace web extension. Service continuity removes (or minimizes) the dependency on the availability of the components involved in the connection process. It allows you to connect to your virtual apps and desktops regardless of the cloud services' health status. For more information about the service continuity feature, see section Service continuity.

Improved audio echo cancellation support [Technical Preview]

Citrix Workspace app now supports echo cancellation in adaptive audio and legacy audio codecs. This feature is designed for real time audio use cases, and it improves the user experience.
Citrix recommends using adaptive audio.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

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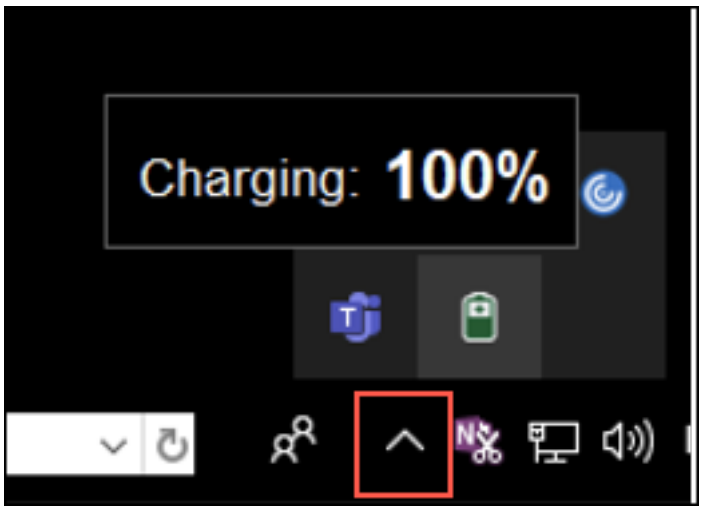
Enhancements to Optimized Microsoft Teams

In optimized Microsoft Teams, you can now use the video function when more than one virtual desktop or app session is in use.

Battery status indicator [Technical Preview]

The battery status of the device now appears in the notification area of a Citrix Desktop session.



> **Note:**
>
> The battery status indicator does not appear for server VDAs.
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 101.1.1.14, based on Chromium version 101. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

Fixed issues

- The mouse pointer is misaligned on Macs with a notch display. [CVADHELP-19337]
- You're not signed out of the Workspace app when the inactivity timeout value lapses. This issue occurs intermittently. [CVADHELP-19812]

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- You might get an error when you try to uninstall Citrix Workspace app. [CVADHELP-19121]
- In optimized Microsoft Teams, the video function might not work if you start another virtual desktop or app session. [HDX-40451]
- While sharing the screen or an app during the Microsoft Teams call, your peer might see visual artifacts. This issue occurs due to unstable frame rates, such as incorrect video playback (frozen or transient black frames). This release includes improved frame rates or sampling rates that help to reduce visual artifacts. [HDX-38032]

2204

What's new

Global App Configuration Service settings for `allowedWebStoreURLs`

Admins can now use Global App Config Service to configure settings of Custom Web Stores. Admins can configure the Custom Web Stores by using the `allowedWebStoreURLs` property. For more information about the Global App Configuration Service, see Getting Started.

Support to open Citrix Workspace app in maximized mode

Admins can configure the `maximise workspace window` property in the Global App Configuration Service to enable the Citrix Workspace app to open in the maximized mode by default. For more information about the Global App Configuration Service, see Getting Started.

Support for high DPI monitors [Technical preview]

Citrix Workspace app for Mac is now compatible with high DPI monitors with resolution greater than 4K. On desktop sessions, apps, text, images, and other graphical elements appear in a size that can be viewed comfortably on these high-resolution monitors.

To enable this feature, run the following command in macOS terminal:

```
defaults write com.citrix.receiver.nomas EnableHighDPI -bool YES
```

Admins can edit the **Display memory limit** policy, which specifies the maximum video buffer size in kilobytes for a desktop session, to suit the display resolution. The default value for the Display memory Limit policy is 65536 KB and is sufficient for up to 2x4K monitors (2x32400KB). Admins must edit this value by navigating to **Citrix Studio** > **Policies** > **Display memory limit** and use a value of 393216 KB to use this feature.

For more information about the Display memory limit policy, see Display memory limit.

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> **Note:**
>
> This feature works with a maximum of two connected monitors.
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to give customers an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds aren't deployed in production environments.

Enhancement to Permanent Client Access License (CAL) for Remote Desktop Sessions

With this release, if you are running CAL in your environment to access remote desktops, when the client ID is greater than 15 characters, you can launch the remote desktop session with a permanent license.

To enable this feature, admins must configure the **default.**ica file by doing the following:

1. In the StoreFront server, navigate to *C:\inetpub\wwwroot\Citrix<StoreName>\App_Data* and open the **default.**ica file with any editor.
2. Add the following line in the **[WFClient]** section:

```
isRDSLicensingEnabled=On
```

Restore default keyboard settings

If you had previously modified the keyboard preferences in the Citrix Workspace app, you can now restore default keyboard settings. To restore the keyboard settings to its default values, open the Citrix Workspace app, navigate to **Preferences** > **Keyboard** and click **Restore Defaults**. Click **Yes** to confirm.

App Protection compatibility with HDX optimization for Microsoft Teams

With this release, full monitor or desktop sharing is disabled when App Protection is enabled for the delivery group. When you click **Share content** in Microsoft Teams, the screen picker removes the **Desktop** option. You can only select the Window option to share any open app, if the VDA is 2109 or higher. If you are connected to VDA older than 2019, no content is selectable.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 99.1.1.8, based on Chromium version 99. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documentation.

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Make Citrix Enterprise Browser your default browser

You can now make Citrix Enterprise Browser your default browser. Once you have made the Citrix Enterprise Browser your default browser, all links and Web and SaaS apps open in the Citrix Enterprise Browser by default.
To make Citrix Enterprise Browser your default browser on macOS, do the following:

1. Open the Citrix Enterprise Browser and click the ellipsis icon and open the **Settings** menu.
2. Click the **Default Browser** option on the left pane.
3. In the Default browser page, click **Make default**. When prompted, click **Use Citrix Enterprise Browser** to confirm your choice and apply the changes.

Fixed issues

- The mouse pointer is misaligned on Macs with a notch display. [CVADHELP-19337]
- You're not signed out of the Workspace app when the inactivity timeout value lapses. This issue occurs intermittently. [CVADHELP-19812]
- You might get an error when you try to uninstall Citrix Workspace app. [CVADHELP-19121]
- In optimized Microsoft Teams, the video function might not work if you start another virtual desktop or app session. [HDX-40451]
- While sharing the screen or an app during the Microsoft Teams call, your peer might see visual artifacts. This issue occurs due to unstable frame rates, such as incorrect video playback (frozen or transient black frames). This release includes improved frame rates or sampling rates that help to reduce visual artifacts. [HDX-38032]

2203.1

What's new

This release includes a simplified and intuitive onboarding experience for first time users.

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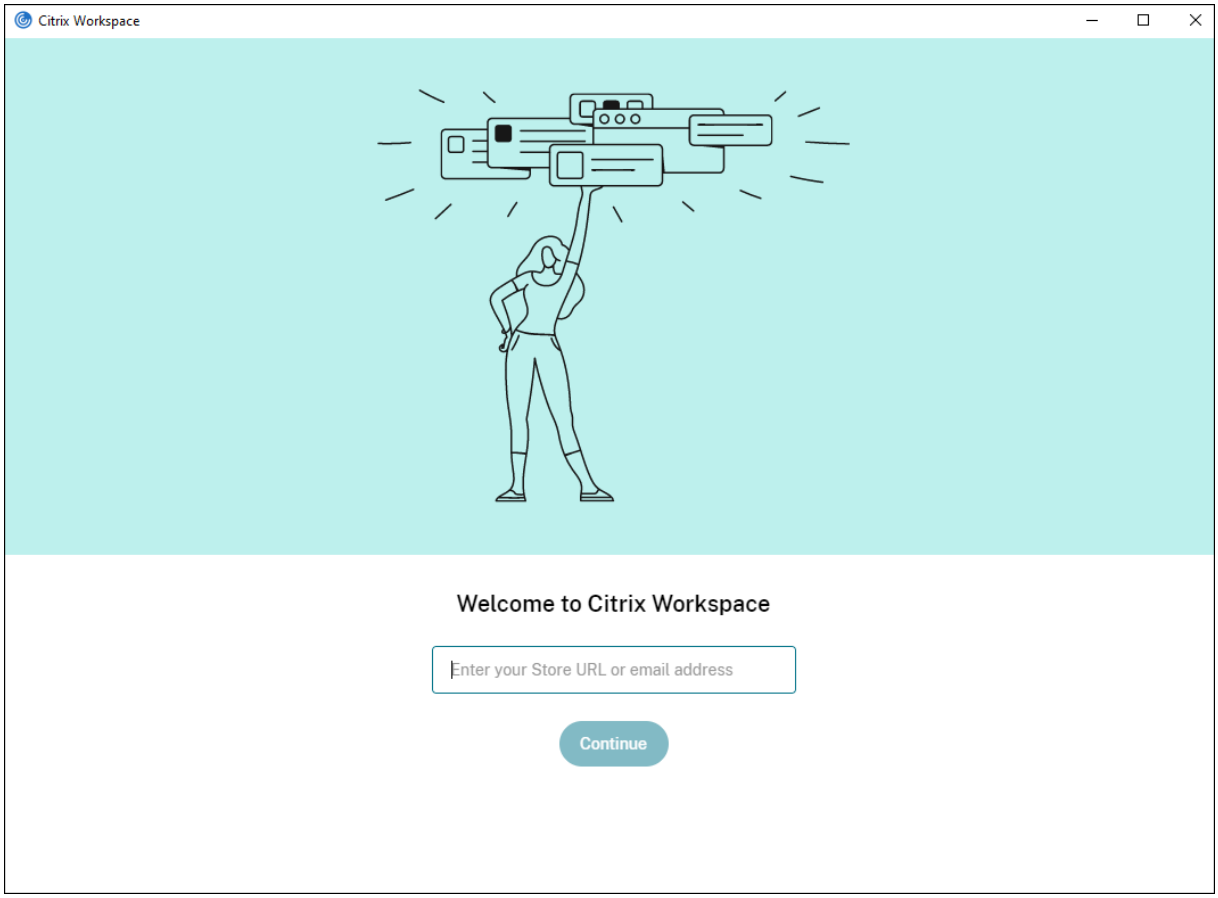

Inactivity timeout for Citrix Workspace app

The inactivity timeout feature logs you out of the Citrix Workspace app based on a value that the admin sets. Admins can specify the amount of idle time that is allowed before a user is automatically signed out of the Citrix Workspace app. You're automatically signed out when no activity from the mouse, keyboard, or touch occurs for the specified interval of time, within the Citrix Workspace app window. The inactivity timeout does not affect the already running Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service) sessions or the Citrix StoreFront stores.

For more information see Inactivity Timeout for Citrix Workspace app.

PDF Universal Printing

You can now use the PDF universal printing feature when printing from a Mac. You no longer need to install the HP Color LaserJet 2800 Series PS driver when auto-creating client printers on a Mac by using the Citrix Universal Printer Driver (UPD).

For more information about using this feature, see Printing.

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Share apps using the 'Share content' feature in Microsoft Teams

You can now share individual applications, windows, or full screen using the screen sharing feature in Microsoft Teams. Citrix Virtual Delivery Agent 2109 is a prerequisite for this feature.
To show a specific application, click **Share content** in your meeting controls and select the application of interest. After a red border appears around the app you select, peers on the call can see your app. If you minimize the app, Microsoft Teams displays the last image from the shared app. Maximize the window to resume sharing.

Multi-window chat and meetings for Microsoft Teams

Users can now use multiple windows for chat and meetings in Microsoft Teams (1.5.00.5967 or higher) when optimized by HDX in Citrix Virtual Apps and Desktops and Citrix DaaS. Users can pop out their conversations or meetings in a variety of ways. For details on the pop-out window feature, see Teams Pop-Out Windows for Chats and Meetings on the Microsoft Office 365 site.

If you're running an older version of Citrix Workspace App or VDA, be aware that Microsoft will deprecate the single-window code in the future. However, you will have a minimum of nine months to upgrade to a version of the VDA/CWA that supports multiple windows (2203 or later).

> **Note:**
>
> This feature is available only after the roll-out of a future update from Microsoft Teams. Got more details, see Microsoft 365 roadmap.

Give or take control in Microsoft Teams

You can use the **Give control** button to give control access of your shared screen to other users participating in the meeting. The other participant can make selections and modify the shared screen through keyboard, mouse, and clipboard input. You both now have control of the shared screen and you can take back the control anytime.

To take control during screen sharing sessions, any participant can request control access through the **Request control** button. The person sharing the screen can then approve or deny the request. When you have the control, you can control the keyboard and mouse input on the screen shared and release control to stop sharing control.

> **Note:**
>
> This feature is available only after the roll-out of a future update from Microsoft Teams.

StoreFront to Workspace migration

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As your organization transitions from on-premises StoreFront to Workspace, users are required to manually add the new Workspace URL to the Citrix Workspace app. This feature enables admins to seamlessly migrate users from a StoreFront store to a Workspace store with minimal user interaction.

For more information about this feature, see StoreFront to Workspace URL Migration.

Global App Config Service

The new Global App Configuration Service for Citrix Workspace allows a Citrix administrator to deliver Workspace service URLs and Citrix Workspace App settings through a centrally managed service.
For more information, see Global App Configuration Service documentation.

Extend multiple monitors in full-screen mode

You can now enter full-screen mode on two or more monitors simultaneously. To use this feature, perform the following steps:

1. Open the Citrix Viewer.
2. To use full-screen mode on the other connected monitors, drag the window from your primary monitor to span into the connected monitors. From the menu bar, select **View** > **Enter Full Screen**. The window goes into full screen mode on those monitors.

   > **Note:**
   >
   > If you have previously selected the **Use All Displays In Full Screen** option, ensure to unselect it as this selection extends full screen on all connected monitors.

Citrix recommends using a maximum of 3 monitors, including the primary monitor.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 98.1.2.17, based on Chromium version 98. For features or bugs fixes in the Citrix Enterprise Browser, see What's new in the Citrix Enterprise Browser documentation.

Technical Preview

- Support for an enhanced Single sign-on (SSO) experience for web and SaaS apps
- Support for Transport Layer Security (TLS) protocol version 1.3 on Linux VDAs

For a complete list of Technical Preview features, see Features in Technical Preview page.

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Fixed issues

- During active sessions, the Citrix Workspace app watermark becomes transparent, displaying content from windows in the background. This issue occurs only in seamless mode. [CVADHELP-19153]
- When launching a session from a VDA (2112 or higher) through a Citrix ADC, you might experience a session interruption, with session reliability starting but not reconnecting. [CVADHELP-19687]
- The Large File Receive pop-up dialog from the Mimecast plug-in doesn't appear in Outlook. [HDX-37137]
- When the value for Path MTU Discovery (PMTUD) is not 1500 (default), users can't fall back to TCP on an Azure cloud environment. [HDX-37215]
- You might experience high CPU utilization on endpoint when webcam is turned on in an optimized Microsoft Teams video call. [HDX-37168]
- In Citrix Workspace app, you might experience intermittent failures when answering or making a Microsoft Teams call. The following error message appears:
  "Call could not be established." [HDX-38819]
- Citrix Workspace app sessions might not launch if the Citrix AppFlow is configured in Citrix ADC. [HDX-39496]
- When auto-update is disabled and you navigate to **Preferences** > **Advanced**, the Citrix Workspace app crashes. [RFMAC-10978]

2201

What's new

StoreFront to Workspace migration [Technical preview]

As your organization transitions from on-premises StoreFront to Workspace, users are required to manually add the new Workspace URL to the Citrix Workspace app. This feature enables admins to seamlessly migrate users from a StoreFront store to a Workspace store with minimal user interaction.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds aren't deployed in production environments.

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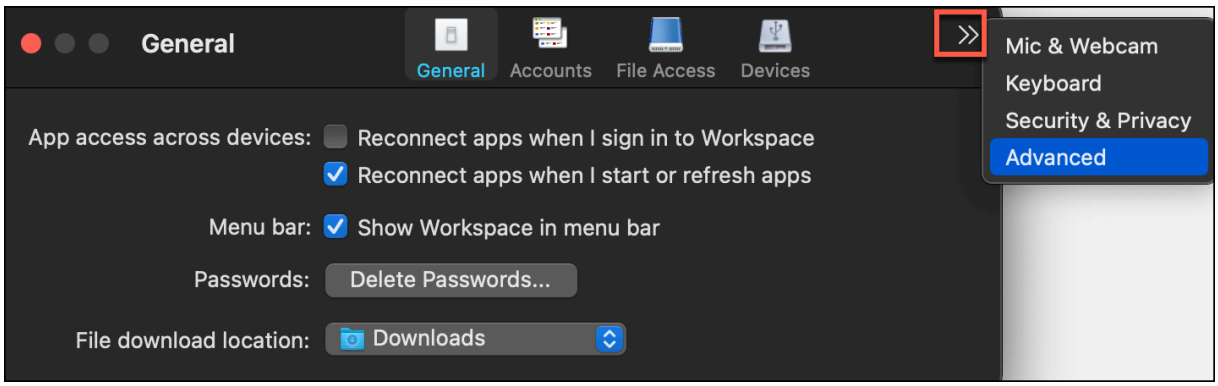
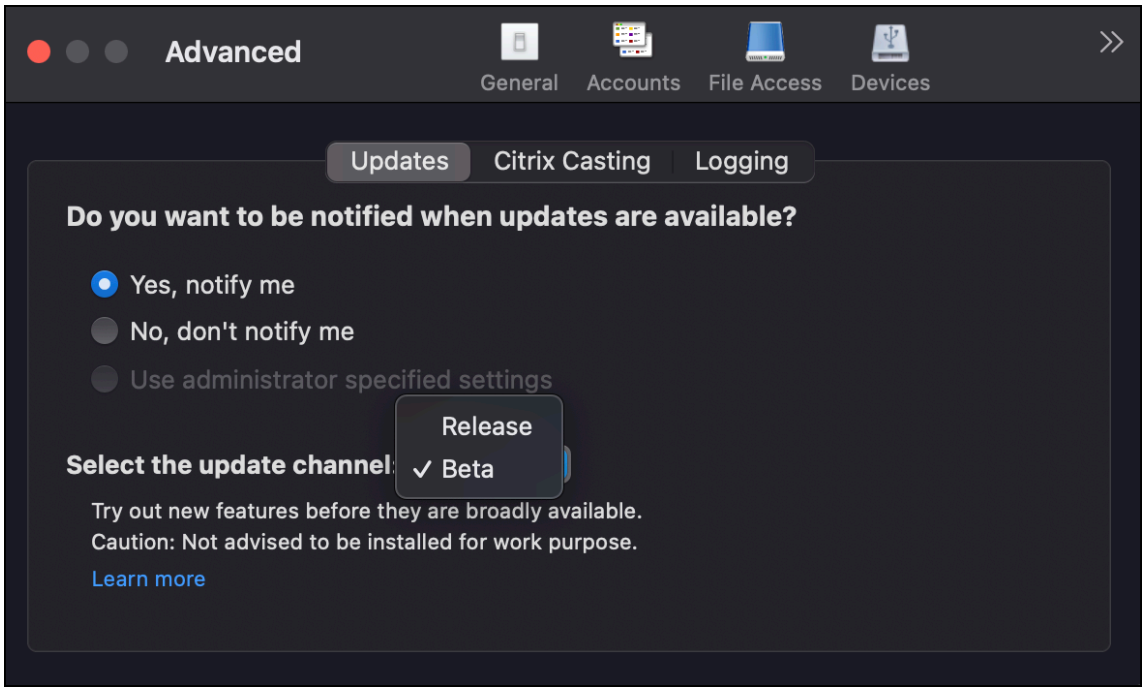
Citrix Workspace app Beta program

Starting with this release, you can automatically update existing installations of Citrix Workspace app to the most recent beta builds and test them. Beta builds are early access versions released before the general availability of a fully supported stable release update. You receive an update notification when the Citrix Workspace app is configured for automatic updates.

To access the beta builds, open the Citrix Workspace app, right-click on Citrix Workspace in the toolbar and click **Preferences** > **Advanced**. To update to beta builds, select the **Beta channel** from the drop-down list.



- **Beta** - Early access release to easily test and report issues before general availability.
- **Release** - Fully supported stable release update.



For more information about using this feature, see Update.

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Extend multiple monitors in full-screen mode [Technical preview]

You can now enter full-screen mode on two or more monitors simultaneously. To use this feature, perform the following steps:

1. Open the Citrix Viewer.
2. To use full-screen mode on the other connected monitors, drag the window from your primary monitor to span into the connected monitors. From the menu bar, select **View** > **Enter Full Screen**. The window goes into full screen mode on those monitors.

   > **Note:**
   >
   > If you have previously selected the **Use All Displays In Full Screen** option, ensure to unselect it as this selection extends full screen on all connected monitors.

Citrix recommends using a maximum of 3 monitors, including the primary monitor.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds aren't deployed in production environments.

Fixed issues

- While selecting the candidate text from the Input Method Editor composition window using the left or right arrows in the keyboard, the input cursor doesn't move accordingly. This issue occurs when you launch a desktop with the **Use local keyboard layout, rather than the remote server keyboard layout** check box is selected in the **Preferences** > **Keyboard** window of Citrix Workspace app. This issue is observed only in the Chinese and Japanese language. [HDX-34956]
- The mouse pointer disappears intermittently in Workspace apps sessions and you are not able to click anything. [HDX-36820]
- The desktop session closes unexpectedly when you drag a cell in a PivotTable in an Excel sheet. [HDX-37178]
- Sometimes, you experience issues with graphics in your desktop session after you upgrade to version 2112 and when lossless and full screen H.264 codec policies are applied. [HDX-37272]
- After you upgrade from Citrix Workspace app 2010 to version 2112, you can't connect to desktops or apps. [RFMAC-10811]

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2112

What's new

Support for custom web stores

You can now access your organization's custom web store from the Citrix Workspace app for Mac. Previously, you accessed all customized stores through the browser only.

Citrix Workspace app for Mac loads the custom web stores with a browser-like experience and extends App Protection capabilities to custom web stores. Making the custom portal accessible from the native Citrix Workspace App provides comprehensive capabilities and user experience for this feature. For more information about Global App Configuration Service, see Getting Started.

For more information about configuring a custom web store, see Custom web store.

Request control in Microsoft Teams

With this release, you can request control during a Microsoft Teams call when a participant is sharing the screen. Once you have control, you can make selections, edits, or other modifications to the shared screen.

To take control when a screen is being shared, click **Request control** at the top of the Microsoft Teams screen. The meeting participant who's sharing the screen can either allow or deny your request. When you're done, click **Release control**.

Limitation:

The **Request Control** option is not available during peer-to-peer calls between an optimized user and a user on the native Microsoft Teams desktop client that is running on the endpoint. As a workaround, users can join a meeting to get the **Request Control** option.

Dynamic e911

With this release, Citrix Workspace app supports dynamic emergency calling. When used in Microsoft Calling Plans, Operator Connect, and Direct Routing, it allows you to do the following:

- Configure and route emergency calls.
- Notify security personnel.

Notification is provided based on the current location of the Citrix Workspace app running on the endpoint, instead of the Microsoft Teams client that runs on the VDA. Ray Baum's law requires the 911 caller's dispatchable location to be transmitted to the appropriate Public Safety Answering Point (PSAP). Starting from Citrix Workspace app 2112.1 for Windows, Microsoft Teams Optimization with HDX is compliant with Ray Baum's law. For more information about this feature, see Support for dynamic e911 in the section **Microsoft Phone System**.

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PDF Universal Printing (Technical preview)

The PDF universal printing feature is available with the Citrix Virtual Apps and Desktops 2112 release. This feature is disabled by default. To use this feature, you must sign up by using this web form. The feature is enabled for you once we receive your information. You also receive instructions about using the feature and the printing policies that must be enabled.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds aren't deployed in production environments.

Service continuity

Service continuity removes or minimizes the dependency on the availability of components that are involved in the connection process. Users can launch their virtual apps and desktops regardless of the health status of the cloud services. Citrix Workspace Web extensions make service continuity available to users who access their apps and desktops through a browser.

Together, the Citrix Workspace app and the Workspace Web extension use Workspace connection leases to give browser users access to their apps and desktops during outages. For more information, see Service continuity

Citrix Enterprise Browser

This release of the Citrix Enterprise Browser is based on Chromium version 95. For features or bugs fixes in the Citrix Enterprise Browser, see What's new in the Citrix Enterprise Browser documentation.

Fixed issues

- The "Cannot connect to server error" appears when the transport protocol switches from Enlightened Data Transport (EDT) to TCP. [CVADHELP-18310]
- If a Progressive Web App (PWA) that is protected is opened on macOS, the **App Protection** policies aren't enforced. [RFMAC-10128]

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2111

What's new

- With this release, users cannot manually roll back Citrix Workspace app for Mac to a version that is lower than the version installed on their systems. For example, if a Mac device has Citrix Workspace app Version 2109 installed on it, then you cannot manually roll back the app to version 2108 or lower.
- Launch the remote desktop session with a permanent license, if you're running Client Access Licenses (CAL) to access remote desktops. You can launch the remote desktop session when the client ID is greater than 15 characters.
- To load Citrix Virtual Channel SDK on a Mac running Citrix Workspace app 2111, you must recompile your custom virtual channels. For details, see Update Custom Virtual Channels on Citrix Workspace app for Mac.

Support for custom web stores [Technical Preview]

With this release, you can access your organization's custom web store from the Citrix Workspace app for macOS. Admins must add the custom web store to the list of allowed URLs in the Global App Configuration Service to use this feature. After adding the URLs, you can provide the custom web store URL in the Add Account option in Citrix Workspace app. The custom web store opens in the native Citrix Workspace app for macOS.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited production environments, and to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds aren't deployed in production environments.

Citrix Enterprise Browser - For new features or bugs fixes in Citrix Enterprise Browser, see What's new in the Citrix Enterprise Browser documentation.

Fixed issues

- On devices running macOS, Advanced Audio Coding (AAC) is not supported. [CTXBR-1844]
- If you have configured the Citrix Workspace app using the `.cr` file and signed in with your credentials, there's a delay before the home page appears. [RFMAC-9990]
- Open a protected SaaS app, open a new tab, and separate the new tab into a new window by dragging it out of the tab bar. Now arrange two windows next to each other and open a new

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tab in the second window and take a screenshot. You are able to capture the screenshot for the protected SaaS app as well in. [RFMAC-10060]

- Switching from one store to another might sign you out from the first store. [RFMAC-10137]
- When you enter incorrect credentials while signing into the Citrix Workspace app, the "Incorrect credentials" error message doesn't appear and an authentication prompt appears again. Sometimes, **Domain\User** appears in the authentication prompt instead of **User name**. [RFMAC-10210]
- Calls fail when an optimized Microsoft Teams P2P call is made from Citrix Workspace app for Mac 2109 to Citrix Workspace app for Windows 2109. [HDX-35223]

2109.1

What's new

macOS Monterey Support

Citrix Workspace app for Mac is supported on macOS Monterey (12.0.1).

Fixed issues

- If you have opened a protected app, an unprotected SaaS app, and a protected desktop session, the browser exits unexpectedly. This issue occurs when you switch from the protected desktop session window to the unprotected SaaS app. [CTXBR-2087]
- If your admin has installed external extensions in Google Chrome, the Citrix Enterprise Browser crashes when you open it. [CTXBR-2135]

2109

What's new

> **Note:**
>
> If Service continuity is enabled, and you upgrade to version 2109, the connection lease files are refreshed. All the existing leases are deleted and new leases are fetched as part of functionality enhancements.

Citrix Workspace app for Mac on macOS Monterey Beta

Citrix Workspace app 2109 for Mac has been tested on macOS Monterey Beta 7. Use this setup in a test environment and provide your feedback.

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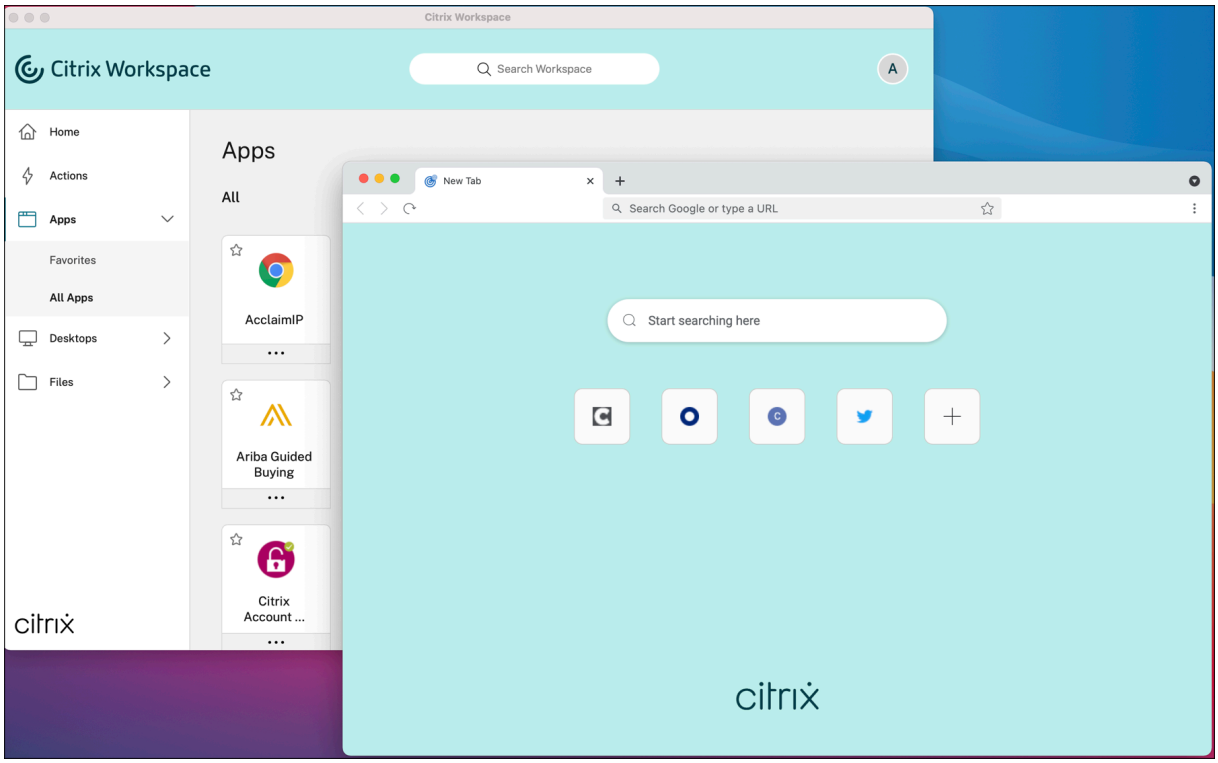
> **Caution:**
>
> Do not use Citrix Workspace app for Mac on macOS Monterey Beta versions in production environments.

Email-based auto-discovery of store

You can now provide your email address in Citrix Workspace app for Mac to automatically discover the store associated with the email address. If there are multiple stores associated with a domain, by default the first store returned by the Global App Configuration Service is added as the store of choice. Users can always switch to another store if necessary.

Citrix Enterprise Browser

Citrix Enterprise Browser is a native browser running on the client machine. It enables users to open web or SaaS apps from the Citrix Workspace app in a secure manner. The browser ensures a consistent user interface while accessing various web or SaaS apps while improving your productivity and giving you a great performance in rendering those apps.



With a continued focus on enriching the user-experience, the new Citrix Enterprise Browser brings you an enhanced and a more native browser-like experience, complete with the following features:

- VPN-less access to internal webpages
- Microphone and webcam support

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- Tabbed browsing experience
- Multi-window views
- Editable omnibox
- Bookmarks
- Shortcuts on the new tab page
- Customizable settings
- Analytics

Admins can enable Secure Private Access or App protection policies including anti key-logging, anti-screen capture, download, printing, clipboard restrictions, and watermarking in varying combinations on a per-URL basis.

For more information, see Citrix Enterprise Browser documentation.

End Point Analysis (EPA) enhancement

Starting with this release, Citrix Workspace app for macOS supports End Point Analysis (EPA). Advanced Endpoint Analysis (EPA) scans the device for endpoint security requirements configured on the Citrix Gateway. When the scan completes successfully, a user is granted access.

> **Note:**
>
> This feature works only if you have configured nFactor authentication in your environment.

For more information about the EPA scan, see Advanced Endpoint Analysis scans.

Adaptive audio

With Adaptive audio, you don't need to configure the audio quality policies on the VDA. Adaptive audio optimizes settings for your environment and replaces legacy audio compression formats to provide an excellent user experience. For more information, see Adaptive Audio.

Support for H.264 Advanced Video Coding (MPEG-4 AVC) with Microsoft Teams

This release includes support for hardware accelerated H.264 video encoding/decoding, which reduces the load on CPU usage and improves your video conferencing experience. The multimedia engine of Citrix HDX optimized Microsoft Teams (HdxRtcEngine.exe) now uses Apple's Video Toolbox framework for encoding and decoding. This framework compresses and decompresses video faster and in real time. Also, the offloading of encoding and decoding to the GPU is optimized. Hardware accelerated video decoding and encoding is enabled by default if a device supports it. This enhancement reduces the load on the CPU during multimedia usage when Microsoft Teams is optimized with HDX.

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Fixed issues

- After you sign in to the Citrix Workspace app for Mac, you are prompted for authentication after a few hours. [RFMAC-10032]
- When you add a store in the Citrix Workspace app, change the authentication domain in the server console, leave the app idle for a few minutes, and then open any app or desktop session, the Citrix workspace app may crash. [RFMAC-10133]
- When a virtual app or desktop is already running and you start another virtual app or desktop, Citrix Viewer appears but the virtual app does not open. This issue occurs on devices running macOS 11.6. [RFMAC-10134]

2108.1

What's new

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

Fixed issues

When a virtual app or desktop is already running and you start another virtual app or desktop, Citrix Viewer appears but the virtual app does not open. This issue occurs on devices running macOS 11.6. [RFMAC-10134]

2108

What's new

Citrix Workspace app for Mac now supports Maximum Transmission Unit (MTU) discovery in Enlightened Data Transport (EDT). It increases the reliability and compatibility of the EDT protocol and provides an improved user experience.

> **Note:**
>
> EDT MTU discovery is supported on macOS Big Sur and later.

Fixed issues

- There is a lag in video during conference calls in Microsoft Teams. [HDX-32603]
- On Mac clients running macOS Big Sur, an HTTP 404 or HTTP/1.1 internal server error might occur. The issue occurs when attempting to reconnect to sessions. [RFMAC-9448]

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2107

What's new

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

Fixed issues

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

2106

What's new

Support for customized URLs through 301 redirects

You can add URLs that redirect to Citrix Workspace from StoreFront or Citrix Gateway through HTTP 301 redirects.

If you're migrating from StoreFront to Citrix Workspace, you can redirect the StoreFront URL to a Citrix Workspace URL through an HTTP 301 redirect. As a result, when adding an old StoreFront URL, you're automatically redirected to Citrix Workspace.

Example of a redirect:

The StoreFront URL: `https://< Citrix Storefront url>/Citrix/Roaming/Accounts` can be redirected to a Citrix Workspace URL: `https://<Citrix Workspace url>/Citrix/Roaming/Accounts`.

> **Note:**
>
> - Citrix Workspace app for Mac does not support Dual Tone Multi Frequency (DTMF) with Microsoft Teams due to pending changes from Microsoft.
> - From this release onward, the Citrix Viewer's version number and the Citrix Workspace app's version number might not match. This change does not affect your experience.

Service continuity

Service continuity removes or minimizes the dependency on the availability of components that are involved in the connection process. Users can launch their virtual apps and desktops regardless of the health status of the cloud services.

For more information, see Service continuity section in the Citrix Workspace documentation.

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Microsoft Teams enhancements

When the **Desktop Viewer** is in full screen mode, the user can select one from all the screens covered by the **Desktop Viewer** to share. In the window mode, the user can share the **Desktop Viewer** window. In the seamless mode, the user can select one screen from the screens connected to the endpoint device.
When the Desktop Viewer changes the window mode (maximized, restore, or minimize), the screen sharing stops.

When the user wants to share the screen, previews for all available screens appear in the screen sharing panel, making it intuitive to select the right one by from the previews.

Fixed issues

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

2104

What's new

Citrix Workspace app for Mac supports manual user sign-on to network shares unless your organization enables single sign-on. To access shared network locations, open Citrix Workspace app, navigate to **Files** > **Network Shares** and provide your credentials. For more information about setting up network shares, see Create and manage storage zone connectors.

Fixed issues

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

2102

What's new

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

Fixed issues

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

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2101

What's new

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 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 Citrix 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.

Fixed issues

- 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]

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- 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]

2012

What's new

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.

Fixed issues

- 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]
- Attempts to launch Citrix Files from within Citrix Workspace app for Mac might fail due to issues with single sign-on. [RFMAC-4477]
- 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]

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- HDX RealTime Connector engine might exit unexpectedly when you turn the camera on and off in Microsoft Teams. [RFMAC-6293]

Known issues

Known issues in 2305

- After upgrading Citrix Workspace app for Mac to version 2305, certain third-party virtual apps that have pop-up dialogs for entering username and password might become unresponsive upon opening. [CVADHELP-23032]

Known issues in 2304

- A user with multiple accounts might see the Citrix Workspace app loading screen for a long time. As a workaround, you must quit Citrix Workspace app and restart it. [RFMAC-13432]

Known issues in 2301.1

- You might not be able to update to the Citrix Workspace app version 2301.1 using auto-update service. You can install the app by downloading the file from the Citrix website at Downloads.

Known issues in 2301

- On macOS Ventura devices, progressive web apps (PWA) fail to open. The following error message appears:

  App Name is damaged and can't be opened. You should move it to the Bin.

  As a workaround, right-click on the app and select Open. If you are using the keyboard, press the Ctrl key and click on the app. Select Open. [CTXBR-3885]

- An infinite loading spinner might appear when users sign in to Citrix Workspace associated with Global App Config Service. Storefront and Custom Web Stores are not impacted by this issue. [RFMAC-13086]

Known issue in 2211.1

No new issues have been observed in this release.

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Known issues in 2211

- When using Citrix Workspace app for Mac 2209 and later versions, the user sign-in page might not be displayed while using the custom web portal. As a workaround, quit Citrix Workspace app by using the **Quit** option from Citrix Workspace icon in the menu bar. [CVADHELP-21377]

Known issues in 2210

- On macOS 13 Ventura, the seamless app interaction might run into issues when you change the **All at Once default** option to the **One at a Time** option in the **Stage Manager** preference under the **Stage Manager** feature. [HDX-44567]
- Attempts to start a desktop session in offline mode might fail. As a workaround, resize the session window. [HDX-45081]
- When resizing a session to full-screen mode on a MacBook, the focal point of a cursor might appear slightly above the actual cursor position. As a workaround, navigate to **System Preferences > Dock & Menu Bar** and enable the **Automatically hide and show the menu bar in full screen** option. [HDX-45585]
- With 2210 release, using Mission Control or App Expose features in an app session might cause Citrix Workspace app to close unexpectedly. [HDX-46130]
- When launching certain third-party apps such as Epic or Kronos, the sign-in window of the apps might be covered by another window. As a result, the entire session freezes. As a workaround, perform one of the following actions:
  - Drag the window that is blocking the sign-in window away from it.
  - Locate the sign-in window using the Mission Control feature.
  - Use the keyboard shortcut **Command+~** to switch windows.

  [HDX-46140]

Known issues in 2209

No new issues have been observed in this release.

Known issue in 2208.1

No new issues have been observed in this release.

Known issue in 2206.1

No new issues have been observed in this release.

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Known issue in 2204

- When traffic is tunneled through NGS, Citrix Workspace app might fail to upload or download files that are greater than 64 MB. [CTXBR-3354]

Known issues in 2203.1

- You can't click the **Create** button in the Jira app unless the browser window is maximized. [CTXBR-1976]
- Web socket connections aren't tunneled through Citrix Secure Private Access. [CTXBR-2439]
- After upgrading the Citrix Workspace app to version 2203, a question mark icon appears on the Citrix Enterprise Browser icon. This issue occurs if the Citrix Enterprise Browser was pinned to the dock before the upgrade. [CTXBR-2864]
- When you click the **Reset settings** option on the **Advanced** settings section of the Citrix Enterprise Browser, the log settings do not reset to default. As a workaround, click the **Reset to default log settings** option available on the **Logs** page. [CTXBR-2929]
- After you upgrade from Citrix Enterprise Browser version 2201 to version 2203, previously saved passwords are lost and you're unable to save new passwords. [CTXBR-3063]
- Full screen mode is not available on Macs with a notch. [CVADHELP-19337]
- When you launch a desktop or app session using the browser, the session window launches in the background, behind the browser window. [RFMAC-11362]

Known issues in 2201

- The client name appears with random characters in the Citrix Broker Service and the Citrix Director if you are using the Citrix Workspace app in the offline (intranet) mode. [RFMAC-10842]

Known issues in 2112

- In Citrix Workspace app, you might experience intermittent failures when answering or making a Microsoft Teams call. The following error message appears:
  "Call could not be established." [HDX-38819]

Known issues in 2111

No new issues have been observed in this release.

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Known issues in 2109.1

No new issues have been observed in this release.

Known issues in 2109

- If you have configured the Citrix Workspace app using the `.cr` file, and signed in with your credentials, the home page appears after a delay. [RFMAC-9990]
- If a Progressive Web App (PWA) that is protected is opened on macOS, the *App Protection* policies aren't enforced. [RFMAC-10128]
- After you add stores in the Citrix Workspace app and change the **Current Reauthentication Period** in **Reauthentication Period for Workspace App** and switch from on-premises to the cloud store after a few minutes, you are signed out of the cloud store and an authentication prompt appears. Once you sign in to the Citrix Workspace app, the spinner appears indefinitely and you are unable to sign in. [RFMAC-10140]

Known issues in 2108.1

No new issues have been observed in this release.

Known issues in 2108

- When you start a subscribed SaaS app after changing the authentication domain in the server console, the session does not start and the following error message appears:

  "AuthDomain has changed. Please sign in again after some time"

  [RFMAC-9616]

Known issues in 2107

- When you change the authentication domain in the server console and sign in with your credentials, the following error message appears:

  Cannot connect to the server

  You can access the store once you click OK.

  [RFMAC-9494]

Known issues in 2106

- A black window appears when you share your screen. [HDX-30083]

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Known issues in 2104

No new issues have been observed in this release.

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 Citrix 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]

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

Features in Technical Preview

September 12, 2023

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Features in Technical Preview are available to use in non-production or limited production environments, and to give customers an opportunity to share feedback. Citrix does not accept support cases for features in technical preview but welcomes feedback for improving them. Citrix might act on feedback based on its severity, criticality, and importance.

Keyboard accessibility support for the toolbar on the Virtual Desktop

This feature is in technical preview from 2307 release.

With the 2307 release, you can use the keyboard shortcut to hide or activate the session toolbar. From the **Citrix Viewer** menu bar, navigate to **View > Use Toolbar shortcut** to use the keyboard shortcut. By default, the **Use Toolbar shortcut** option is enabled.

The toolbar and CWA preference window now support **Keyboard navigation**, which helps to navigate between the UI elements and highlights the element that is in focus.

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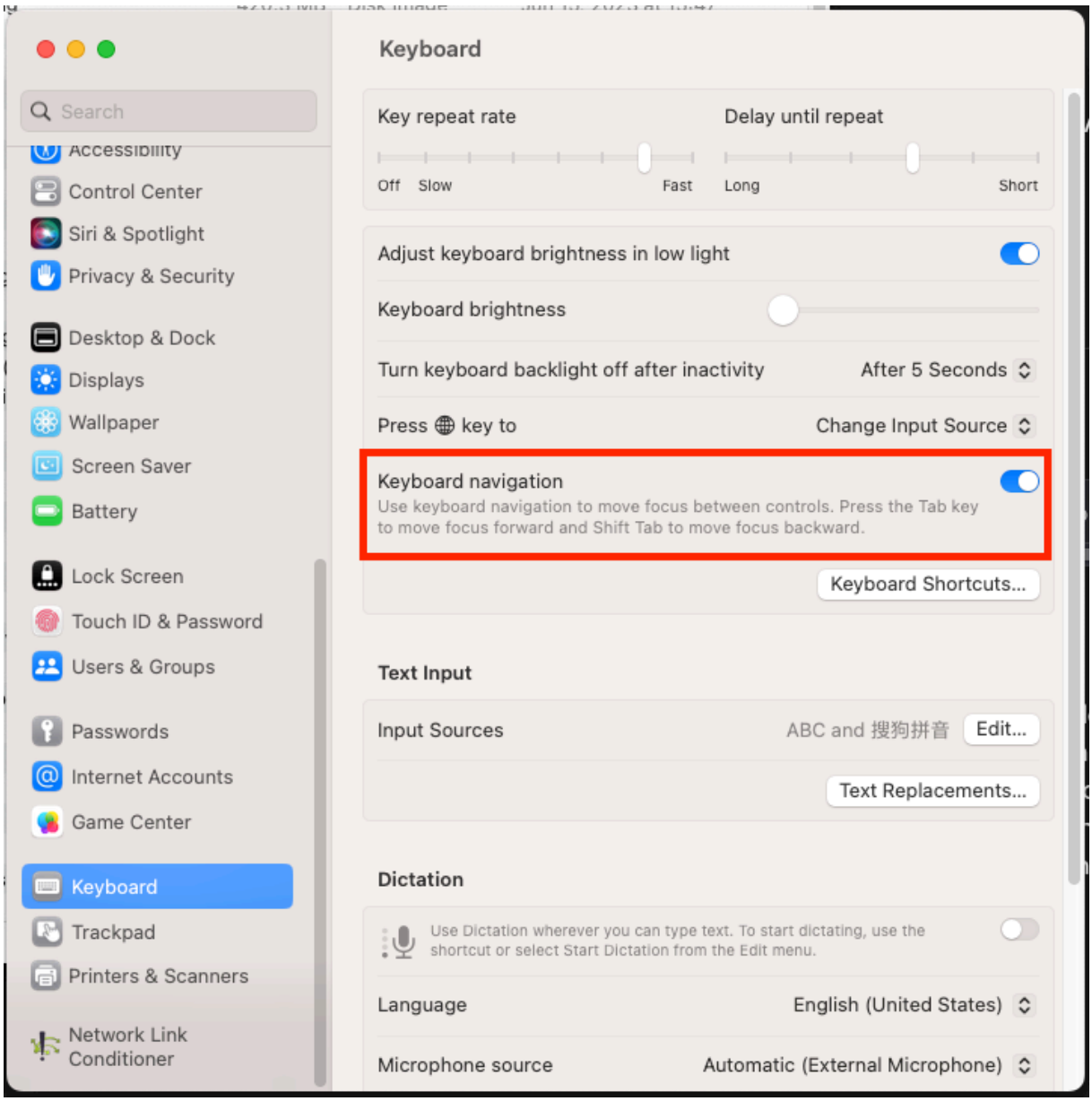

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

You can provide feedback for this feature using the Podio form.

Client App Management

This feature is in technical preview from 2305 release.

Citrix Workspace app 2305 for Mac now offers Client App Management capability that makes the Citrix Workspace app a single client app required on the end point to install and manage agents such as End Point Analysis (EPA) plug-in.

With this capability, administrators can easily deploy and manage required agents from a single man-

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agement console.

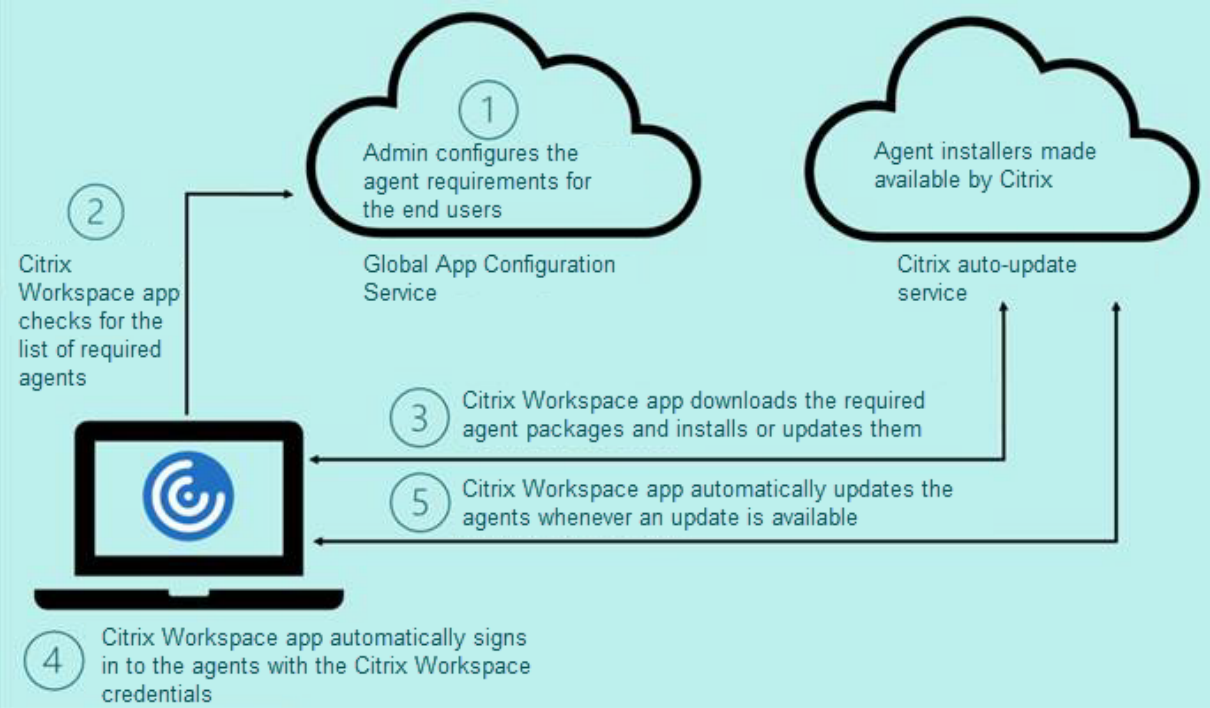
> **Note:**
>
> - This feature is applicable to Workspace (cloud) sessions only.
> - Global App Configuration Service is a prerequisite for this feature.

Client App Management includes the following steps:

- Administrators must specify the agents required on end users' devices in the Global App Configuration Service. With this technical preview, administrators can specify Endpoint Analysis (EPA) agent.
- Citrix Workspace app fetches the list of agents from Global App Configuration Service.
- Based on the list fetched from Global App Configuration service, Citrix Workspace app downloads the agent packages through the auto-update service. If the agent is not previously installed on the end point, Citrix Workspace app triggers the installation of the agent. If the agent is already installed, Citrix Workspace app triggers an update to the agent (if the version of the downloaded agent is higher than the installed version.)

Citrix Workspace app ensures to automatically update the agents whenever an update is available in the future.

The following diagram illustrates the workflow:



Example JSON file in Global App Config Service:

```
{
```

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```
2
3       "serviceURL": {
4
5           "url": "https://serviceURL:443"
6        }
7   ,
8       "settings": {
9
10          "name": "Client App management",
11          "description": "Client App management",
12          "useForAppConfig": true,
13          "appSettings": {
14
15              "macos": [
16                  {
17
18                      "category": "AutoUpdate",
19                      "userOverride": false,
20                      "assignedTo": [
21                          "AllUsersNoAuthentication"
22                      ],
23                      "settings": [
24                          {
25
26                              "name": "Auto update plugins settings",
27                              "value": [
28                                  {
29
30                                      "pluginName": "Citrix Endpoint
    Analysis",
31                                      "pluginId": "7303CB73-42EE-42BB-
    A908-9E6575912106",
32                                      "pluginSettings": {
33
34                                          "deploymentMode": "
    InstallAndUpdate",
35                                          "upgradeToLatest": true,
36                                          "minimumAllowedVersion": "1.0",
37                                          "maximumAllowedVersion": "24.0"
    ,
38                                          "delayGroup": "Medium",
39                                          "stream": "",
40                                          "isFTU": true,
41                                          "isBlocking": true,
42                                          "detectRule": ""
```

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```
                                        }

                                    }

                                ]
                            }

                        ]
                    }

                ]
            }

        }

    }


<!--NeedCopy-->
```

The following table lists the Client App Management settings schema, values, and description.

Schema setting	Value	Description
isBlocking	True or False	When the isBlocking parameter is set to true, the plug-in is considered mandatory, and the sign-in page appears only when the required plug-in is installed. Citrix recommends you set EPA as the mandatory plug-in.
pluginName		Friendly name for the plug-in. The pluginName can be modified.
pluginId		ID of the plug-in and must not be modified.
deploymentMode	InstallAndUpdate/Update	
maximumAllowedVersion		Maximum allowed version of the plug-in.

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Schema setting	Value	Description
minimumAllowedVersion		Minimum allowed version of the plug-in.
upgradeToLatest	True or False	

Starting with 2301 release, administrators can manage auto-update of EPA Clients for macOS through the Citrix Workspace app and single sign-on to Citrix Secure Access if you have already signed in to Citrix Workspace app.

Auto-update of Endpoint Analysis (EPA)

You can now manage auto-update of EPA Clients for macOS through the Citrix Workspace app. Administrators must specify the agents required on end users' devices in the Global App Configuration Service. If the agent is already installed and a new version of the agent is available, then the Citrix Workspace app updates the agent to the next higher version. Citrix Workspace app ensures to automatically update the agents whenever a new update is available in the future.

Example JSON file in Global App Config Service:

```
{

    "serviceURL": {

        "url": "https://serviceURL:443"
     }
 ,
    "settings": {

        "name": "Client App management",
        "description": "Client App management",
        "useForAppConfig": true,
        "appSettings": {

            "macos": [
                {

                    "category": "AutoUpdate",
                    "userOverride": false,
                    "assignedTo": [
                        "AllUsersNoAuthentication"
                    ],
```

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```
23                      "settings": [
24                          {
25
26                              "name": "Auto update plugins settings",
27                              "value": [
28                                  {
29
30                                      "pluginName": "Citrix Endpoint
                                           Analysis",
31                                      "pluginId": "7303CB73-42EE-42BB-
                                           A908-9E6575912106",
32                                      "pluginSettings": {
33
34                                          "deploymentMode": "
                                               InstallAndUpdate",
35                                          "upgradeToLatest": true,
36                                          "minimumAllowedVersion": "1.0",
37                                          "maximumAllowedVersion": "7.0",
38                                          "delayGroup": "Medium",
39                                          "stream": "",
40                                          "isFTU": false,
41                                          "isBlocking": false,
42                                          "detectRule": ""
43                                       }
44
45                                   }
46
47                              ]
48                          }
49
50                      ]
51                  }
52
53              ]
54          }
55
56      }
57
58  }
59
60
61  <!--NeedCopy-->
```

The meaning of the properties and their possible values for the deploymentMode key are as follows:

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- “InstallAndUpdate”: Plugin can be freshly installed and can updated with new version.
- “Update”: Only update should be allowed, no fresh install.
- “None”: No action needed for this plugin.

Single sign-on to Citrix Secure Access using Citrix Workspace app

You can single sign-on to Citrix Secure Access if you have already signed in to Citrix Workspace app. When you sign in to Citrix Workspace app and open Citrix Secure Access, you will not be asked to authenticate by entering the credentials. It automatically proceeds with the authentication. This feature provides users with a seamless experience by allowing single sign-on to different Citrix applications. This feature is available only for customers on cloud stores. Along with the latest version of Citrix Workspace app, you must have a compatible version of Citrix Secure Access (22.12.2 and later versions).

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

You can provide feedback for this feature using the Podio form.

Rapid Scan

This feature is in technical preview from 2304 release.

If you are logged into Citrix Workspace app on multiple devices, you can use the Rapid Scan feature to scan multiple documents with an iOS device, and then transfer those scanned documents to a Mac device.

For instructions on how to use the Rapid Scan feature to scan documents, follow these steps:

1. On your Mac device, right-click on the Citrix Workspace app icon in your desktop session and click on **Rapid Scan**. This displays a QR code.
2. On your iOS device, click **Settings > Rapid Scan**.
3. Scan the QR code displayed on your Mac device to establish the connection between your Mac and iOS devices.
4. Scan any document and send it to your Mac device.
5. In your desktop session on your Mac device, you can locate the documents you scanned in the Finder.

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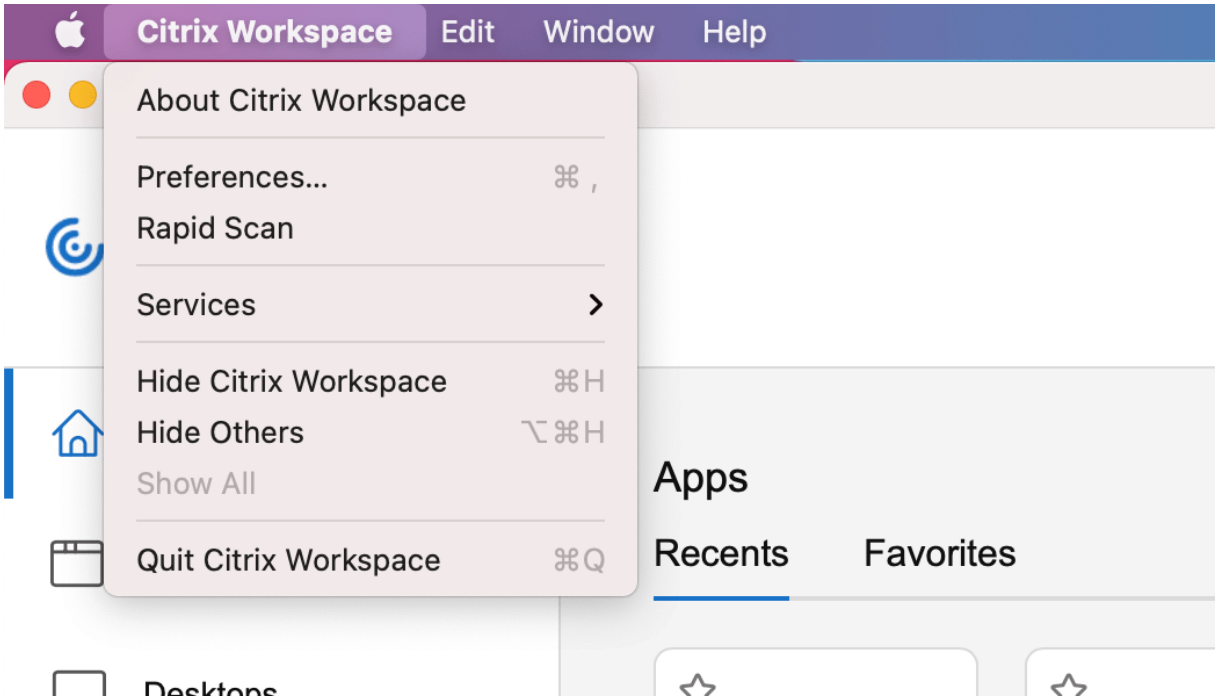

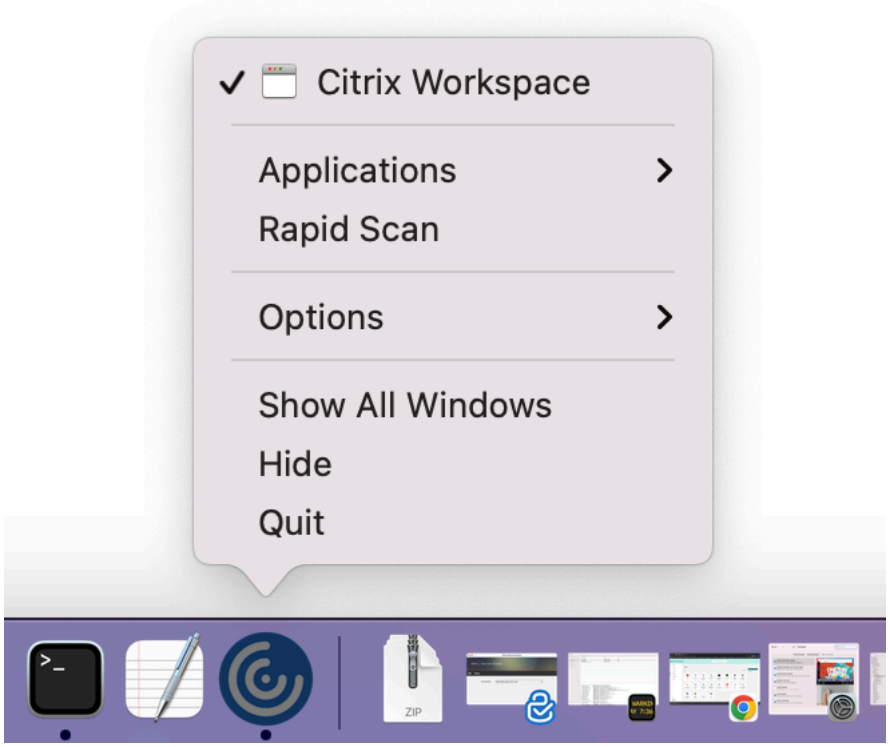

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Prerequisites

- Client drive mapping (CDM) must be enabled for the store.
- You must be signed into the same account in the Citrix Workspace app on both your iOS device and Mac device.
- You must be connected to the same Wi-Fi.
- The minimum version required of Citrix Workspace app for Mac is 2304.
- This feature is supported on Citrix Workspace app for iOS version 23.3.5 onwards.
- Rapid Scan requires read and write access on your device. To enable access, follow these steps:
    1. From your profile, click **Application Settings > Store Settings**.
    2. Click on your current store.
    3. Click **Device Storage** and select **Read and write access**.

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

You can provide feedback for this feature using the Podio form.

Enhanced virtual apps and desktops launch experience

This feature is in technical preview from 2304 release.

The opening of Citrix resources has been enhanced to be more intuitive, informative, and user-friendly. Starting with the 2304 release, this improved virtual apps and desktops launch experience is supported for Custom Web Stores and hybrid launch. For more information on virtual apps and desktops launch experience, refer to Improved virtual apps and desktops launch experience [Technical Preview].

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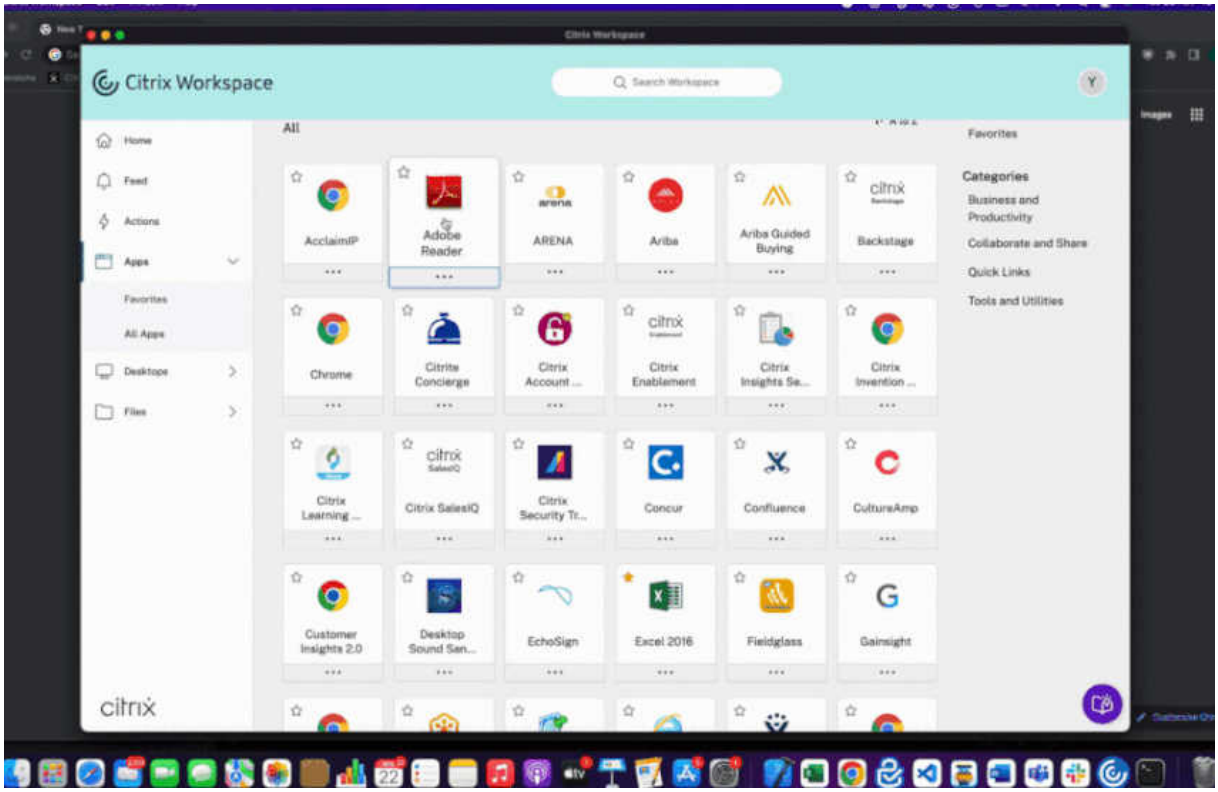
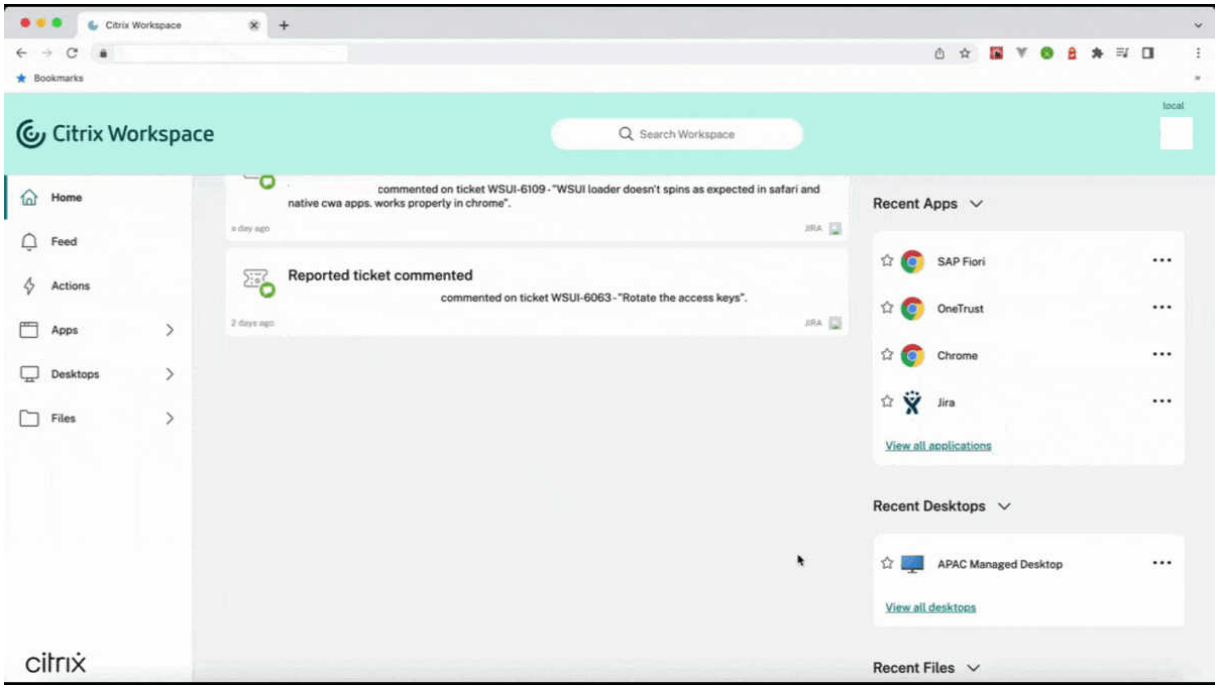


The launch progress notification now appears at the bottom-right corner of your screen. A progress status of the resources, which are in the process of being opened is shown. You cannot retrieve the notification once you dismiss it. The notification stays for a few seconds from the time you start the session. If the session fails to start, then the notification shows the failure message.



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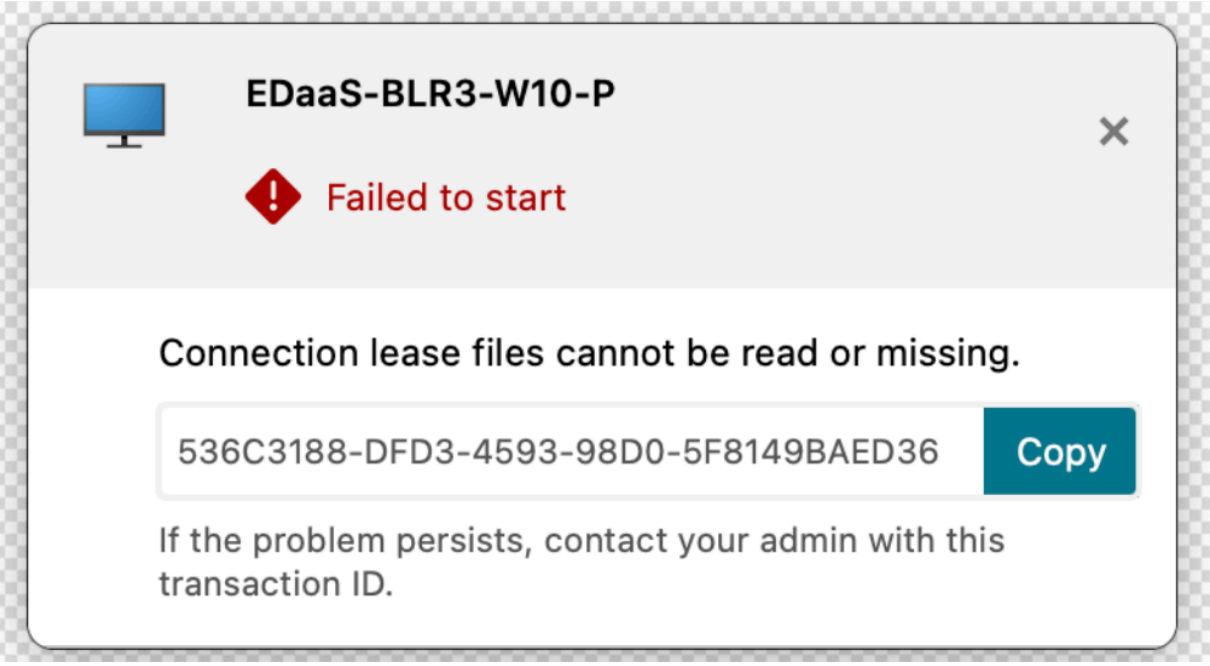

Note:

- This feature is available for both Workspace (cloud) and storefront sessions.
- You can provide feedback for this technical preview by using the Podio form.

Support for multiple audio devices

This feature is in technical preview from 2304 release.

Starting with the 2304 release, Citrix Workspace app displays all available local audio devices in a session with their names. In addition, plug-and-play is also supported.

This feature is a request-only preview. To get it enabled in your environment, fill out the Podio form.

You can provide feedback for this feature using the Podio form.

Upgraded version of WebRTC for the optimized Microsoft Teams

This feature is in technical preview from 2210 release.

The version of WebRTC that is used for the optimized Microsoft Teams is upgraded to version M98.

You can provide feedback for this feature using the Podio form.

Support for an enhanced Single sign-on (SSO) experience for web and SaaS apps

This feature is in technical preview from 2203.1 release.

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This feature simplifies the configuration of SSO for internal web apps and SaaS apps while using third party identity providers (IdPs). The enhanced SSO experience reduces the entire process to a few commands. It eliminates the mandatory prerequisite to configure Citrix Secure Private Access in the IdP chain to set up SSO. It also improves the user experience, provided the same IdP is used for authentication to both the Citrix Workspace app and the particular web or SaaS app being launched.

You can register for this technical preview by using this Podio form.

Support for Transport Layer Security (TLS) protocol version 1.3 on Linux VDAs

This feature is in technical preview from 2203.1 release.

If you're running TLS version 1.3, you can now connect to virtual apps and desktops hosted on the Linux operating system.

> **Note:**
>
> You can't connect to Windows virtual apps and desktops if you're running TLS version 1.3.

You can provide feedback for this feature using the Podio form.

Native support for Mac with Apple Silicon (M1 and M2 series)

August 31, 2023

Native support for Mac with Apple Silicon (M1 and M2 series) - Universal architecture

Citrix Workspace app for macOS now natively supports Macs with Apple silicon (M1 and M2 series). By default, the build runs natively on Macs with Apple silicon (M1 and M2 series) and it must be installed and tested on Macs using M1 and M2 Series. You can download either the Universal Architecture build or Intel build from the **Citrix Workspace App for macOS (Apple silicon)** section at Downloads.

> **Note:**
>
> Citrix continues to support Intel-based Macs that use the Rosetta 2 dynamic binary translator. However, Citrix will soon deprecate the Citrix Workspace app for Mac that uses Rosetta emulation. Keep a look out for an announcement in the Deprecation section.

If you are using Citrix Workspace app on a Mac running Apple silicon (M1 and M2 series), you must upgrade the HDX RealTime Optimization Pack (RTOP) by installing the HDX RealTime Media Engine 2.9.500 for Mac from the Citrix website at Downloads.

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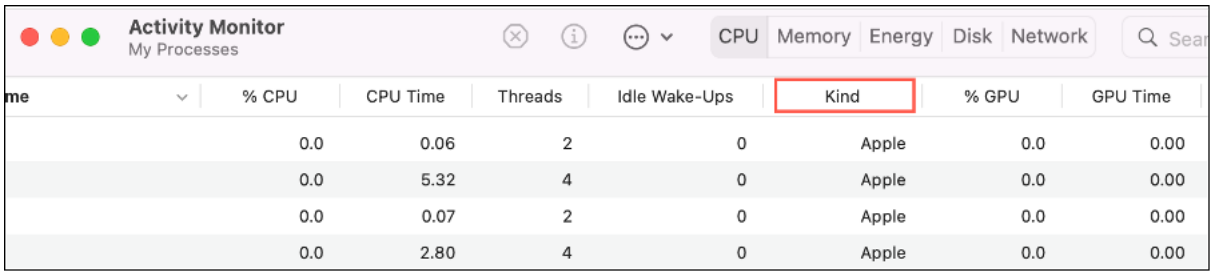
To determine if the Citrix Workspace app is running natively on Apple silicon, open **Activity monitor** on your Mac. The column titled **Kind** in the **CPU** tab indicates whether the Workspace app is running on Apple Silicon or Intel processor.



Uninstall the universal architecture build and install the Citrix Workspace app for an Intel-based Mac

You can switch to the Citrix Workspace app for an Intel-based Mac by uninstalling the universal architecture build. To uninstall the Citrix Workspace app, see Uninstall section.

Once you've uninstalled the app, download the latest version of the Citrix Workspace app for an Intel-based Mac from Citrix Downloads and follow the steps listed in the section Manual install.

Citrix Virtual Channel SDK

The Citrix Virtual Channel software development kit (VCSDK) supports writing server-side applications and client-side drivers for more virtual channels using the ICA protocol. The server-side virtual channel applications are on Citrix Virtual Apps and Desktops servers. If you want to write virtual drivers for other client platforms, contact Citrix Technical support.

The Virtual Channel SDK provides:

- The Citrix Virtual Driver Application Programming Interface (VDAPI) is used with the virtual channel functions in the Citrix Server API SDK (WFAPI SDK) to create new virtual channels. The virtual channel support provided by VDAPI makes it easy to write your own virtual channels.
- The Windows Monitoring API, which enhances the visual experience and support for third-party applications integrated with ICA.
- Working source code for virtual channel sample programs to demonstrate programming techniques.

The Virtual Channel SDK requires the WFAPI SDK to write the server side of the virtual channel.

Load Custom Virtual Channels on Macs with Apple Silicon (M1 and M2 series)

As an end-user, you can load the Custom Virtual Channel SDK (VCSDK) successfully on a Mac with the M1 and M2 chipset. With universal architecture, you must load the VCSDK on Macs with Apple silicon

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by recompiling your Custom Virtual Channels using the latest VCSDK on M1 and M2 chipset device. You can download the universal architecture build from the **Virtual Channel SDK 2204 for macOS (Apple silicon) - Universal Architecture** section at Downloads.

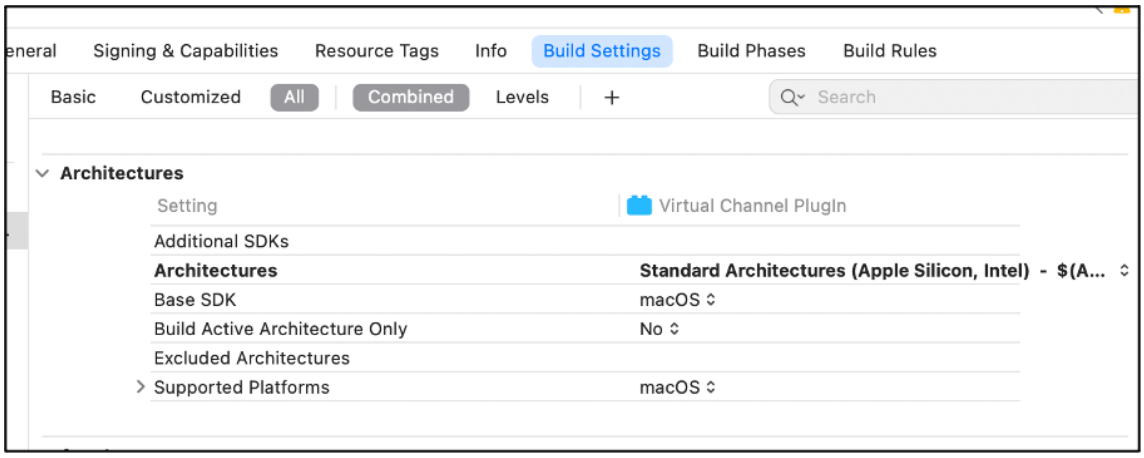
To load the VCSDK, do the following:

1. Download Virtual Channel SDK 2204 for macOS from Downloads.
2. Open your Custom Virtual Channel project in Xcode.
3. Change your code.
4. Compile your Custom Virtual Channel to generate the virtual channel bundle.

Test your Virtual Channel Software Development Kit (VCSDK)

If you're using the Citrix Virtual Channel Software Development Kit (VCSDK), you must make some changes so your customized virtual channels run correctly. To test your VCSDKs, do the following:

1. Ensure that all the linked libraries of your customized virtual channels are compiled for Universal Binary.
2. Change the Project file to support Universal Binary:
    - Open **Project** > **Build Settings**.
    - Set **Architectures** to **Standard Architectures**.



Examples for the VCSDK can be found inside *VCSDK.dmg*. These examples support Apple's Universal macOS Binary that runs natively on both Apple silicon and Intel-based Mac computers, because it contains executable code for both architectures. You can use these examples as a reference.

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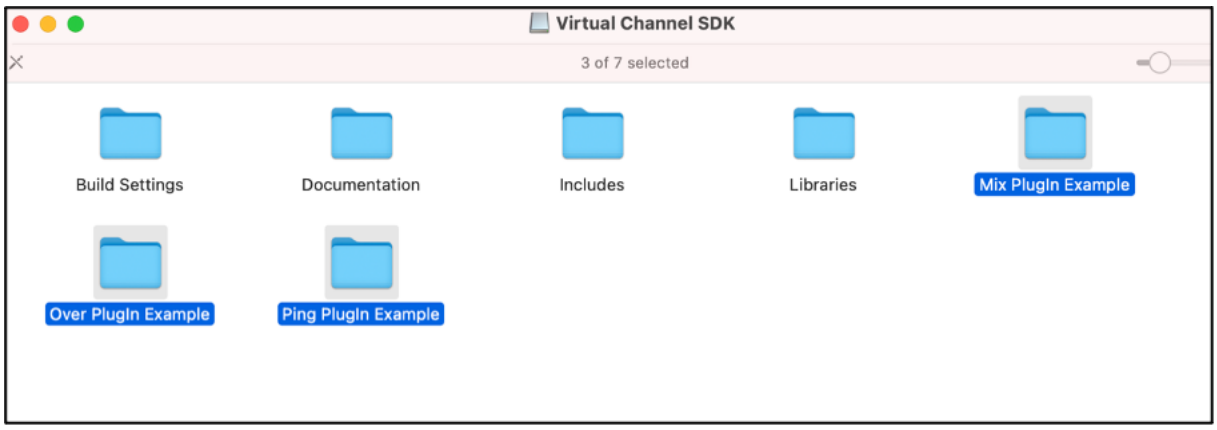

System requirements and compatibility

September 13, 2023

Supported operating systems

Citrix Workspace app for Mac supports the following operating systems:

- macOS Ventura (13.5.2)
- macOS Monterey
- macOS Big Sur 11

At any point in time, Citrix supports only the latest and the previous two macOS operating systems (N, N-1, and N-2) only.

Compatible Citrix products

Citrix Workspace app is compatible with all the currently supported versions of Citrix Virtual Apps and Desktop, Citrix DaaS (formerly Citrix Virtual Apps and Desktops service), and Citrix Gateway as listed in the Citrix Product Lifecycle Matrix.

Compatible browsers

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

- Google Chrome
- Microsoft Edge
- Safari

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Hardware requirements

- 1 GB of free disk space
- A working network or Internet connection to connect to servers

Connections, Certificates, and Authentication

Connections

Citrix Workspace app for Mac supports the following connections to Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service):

- 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 website;	Citrix Gateway 12.x-13.x, including VPX

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:**
>
> When the remote gateway's certificate can't be verified upon connection, an untrusted certificate warning appears, as the root certificate isn't included in the local keystore. When a user continues to add a store, the store addition fails. However, on the web browser, the user might be able to authenticate to the store but connections to sessions fail.

Importing root certificates for 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

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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, linking, and updating certificates, see How to Install and Link Intermediate Certificate with Primary CA on Citrix Gateway.

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 server or gateway certificates 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 uses **all** the certificates supplied by the server (or gateway). Citrix Workspace app for Mac then checks whether the certificates are trusted. If none of the certificates are 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 that 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.

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

> **Important**
>
> Some certificate authorities have more than one root certificate. If you require this stricter vali-

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> dation, ensure 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. 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 that 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 a trusted certificate that validates correctly, 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 that 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, 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 are at least two intermediate certificates. For

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> 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 “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:

Authentication method	Workspace for Web using browsers	StoreFront 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*

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Authentication method	Workspace for Web using browsers	StoreFront Services site (native)	Citrix Gateway to Workspace for Web (browser)	Citrix Gateway to StoreFront Services site (native)
Domain pass-through				
Security token			Yes*	Yes*
Two-factor authentication (domain with security token)			Yes*	Yes*
SMS			Yes*	Yes*
Smart card	Yes	Yes	Yes*	Yes
User certificate			Yes	Yes (Citrix Gateway Plug-in)

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

Install, uninstall, and upgrade

August 18, 2023

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.

By default, the Citrix Workspace app is installed in the **Applications** directory. The installation paths are as follows:

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- Full install - `"/Applications/Citrix\ Workspace.app/"`
- Citrix Workspace app for Mac executable - `"/Applications/Citrix\ Workspace.app/Contents/MacOS/Citrix\ Workspace"`

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 website).

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 install the app by downloading the file from the Citrix website at Downloads.

To install Citrix Workspace app for Mac:

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

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Uninstall

You can now simply drag or move the Citrix Workspace app icon into the bin to completely uninstall the Citrix Workspace app for Mac. To uninstall the Citrix Workspace app, do the following:

1. Close the Citrix Workspace app, if it's running.
   To close the Citrix Workspace app, do the following:
   a) Navigate to the quick access menu.
   b) Click the **Account** icon in the top-right corner.

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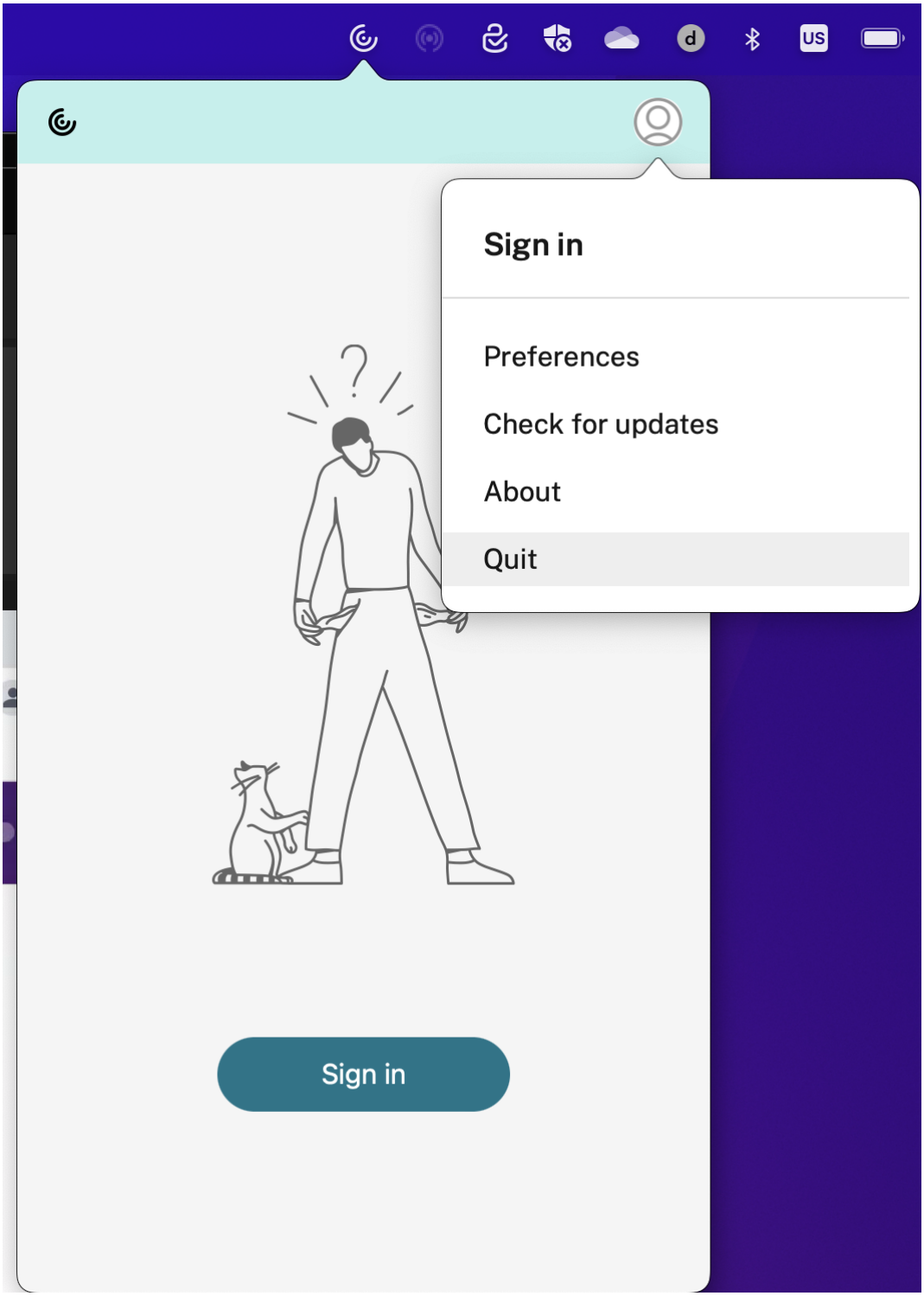

c) Click **Quit** from the list of options.

> **Note:**
>
> If you don't close the Citrix Workspace app as per the preceding steps, you might get the

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> following error message after perfoming the next step:
>
> *The item "Citrix Workspace" can't be moved to the Trash because it's open.*

2. Drag the Citrix Workspace app from the **Application** folder to the bin.
   Alternatively, you can right-click the Citrix Workspace app and select **Options** > **Move to Bin**.
3. Provide your system credentials when prompted.
4. Close all running apps (Citrix Workspace) and click **Continue** to confirm.
   The Citrix Workspace app and all its system files are deleted from your device.

You can also 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. For more information about automatic updates, see Automatic update.

You can upgrade Citrix Workspace app for Mac from any of the previous versions of Citrix Workspace app for Mac. For more information about updating the app manually, see Manual update.

When you upgrade to a newer version of Citrix Workspace app for Mac, the previous version is uninstalled automatically. You don't need to restart your machine.

Update

August 10, 2023

Manual update

To manually update the Citrix Workspace app for Mac, download and install the latest version of the app from the Citrix Downloads page.

Automatic update

When a new version of the Citrix Workspace app releases, Citrix pushes the update on the system that has the Citrix Workspace app installed. You are notified of the available update.

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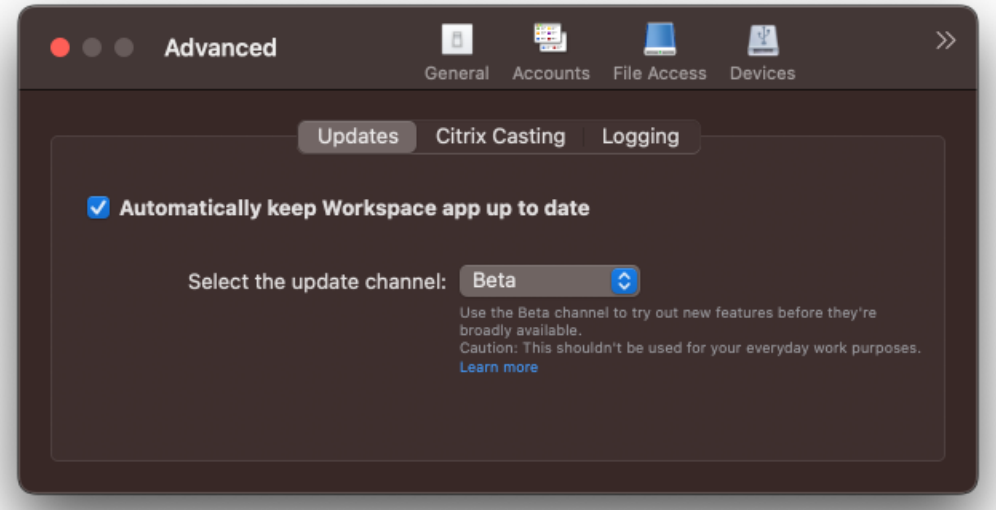
Note:

- If you've configured an SSL intercepting outbound proxy, add an exception to the Workspace auto-update server `https://downloadplugins.citrix.com/` to receive updates from Citrix.
- Auto-update is not available for Citrix Workspace app versions earlier than 2301.1. For more information, see Knowledge Center article CTX491310.
- Your system must have an internet connection to receive updates.
- Workspace for web users cannot download the StoreFront policy automatically.
- Citrix HDX RTME for macOS is included in Citrix Workspace Updates. You are notified of the available HDX RTME update on the Citrix Workspace app.
- Starting with Version 2111, Citrix Workspace updates log paths are modified. The Workspace updates logs are present at `/Library/Logs/Citrix Workspace Updater`. For information about collecting logs, see Log collection section.

Installing Citrix Workspace app Beta program

You receive an update notification when the Citrix Workspace app is configured for automatic updates. To install the Beta build on your system, perform the following steps:

1. Open Citrix Workspace app.
2. Right-click on Citrix Workspace in the toolbar and click **Preferences** > **Advanced**.
3. Select **Beta** from the drop-down list, when the Beta build is available.



To switch from a Beta build to a Release build, perform the following steps:

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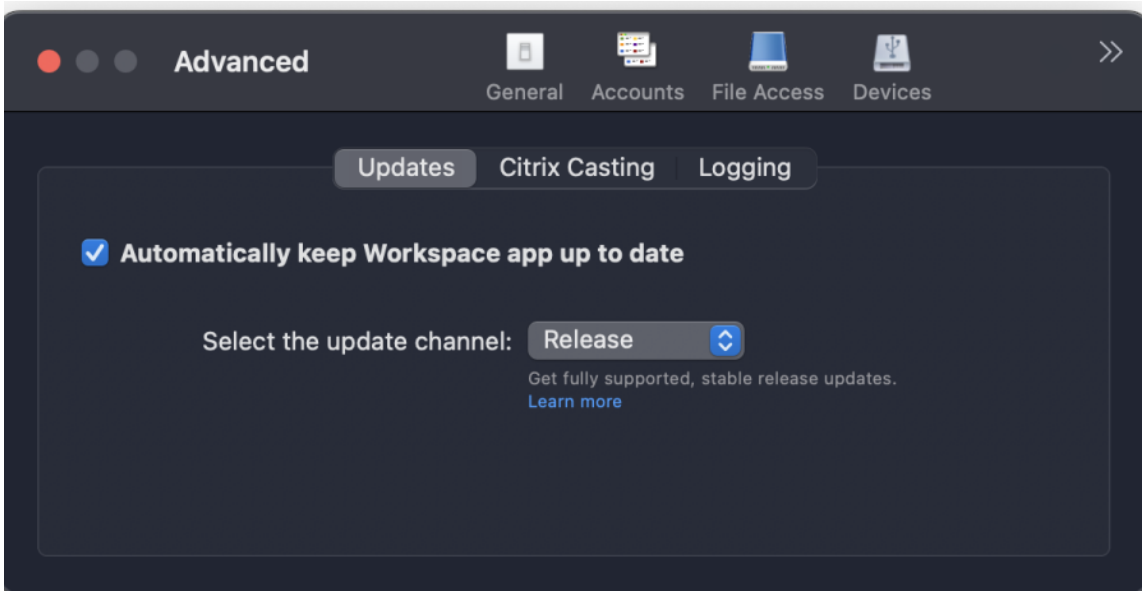
1. Open Citrix Workspace app.
2. Right-click on Citrix Workspace in the toolbar and click **Preferences** > **Advanced**.
3. Select **Release** from the **Select the update channel** drop-down list.



> **Note:**
>
> Beta builds are available for customers to test in their non-production or limited production environments, and to share feedback. Citrix does not accept support cases for beta builds but welcomes feedback for improving them. Citrix might or might not act on feedback based on its severity, criticality, and importance. It is advised that you do not deploy Beta builds in production environments.

Auto-update version control

Administrators can now manage the auto-updated version of Citrix Workspace app for the devices in the organization.
Administrators can control the version by setting the range in the maximumAllowedVersion and minimumAllowedVersion properties in the Global App Config Service.

Example JSON file in Global App Config Service:

```
{

  "serviceURL": {

    "url": "https://serviceURL:443"
   }
 ,
```

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```
"settings": {

  "name": "Version Control for Citrix Workspace",
  "description": "Provides admin ability to Version Control for
     Citrix Workspace",
  "useForAppConfig": true,
  "appSettings": {

    "macos": [
      {

        "category": "AutoUpdate",
        "userOverride": false,
        "assignedTo": [
          "AllUsersNoAuthentication"
        ],
        "settings": [
          {

            "name": "Auto update plugins settings",
            "value": [
              {

                "pluginName": "Citrix Workspace",
                "pluginId": "D99C3E77-FBF5-4B97-8EDA-4E381A1E0826",
                "pluginSettings": {

                  "deploymentMode": "Update",
                  "upgradeToLatest": false,
                  "minimumAllowedVersion": "23.07.0.63",
                  "maximumAllowedVersion": "23.07.0.63",
                  "delayGroup": "Medium",
                  "detectRule": ""
                }

              }

            ]
          }

        ]
      }

    ]
  }
```

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```
52
53      }
54
55   }
56
57
58 <!--NeedCopy-->
```

When the range is set, Citrix Workspace app on the user's device is automatically updated to the highest available version that falls between the mentioned range.

If you want to auto-update Citrix Workspace app to a specific version, enter the same version in the maximumAllowedVersion and minimumAllowedVersion properties in the Global App Config Service.

> **Note:**
>
> - To achieve auto-update version control, upgradeToLatest setting in the Global App Config Service must be set to false. If this is true, maximumAllowedVersion and minimumAllowedVersion will be ignored.
> - Do not modify the pluginId as this is mapped to Citrix Workspace app.
> - If the administrator hasn't configured the version in the Global App Config Service, Citrix Workspace app is updated to the latest available version by default.
> - You can only use the version ranges that are set to update Citrix Workspace app. However, downgrade is not supported.
> - This feature is supported from release 2307 onwards.

Advanced configuration for automatic updates (Citrix Workspace Updates)

You can configure Citrix Workspace updates using the following methods:

- Graphical user interface (GUI)
- Global App Config Service (GACS)
- Mobile Device Management (MDM)
- StoreFront

Configure Citrix Workspace automatic updates using the graphical user interface

Individual users can override the Citrix Workspace updates setting using the **Advanced** preferences dialog, which is a per-user configuration and the settings apply only to the current user. To configure the update using the GUI, perform the following steps:

1. Select the Citrix Workspace app helper icon on your Mac.
2. From the drop-down list, select **Preferences > Advanced > Updates**.

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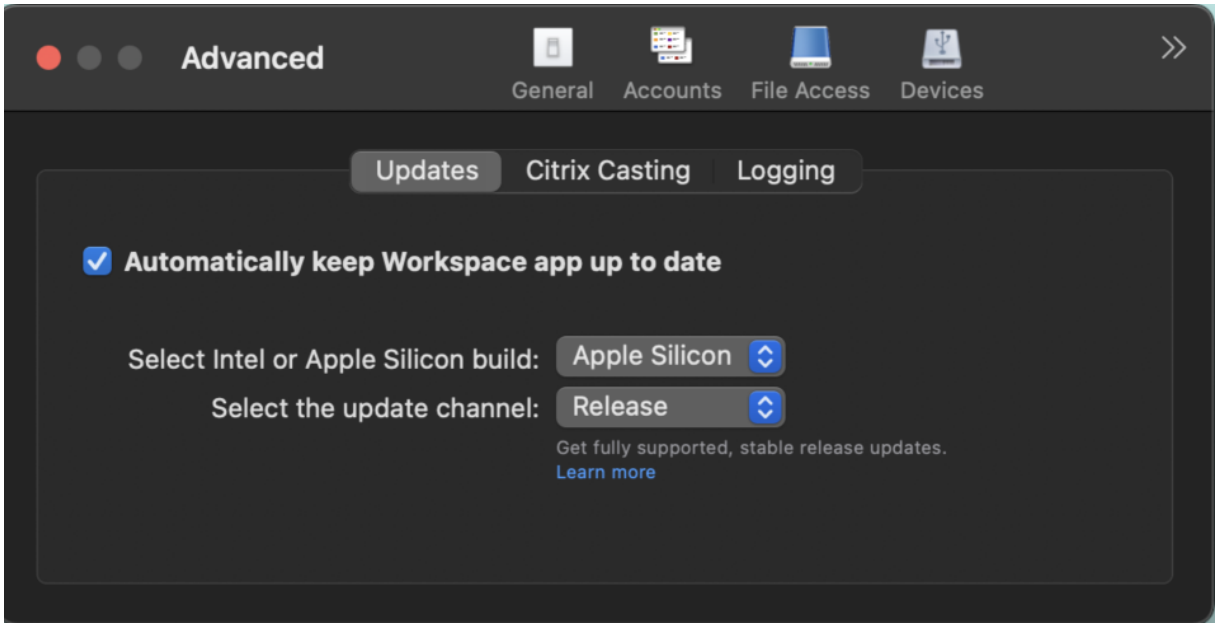
3. Select the build for which you want to install the automatic updates, either the Apple Silicon or Intel build (only applicable for users on Mac with Apple silicon (M1 Series).



Configure Citrix Workspace automatic updates using StoreFront

1. Use a text editor to open the `web.config` file, which is typically in the `C:\inetpub\wwwroot\Citrix\Roaming directory`.
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>
 <!--NeedCopy-->
```

3. Add the auto-update tag after *<clear />* tag.

```
<account>

    <clear />

    <account id="d1197d2c-ac82-4f13-9346-2ee14d4b0202" name="
        F84Store"

```

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```
7       description="" published="true" updaterType="Citrix"
            remoteAccessType="None">
8
9       <annotatedServices>
10
11        <clear />
12
13        <annotatedServiceRecord serviceRef="1__Citrix_F84Store">
14
15          <metadata>
16
17            <plugins>
18
19              <clear />
20
21            </plugins>
22
23            <trustSettings>
24
25              <clear />
26
27            </trustSettings>
28
29            <properties>
30
31              <property name="Auto-Update-Check" value="Disabled"
                    />
32
33              <property name="Auto-Update-DeferUpdate-Count" value
                    ="1" />
34
35              <property name="Auto-Update-Rollout-Priority" value=
                    "fast" />
36
37              <property name="Auto-Update-Architecture" value="
                    Universal" or "Intel" />
38
39                  </properties>
40
41          </metadata>
42
43        </annotatedServiceRecord>
44
45      </annotatedServices>
46
```

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```
47        <metadata>
48
49          <plugins>
50
51            <clear />
52
53          </plugins>
54
55          <trustSettings>
56
57            <clear />
58
59          </trustSettings>
60
61          <properties>
62
63            <clear />
64
65          </properties>
66
67        </metadata>
68
69      </account>
70
71  <!--NeedCopy-->
```

The meaning of the properties and their possible values are detailed as follows:

- **Auto-Update-Check:** Indicates that Citrix Workspace app detects an update automatically when available.
  - Auto (default) – Checks and performs updates automatically
  - Manual – updates are only fetched when the user makes a check request from the Citrix Workspace app system tray menu,
  - Disabled – Updates checks are not performed.
- **Auto-Update-Rollout-Priority:** Indicates the delivery period in which you can receive the update.
  - Fast – updates are rolled-out to the users towards the beginning of the delivery period.
  - Medium – updates are rolled-out towards the middle of the delivery period.
  - Slow– updates are rolled-out towards the end of the delivery period.
- **Auto-Update-DeferUpdate-Count:** Indicates the number of counts that you can defer the notifications for the updates.

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> **Note:**
>
> This configuration is applicable only for interactive updates and not when the silent auto-update feature is enabled, as the user doesn't get any option to defer the updates.

- -1: User can defer the auto-update any number of times.
- 0: User cannot view remind me later option.
- number: User can view remind later options with the given count.

Configure Citrix Workspace automatic updates using the GACS

Administrators can use GACS to configure the automatic updates to either Apple Silicon or Intel build by using the following settings:

"name":"autoUpdateArchitecture"

"value":"Universal" or "Intel"

Configure Citrix Workspace automatic updates using the MDM

Administrators can use MDM to configure the automatic updates to either Apple Silicon or Intel build by using the following settings:

```
<key>AutoUpdateArchitecture</key>

<string>Universal</string> or <string>Intel</string>

<key>AutoUpdateState</key>

<string>Auto</string> or <string>Manual</string> or <string>Disabled</
string>
```

Log collection

Log collection simplifies the process of collecting logs for Citrix Workspace app. The logs help Citrix to troubleshoot, and, in cases of complicated issues, provide support.

You can collect logs using the GUI.

Collecting logs:

1. Open Citrix Workspace app.
2. Right-click on Citrix Workspace in the toolbar and click **Preferences** > **Advanced**.
3. Select **Logging**.

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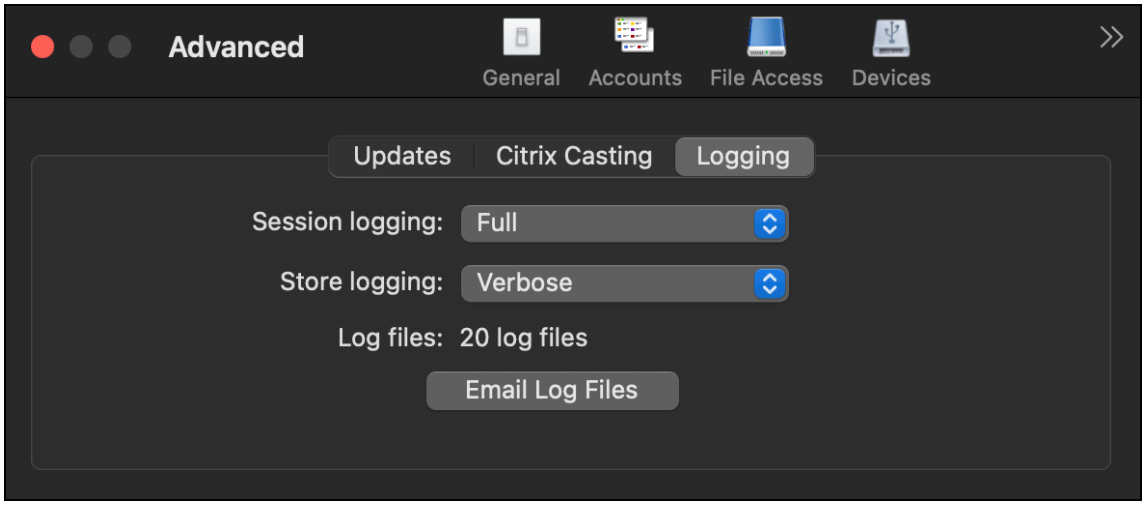

4. Select one of the following session log levels:

    - **Disabled (Default)**: Minimum logs are collected for basic troubleshooting.
    - **Connection Diagnostics**: Identifies errors while connecting. All logging is enabled up until the point when the session is deemed successful.
    - **Full**: Captures everything including the connection diagnostics. Once enabled, the Citrix Workspace app will store up to 10 session logs after which they are deleted starting with the oldest to maintain 10 logs.

    > **Note:**
    >
    > Selecting the **Full** logging option can impact performance and must be used only while troubleshooting an issue because of the amount of data. Do not enable full logging during normal use. Enabling this level of logging triggers a warning dialog that must be acknowledged for you to continue.

5. Select one of the following store log levels:

    - **Disabled (Default)**: Minimum logs are collected for basic troubleshooting.
    - **Normal**: Only store communication logs are collected.
    - **Verbose**: Detailed authentication and store communication logs are collected.

6. Click **Email Log Files** to collect and share logs as a .zip file.

Configure

September 14, 2023

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

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

Administrator tasks and considerations

This article discusses the tasks and considerations that are relevant for administrators of Citrix Workspace app for Mac.

> **Important:**
>
> If you are running macOS 10.15, ensure that your system is compliant with Apple's requirements for trusted certificates in macOS 10.15. Perform this check before you upgrade to Citrix Workspace app for Mac version 2106.

Feature flag management

If an issue occurs with Citrix Workspace app in production, we can disable an affected feature dynamically in Citrix Workspace app even after the feature is shipped. To do so, we use feature flags and a third-party service called LaunchDarkly.

You do not need to make any configurations to enable traffic to LaunchDarkly, except when you have a firewall or proxy blocking outbound traffic. In that case, you enable traffic to LaunchDarkly via specific URLs or IP addresses, depending on your policy requirements.

You can enable traffic and communication to LaunchDarkly in the following ways:

Enable traffic to the following URLs

- `events.launchdarkly.com`
- `stream.launchdarkly.com`
- `clientstream.launchdarkly.com`
- `Firehose.launchdarkly.com`
- `mobile.launchdarkly.com`

List IP addresses in an allow list

If you must list IP addresses in an allow list, for a list of all current IP address ranges, see LaunchDarkly public IP list. You can use this list to ensure that your firewall configurations are updated automatically in keeping with the infrastructure updates. For details about the status of the infrastructure changes, see LaunchDarkly Statuspage page.

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LaunchDarkly system requirements

Ensure that the apps can communicate with the following services if you have split tunneling on Citrix ADC set to **OFF** for the following services:

- LaunchDarkly service.
- APNs listener service

Support for admin configuration of user devices through MDM tool

Admins can now configure the following settings while deploying Citrix Workspace app through any MDM deployment tool such as Citrix Endpoint Management:

- **StoreURLs** – Configure store details so it's automatically added when the user opens the Citrix Workspace app, simplifying the sign-on experience.
  To add a store, provide the details for the **StoreURLs** setting. For example:

  ```
  <array>
  <string>https://myorg.com/Org/storename</string>
  </array>
  ```

  You can also add multiple stores as follows:

  ```
  <array>
  <string>https://myorg.com/Org/storename1</string>
  <string>https://myorg.com/Org/storename2</string>
  </array>
  ```

To add the StoreURLs to Citrix Workspace app, the user must quit and relaunch Citrix Workspace app.

- **BlockStoreAddition** – Prevent the user from adding stores.

  To block the user from adding a store, set the value of the **BlockStoreAddition** setting to **True**.

Provision to disable LaunchDarkly service through MDM tool

Starting with version 2210, you can disable the LaunchDarkly service on Citrix Workspace app, irrespective of whether their users are inside or outside the organization's firewall. To disable the LaunchDarkly service, set the value for the DisableFeatureFlag setting to True.

This service is available for admins who manage Mac devices using the MDM tool.

> **Note:**
>
> Disabling the FeatureFlag requires the admin to restart the device for this setting to take effect.

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App Protection

Starting with 2301 release, App Protection is enhanced to protect the Citrix Workspace app. This enhancement includes protecting the authentication screen and the screen that you see after signing into the Workspace app. For more information, see App Protection.

This feature can be configured using the Global App Configuration service.

To configure App Protection on Citrix Workspace app for Mac, see Citrix Workspace app for Mac section in the Configuration article.

> **Note:**
>
> - This feature is available only for customers on cloud stores.
> - The Global App Configuration service configurations don't apply for virtual apps, virtual desktops, web apps, and SaaS apps. These resources continue to be controlled using the Delivery Controller and Citrix Secure Private Access. For more information, see configure section of App Protection in the Citrix Virtual Apps and Desktops documentation.

Sentry

Sentry is used to collect app logs to analyze issues and crashes to improve product quality. Citrix does not collect or store any other personal user information or use Sentry for feature analytics data. For more information about Sentry, go to [https://sentry.io/welcome/].

FIDO2 for password-less authentication

Citrix Workspace app for Mac supports password-less authentication using FIDO2 security keys when connecting to a cloud store or within an HDX session. FIDO2 security keys provide a seamless way for enterprise employees to authenticate to apps or desktops that support FIDO2 without entering a user name or password. This feature currently supports roaming authenticators (USB only) with PIN code and touchID. This feature is supported on macOS 12 and later versions.

For more information about FIDO2 see FIDO2 Authentication.

For information about the prerequisites and using this feature, see Local authorization and virtual authentication using FIDO2.

FIDO2 based authentication when connecting to cloud store

Citrix Workspace app uses the user's default browser for FIDO2 authentication (Web Authentication), when connecting to cloud store. Administrators can configure the type of browser to authenticate to

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Citrix Workspace app. The FIDO2 feature is currently not supported for on-premises stores. For more information on the web browser settings, see Global App Configuration Service documentation.

The following table lists the settings that allow you to select the type of browser used for authenticating an end user into Citrix Workspace app:

Settings	Description
System	Allows you to use the user's default browser for authentication (for example, Safari or Chrome). Authentication occurs outside Citrix Workspace app. Use this setting to support passwordless authentication. This setting tries to use the existing user session from the user's browser.
SystemWithPrivateSession	This setting is similar to the **System** setting. Citrix Workspace app uses a private session in the browser for authentication. The browser doesn't save authentication cookies or data. Single sign-on is not supported in this option.
Embedded	Allows you to authenticate within Citrix Workspace app. Citrix Workspace app saves the session data or cookies for single sign-on (for example, SaaS apps) when the enhanced single sign-on feature is enabled. This authentication method does not support passwordless authentications such as FIDO2.
EmbeddedWithPrivateSession	This setting is similar to the **Embedded** setting. Single sign-on is not supported as session data or cookies are not present in Citrix Workspace app.

The configured setting can be pushed using the Mobile Device Management (MDM), Global App Config Service (GACS), or the command line interface methods by running the following commands:

- **Enable FIDO2 using MDM:** To enable authentication through MDM, administrators must use the following setting:

  ```
  <key>WebBrowserForAuthentication</key><string>System</string>
  ```

- **Enable FIDO2 using GACS:** To enable authentication through GACS, administrators must use

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the following setting:

```
{

    "serviceURL": {

      "url": "https://serviceURL:443"
     }
 ,
    "settings": {

      "name": "Web browser for Authenticating into Citrix Workspace",
      "description": "Allows admin to select the type of browser used
         for authenticating an end user into Citrix Workspace app",
      "useForAppConfig": true,
      "appSettings": {

        "macos": [
          {

            "assignedTo": [
              "AllUsersNoAuthentication"
            ],
            "category": "authentication",
            "settings": [
              {

                "name": "web browser for authentication",
                "value": "SystemWithPrivateSession"
               }

            ],
            "userOverride": false
           }

         ]
        }

      }

   }


<!--NeedCopy-->
```

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- **Enable FIDO2 using the command-line interface:** To enable authentication using the command-line interface, administrators must run the following command:

  ```
  defaults write com.citrix.receiver.nomas WebBrowserForAuthentication
  System
  ```

FIDO2 based authentication within an HDX session

You can configure FIDO2 Security Keys to authenticate within an HDX session. This feature currently supports roaming authenticators (USB only) with PIN code.

When you access an app or a website that supports FIDO2, a prompt appears, requesting access to the security key. If you've previously registered your security key with a PIN (a minimum of 4 and a maximum of 64 characters), then you must enter the PIN while signing in.

If you've registered your security key previously without a PIN, simply touch the security key to sign in.

This feature is enabled by default for Citrix Workspace app for 2307 and future releases. You can disable FIDO2 authentication using the Mobile Device Management (MDM) or command-line interface methods by running the following commands:

- **Disable FIDO2 based authentication using MDM:** To disable this feature through MDM, administrators must use the following setting:

  ```
  <key>Fido2Enabled</key><false/>
  ```

- **Disable FIDO2 based authentication using the command-line interface:** To disable this feature, run the following command in command-line interface methods:

  ```
  defaults write com.citrix.receiver.nomas Fido2Enabled -bool NO
  ```

Quick access menu for StoreFront

Starting with the 2307 release, you can navigate to your favorite apps and desktops quickly and easily using the quick access feature for on-premises stores. To enable quick access, right-click **Citrix Workspace** in the toolbar, navigate to **Preferences > General**, and then select **Show Quick Access for Storefront experience**. This feature allows you to see your favorite data directly from the Mac menu bar.

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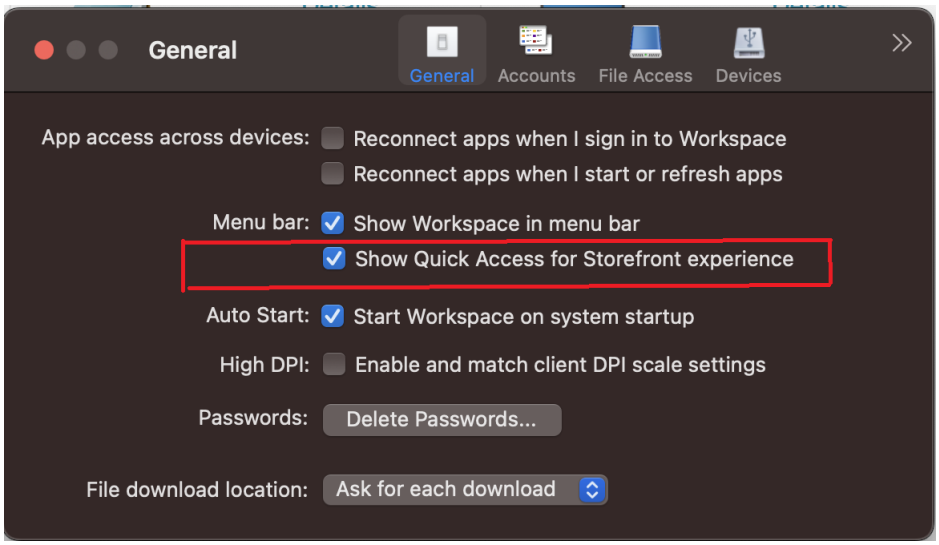
You can enable the quick access feature by using **Preferences**.



Administrators can enable or disable the quick access feature by using the Mobile Device Management (MDM) or Global App Config Service (GACS) methods.

Enabling or disabling quick access using MDM

To enable quick access through MDM, administrators must use the following setting:

```
<key>ShowQuickAccessForStoreFront</key>
<false/>
```

Enabling or disabling quick access using GACS

To enable quick access through GACS, administrators must use the following setting:

```
enableQuickAccessForStoreFront
```

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 113.1.1.34, based on Chromium version 113. For more information about the Citrix Enterprise Browser, see Citrix Enterprise Browser documenta-

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tion.

Citrix Enterprise Browser shortcut

Starting with the Citrix Workspace app for Mac 2307 version, an administrator can configure and control the presence of Citrix Enterprise Browser shortcut on launch pad.

> **Note:**
>
> By default, this feature isn't configured.

Configuration

An IT administrator can configure the presence of Citrix Enterprise Browser shortcut in one of the following ways:

- Mobile Device Management (MDM)
- Global Admin Configuration service (GACS)
- web.config file.

> **Note:**
>
> - All the configuration methods have equal priority. Enabling any one of them enables the shortcut.
> - If you haven't configured the shortcut but have one or more cloud stores, the shortcut gets automatically enabled.
> - Administrators can turn off this feature for cloud users by setting the **CEBShortcutEnabled** attribute to **false**, or by disabling the **Enable Citrix Enterprise Browser shortcut** property.

Mobile Device Management (MDM)

Administrators can push the settings **CEBShortcutEnabled** to the user's device.

For more information on how to use MDM, see Mobile Device Management (MDM) page in the Citrix Workspace app for Mac documentation.

> **Note:**
>
> This way of configuration is applicable on cloud and on-premises deployments.

Global Admin Configuration service (GACS)

Navigate to Workspace **Configuration > App Configuration > Citrix Enterprise Browser** and enable **Enable Citrix Enterprise Browser shortcut**.

For more information about how to use the GACS UI, see User interface article in the Citrix Enterprise Browser documentation.

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> **Note:**
>
> This way of configuration is applicable on cloud and on-premises deployments.

web.config file

Enable the attribute **CEBShortcutEnabled** under the properties.

```
                        <properties>
                            <property name="CEBShortcutEnabled" value="
                               True" />
                        </properties>


<!--NeedCopy-->
```

> **Note:**
>
> This way of configuration is applicable for on-premises deployments only.

Using web.config

To enable Citrix Enterprise Browser shortcut, do the following:

1. Use a text editor to open the web.config file, which is typically at C:\inetpub\wwwroot Citrix\Roaming directory.
2. Locate the user account element in the file (Store is the account name of your deployment).

   For example: `<account id=... name="Store">`
3. Before the </account> tag, navigate to the properties of that user account and add the following:

   ```
                        <properties>
                            <property name="CEBShortcutEnabled" value=
                               "True" />
                        </properties>

    <!--NeedCopy-->
   ```

Following is an example of web.config file:

```
<account>
    <clear />
    <account id="d1197d2c-ac82-4f13-9346-2ee14d4b0202" name="F84Store"
      description="" published="true" updaterType="Citrix"
         remoteAccessType="None">
      <annotatedServices>
```

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```
        <clear />
        <annotatedServiceRecord serviceRef="1__Citrix_F84Store">
          <metadata>
            <plugins>
              <clear />
            </plugins>
            <trustSettings>
              <clear />
            </trustSettings>
            <properties>
                  <property name="CEBShortcutEnabled" value="True" />
            </properties>
          </metadata>
        </annotatedServiceRecord>
      </annotatedServices>
      <metadata>
        <plugins>
          <clear />
        </plugins>
        <trustSettings>
          <clear />
        </trustSettings>
        <properties>
          <clear />
        </properties>
      </metadata>
    </account>

<!--NeedCopy-->
```

How to configure using web.config

1. Use a text editor to open the web.config file, which is typically at C:\inetpub\wwwroot\Citrix\Roaming directory.
2. Locate the user account element in the file (Store is the account name of your deployment).

   For example: `<account id... name="Store">`
3. Before the </account> tag, navigate to the properties of that user account and add the following:

```
                    <properties>
                        <property name="CEBShortcutEnabled" value=
                           "True" />
                    </properties>
```

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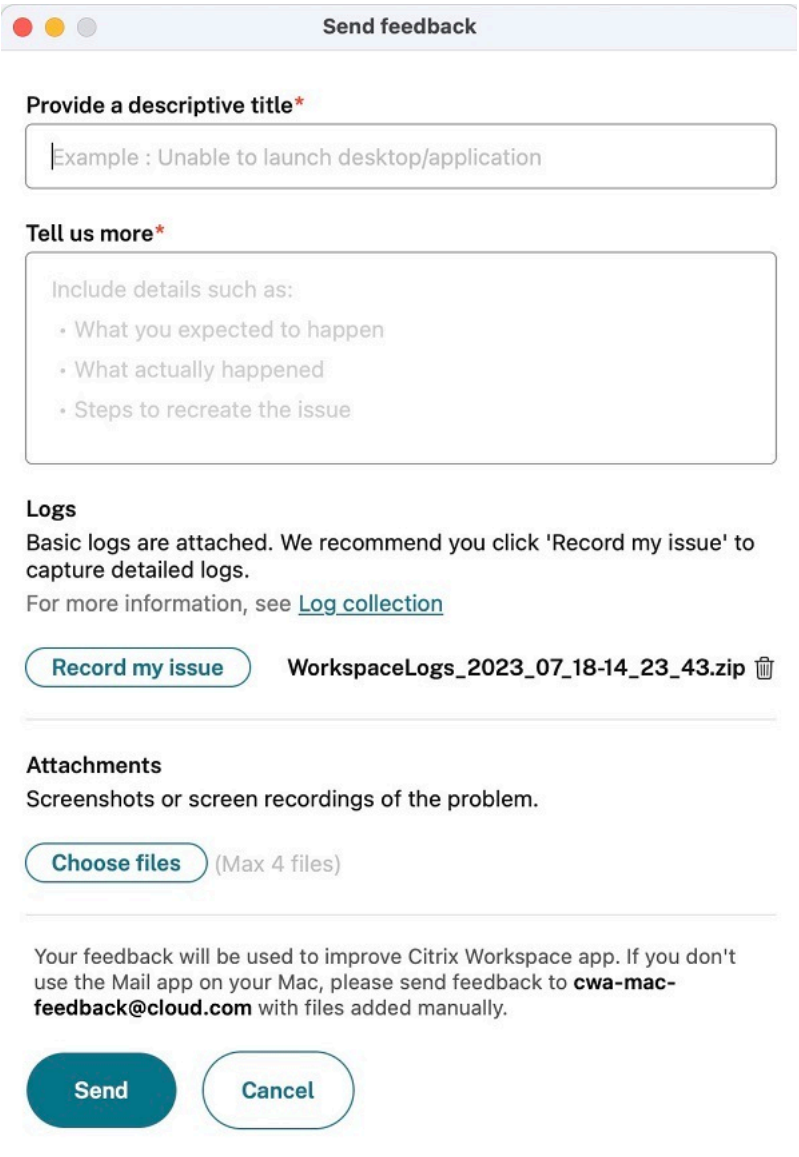
```
4
5
6 <!--NeedCopy-->
```

Send feedback on Citrix Workspace app

The Send feedback option allows you to inform Citrix about any issues you might encounter while using the Citrix Workspace app. You can also send suggestions to help us improve your Citrix Workspace app experience.

You must select **Help > Send feedback** to view and fill the issue details in the Send feedback form. You can add details like the examples provided in the form.



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You can attach the existing log files or generate new log files. To generate log files, click **Record my issue > Start Recording** and then reproduce the issue. After the issue is reproduced, click **Stop Recording**. The log file is saved automatically and replaces the existing logs with the reproduced logs.

> **Note:**
>
> Citrix does not collect any Personally Identifiable Information (PII) from the logs.

You can attach screenshots or screen recordings describing the issue to help us understand what you're experiencing. Click **Choose files** and add the attachments describing your issues, such as screenshots or screen recordings. You can attach a maximum of four files.

Once you've entered the necessary information, click **Send** to have a new email automatically created in your Mail app with the information you added. From there, click the **Send button** to share the feedback with Citrix. For more information, see Send feedback on Citrix Workspace app.

> **Note:**
>
> If you aren't using the default Mail app, then send feedback to cwa-mac-feedback@cloud.com from your mail client. Add the issue details, log files, screenshots, or screen recordings to the email manually.

Enhanced auto start experience

Previously, Citrix Workspace app for Mac used to start automatically whenever a computer was turned on. Starting with the 2304 release, you can choose to disable or enable the auto start feature on Citrix Workspace app for Mac by navigating to **Preferences > General > Start Workspace** on system startup. The auto start setting is enabled by default.

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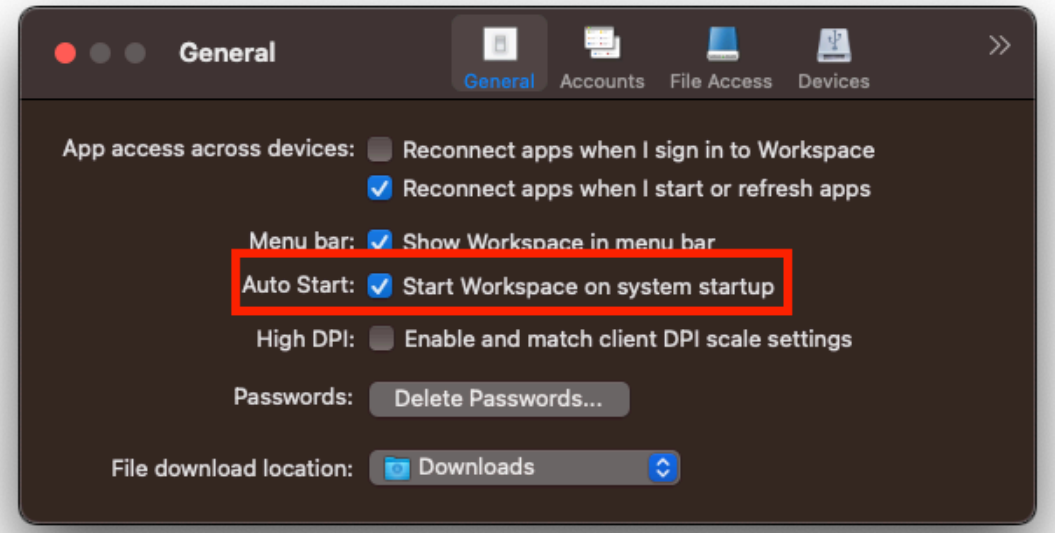

Improved experience for optimized Microsoft Teams video conference calls

Starting with 2304 release, by default simulcast support is enabled for optimized Microsoft Teams video conference calls. With this support, the quality and experience of video conference calls across different endpoints are improved by adapting to the proper resolution for the best call experience for all callers.

With this improved experience, each user might deliver multiple video streams in different resolutions (for example, 720p, 360p, and so on) depending on several factors including endpoint capability, network conditions, and so on The receiving endpoint then requests the maximum quality resolution that it can handle thereby giving all users the optimum video experience.

> **Note:**
>
> This feature is available only after the roll-out of an update from Microsoft Teams. For information on ETA, go to https://www.microsoft.com/ and search for Microsoft 365 roadmap. When the update is rolled-out by Microsoft, you can check CTX253754 for the documentation update and the announcement.

Support for Certificate-based authentication

With this release, Workspace administrators can configure and enforce Azure Active Directory conditional access policies for users authenticating to Citrix Workspace app.

The following methods can be used to enable the authentication using conditional access:

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- Mobile Device Management (MDM)
- Global App Config Service (GACS)

The flag values read by Citrix Workspace app take precedence in the following order:

- Mobile Device Management (MDM)
- Global App Config Service (GACS)

Enabling authentication using conditional access through MDM

To enable authentication using conditional access with Azure AD through MDM, admins must use the following setting:

```
<key>enableAAD</key>
<true/>
```

This setting supports Boolean values. The value is set to false by default. The default value is considered if the key value is not available.

Enabling authentication using conditional access through GACS

To enable authentication using conditional access with Azure AD through GACS, admins must use the following setting:

```
enable conditional AAD
```

For more information, see Supported settings and their values per platform for macOS in GACS documentation.

Channel support for Global App Configuration Service

The Global App Configuration Service for Citrix Workspace allows a Citrix administrator to deliver Workspace service URLs and Workspace App settings through a centrally managed service. Global App Configuration service now allows administrators to test the settings before rolling it out to all users. This feature allows to resolve any issues before applying the global app configurations to the entire user base.

You can achieve the channel support by mapping the settings that you want to test to a channel and then add the channel in the payload. For more information, see Global App Configuration Service documentation.

Improved auto-update experience

The auto-update feature automatically updates the Citrix Workspace app to the latest version without the need for any user intervention.

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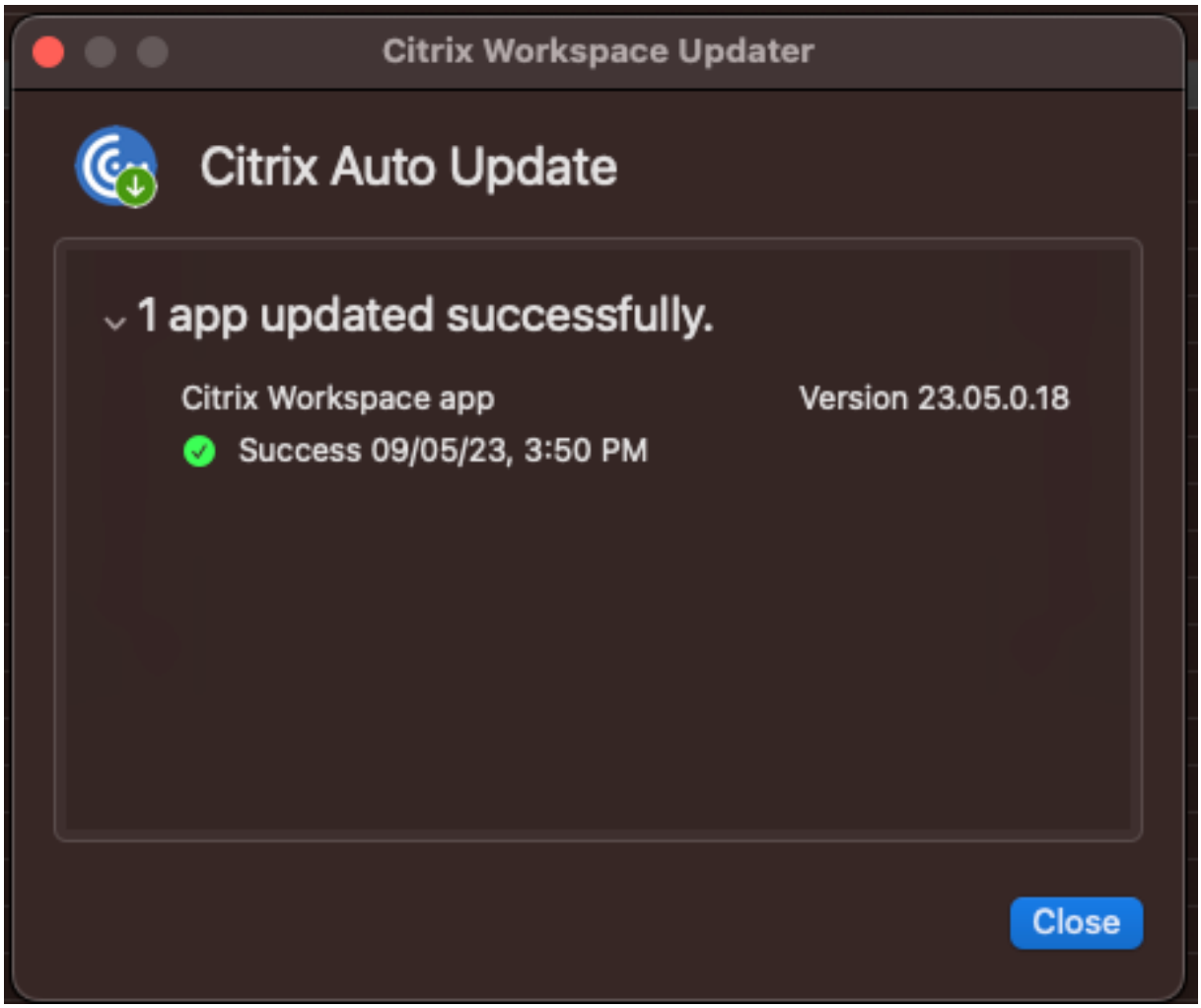
Citrix Workspace app periodically checks and downloads the latest available version of the app. Citrix Workspace app determines the best time to install based on user activity not to cause any disruptions.

When the installation is complete, the following notification appears:



If the Citrix Workspace app can't find the right time to install the updates in the background, Citrix Workspace Updater will prompt the user for the installation.

Force login prompt for Federated identity provider

Citrix Workspace app now honors Federated Identity Provider Sessions setting. For more information, see Citrix Knowledge Center article CTX253779.

You no longer need to use the Store authentication tokens policy to force the login prompt.

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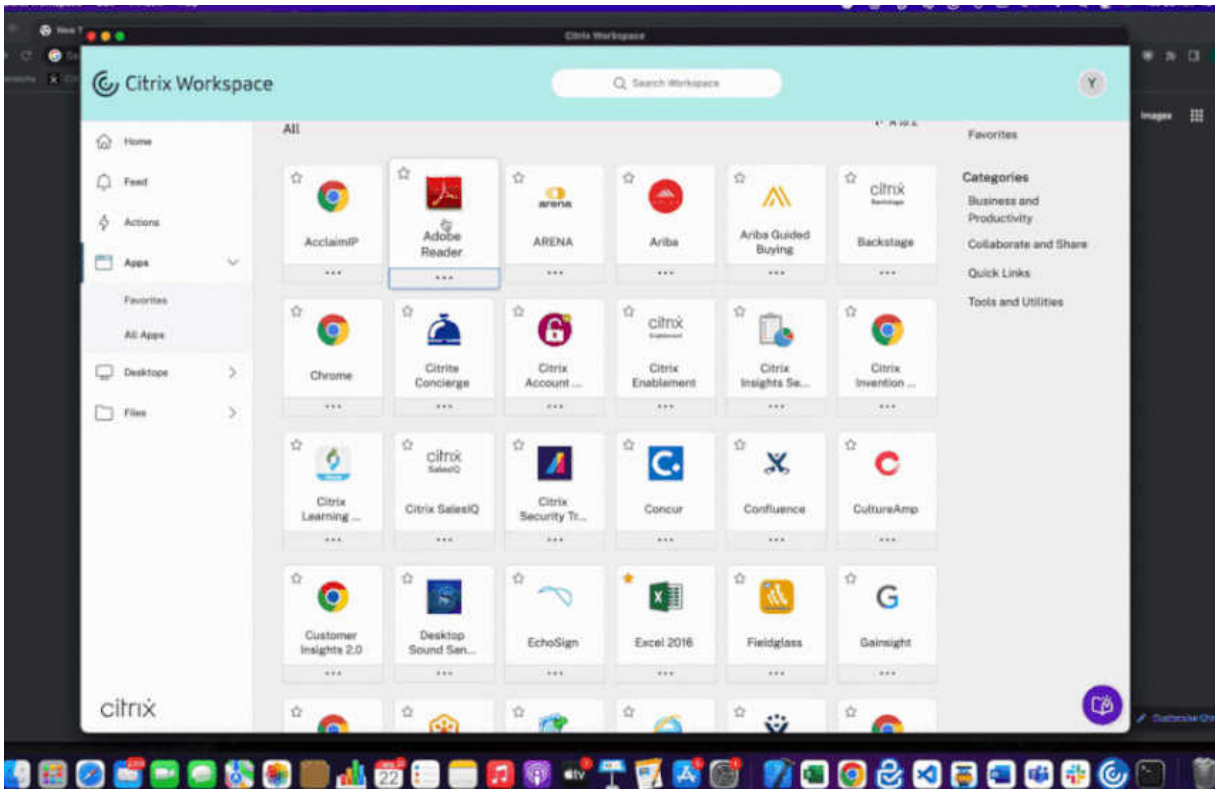
Support for non-English-language Input Method Editors (IME) keyboard layouts

Support for non-English language IME keyboard layouts continues to work uninterrupted after the Carbon APIs are deprecated with the Cocoa APIs.

Improved virtual apps and desktops launch experience [Technical Preview]

Starting with 2301 release, the opening of Citrix resources has been enhanced to be more intuitive, informative, and user friendly.



The launch progress notification now appears at the bottom-right corner of your screen. A progress status of the resources, which are in the process of being opened is shown. You cannot retrieve the notification once you dismiss it. The notification stays for a few seconds from the time you start the session. If the session fails to start, then the notification shows the failure message.

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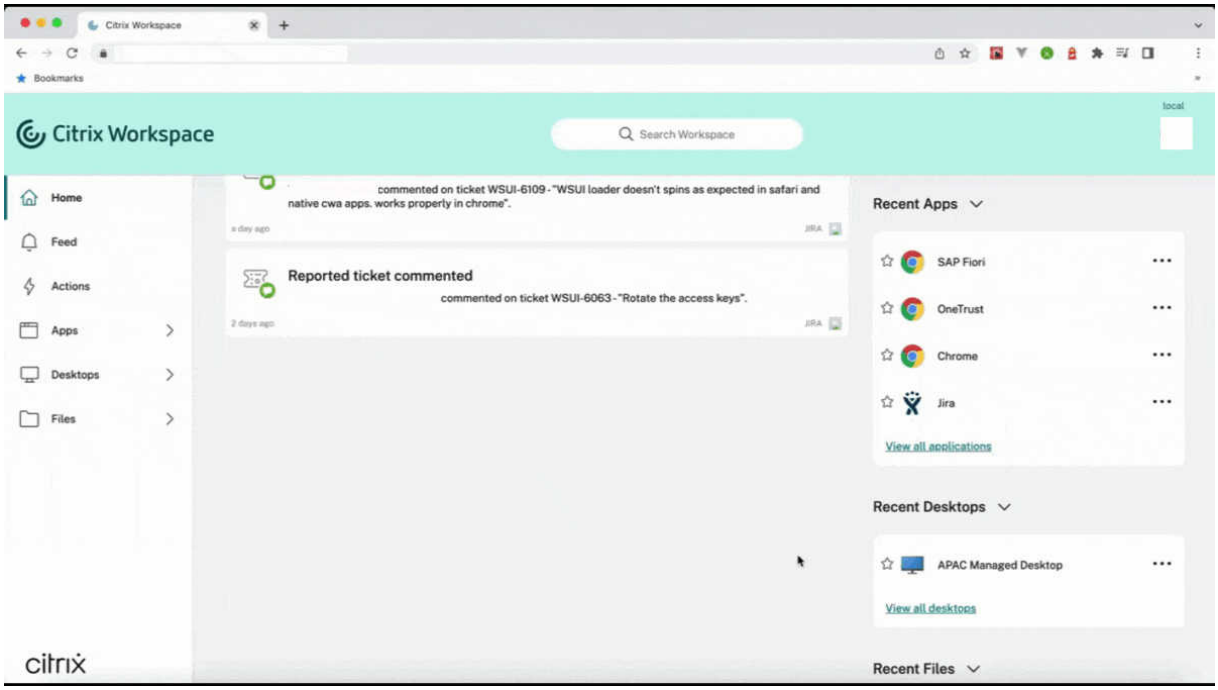

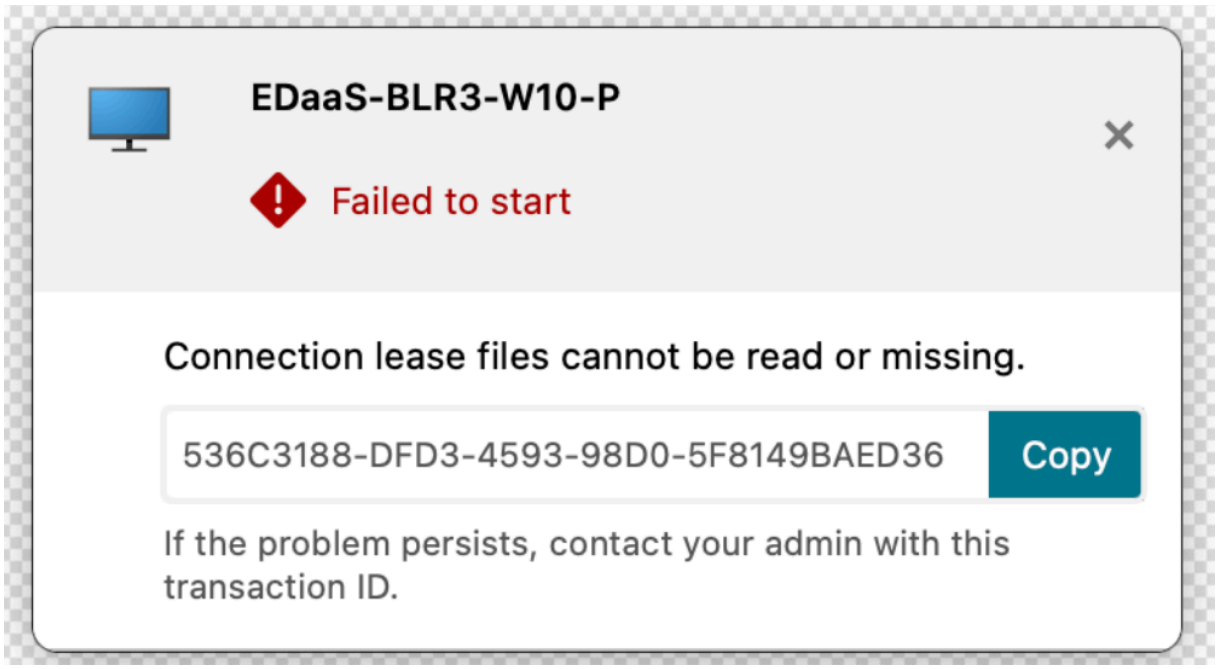

> **Note:**
>
> This feature is available for both Workspace (cloud) and storefront sessions.

You can provide feedback for this technical preview by using the Podio form.

> **Note:**
>
> Technical previews are available for customers to test in their non-production or limited produc-

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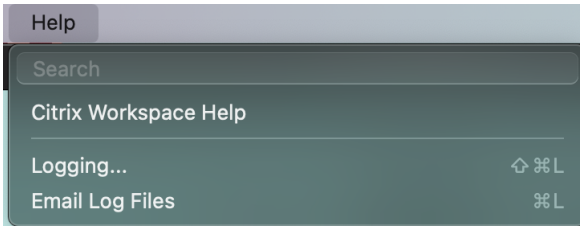
> tion environments, and to give them an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix may or may not act on feedback based on its severity, criticality, and importance. It is advised that Beta builds not be deployed in production environments.

Log collection

Log collection simplifies the process of collecting logs for Citrix Workspace app. The logs help Citrix to troubleshoot, and, in cases of complicated issues, facilitate support. Users can now collect logs quickly by using the new option provided in the **Help** menu by navigating to **Help** and selecting the **Logging...** or **Email Log Files** option. This feature improves the user experience during the log collection process.



- **Logging...** - clicking this option directs you to **Preferences > Advanced > Logging**
- **Email Log Files** – clicking this option allows collecting the latest logs.

Support synchronization for more keyboard layouts

Starting with the 2304 release, Citrix Workspace app for Mac supports keyboard layout synchronization for the following layouts or Input Method Editors (IMEs):

- English ABC
- English ABC - India
- Chinese, Traditional: Zhuyin - Traditional
- Chinese, Traditional: Sucheng - Traditional
- Google Japanese IME
- Sougou Chinese IME

Improved auto-update experience

The auto-update feature automatically updates the Citrix Workspace app to the latest version without the need for any user intervention.

Citrix Workspace app periodically checks and downloads the latest available version of the app. Citrix Workspace app determines the best time to install based on user activity not to cause any disruptions.

For more information, see Improved auto-update experience.

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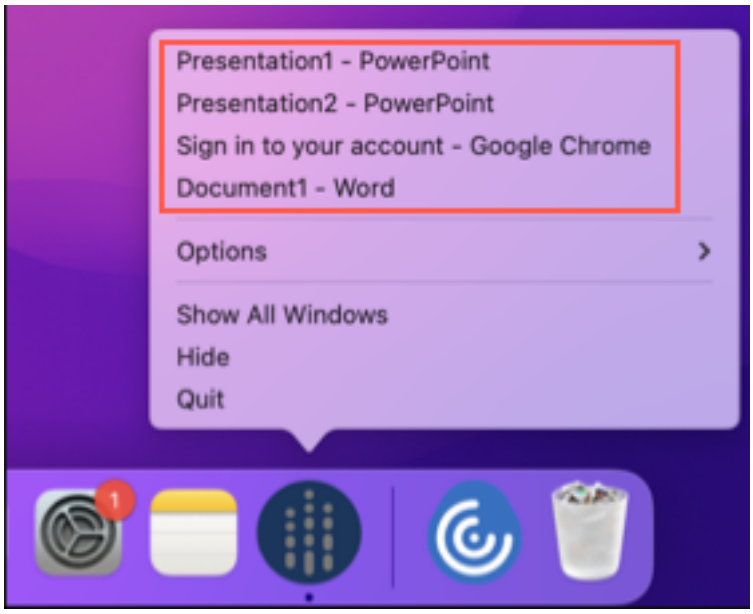
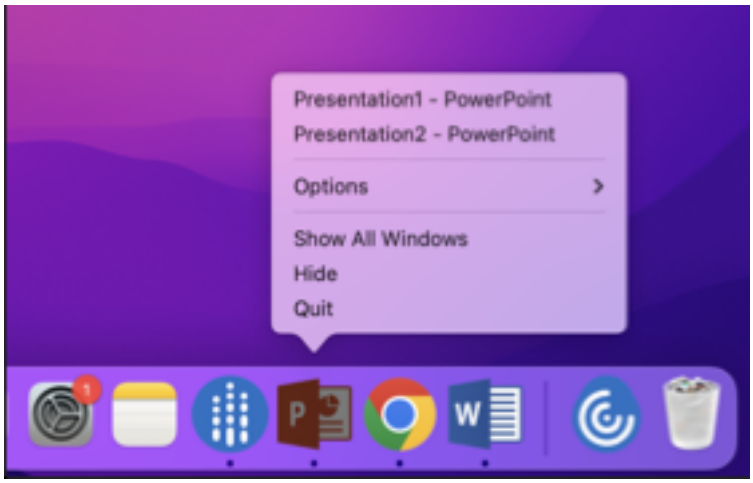
Opened apps appear in the dock with native app icons

Previously, clicking virtual apps in the Citrix Workspace app triggered the **Citrix Viewer** where these apps would be available. If you open many apps, the apps or its instances are opened in the **Citrix Viewer**. You can view the open apps by right-clicking the **Citrix Viewer** icon.



Starting with this release, when you open virtual apps, they appear in the Dock (bottom-right corner of the screen) with their respective icons and are easily identifiable. You can then access the virtual app from the dock itself. If you open multiple instances of an app, these instances are not duplicates in the Dock but are grouped within one instance in the Dock.



Improved Mission Control and App Expose experience

Previously, using the **Mission Control** or **App Expose** feature in a virtual app session resulted in the overlapping of many windows that were opened.

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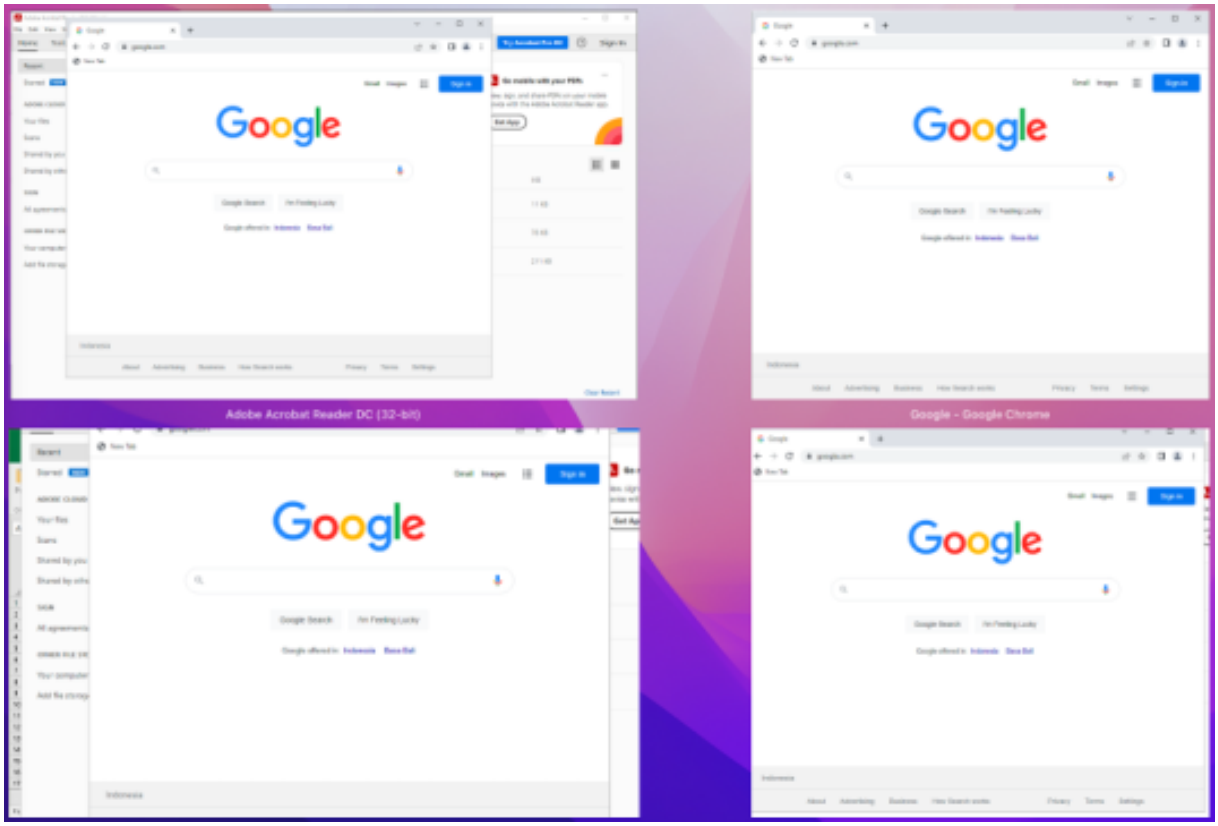

Starting with this release, when you use the **Mission Control** or **App Expose** feature in a virtual app session and open many windows, the windows do not overlap, and you can easily choose from among them.

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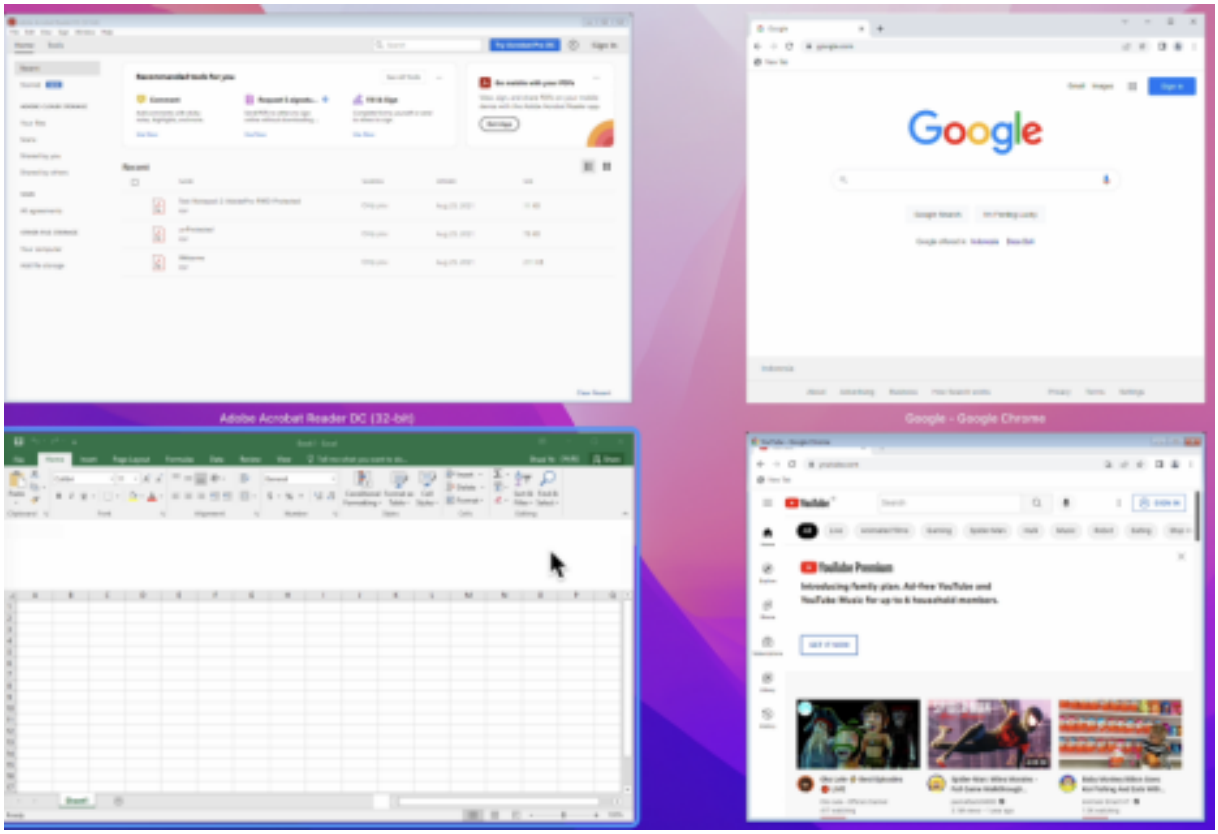

Limiting video resolutions

Administrators who have users on lower-performance client endpoints can choose to limit incoming or outgoing video resolutions to decrease the impacts of encoding and decoding video on those endpoints. Starting from Citrix Workspace app 2304 for Mac, you can limit these resolutions using client configuration options.

> **Note:**
>
> Users running with restricted resolutions impact the overall video quality of the conference because the Microsoft Teams server will be forced to use the lowest-common-denominator resolution for all conference participants.

Call constraints are disabled by default on the client with Citrix Workspace app 2304. To enable, administrators must set the following client-side configurations with the defaults command:

```
defaults write com.citrix.HdxRtcEngine <Name> -<Type> <Value>
```

Name	Type	Mandatory	Accepted values
EnableSimulcast	int	YES	1–3 (set it to 1)

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Name	Type	Mandatory	Accepted values
MaxOutgoingResolution	int	YES	180, 240, 360, 540, 720, 1080 (Microsoft Teams supported Resolutions)
MaxIncomingResolutio	int	YES	180, 240, 360, 540, 720, 1080 (Microsoft Teams supported Resolutions)
MaxIncomingStreams	int	YES	1–8
MaxSimulcastLayers	int	YES	1–3 (set it to 1)
MaxVideoFrameRate	int	NO	1–30
MaxScreenShareFrame	int	NO	1–15

Support for horizontal scroll

Previously, Citrix Workspace app for Mac supported only vertical scroll on a trackpad. Starting with 2305 release, a horizontal scroll is also supported.

Improved audio echo cancellation support

Citrix Workspace app supports echo cancellation in adaptive audio and legacy audio codecs. This feature is designed for real time audio use cases, and it improves the user experience. Citrix recommends using adaptive audio.

USB redirection

HDX USB device redirection enables redirection of USB devices to and from a user device. 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.

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> **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. To restrict the types of USB devices made available to a virtual desktop, update the list of USB devices supported for redirection. More information is provided later in this section.

> **Tip**
>
> Where security separation between the user device and server is needed, ensure that you inform users 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. Use the Generic USB virtual channel as an alternative.

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.

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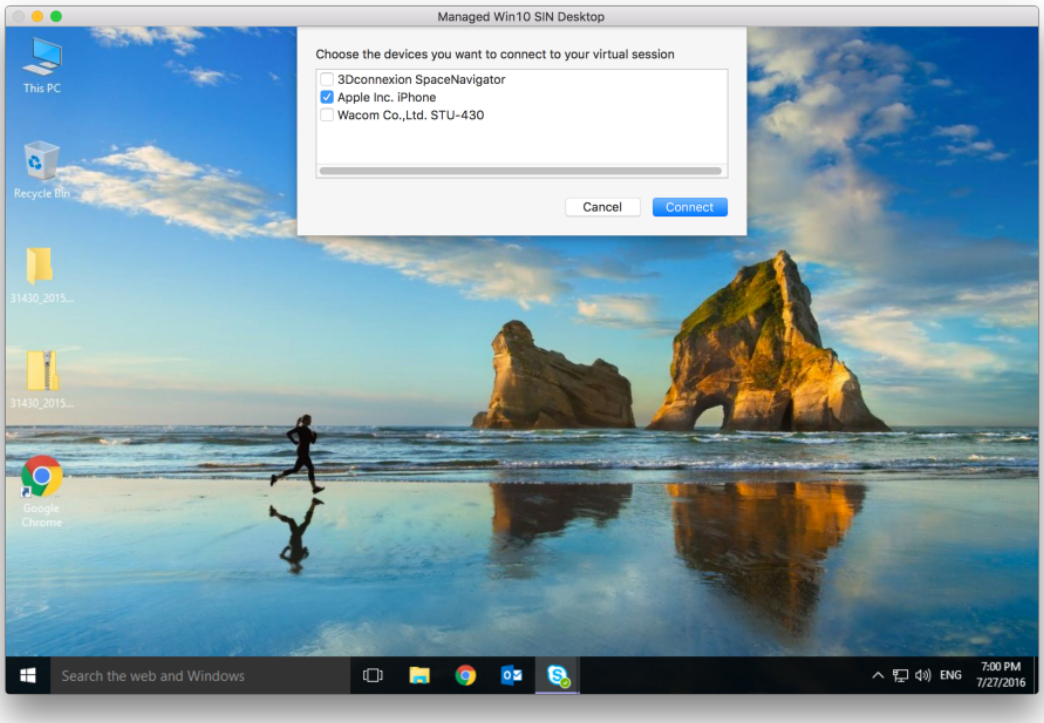

3. Select the device you want to connect and click **Connect**. If the connection fails, an error message appears.
4. In the **Preferences** window **Devices** tab, the connected USB device is listed in the USB panel:

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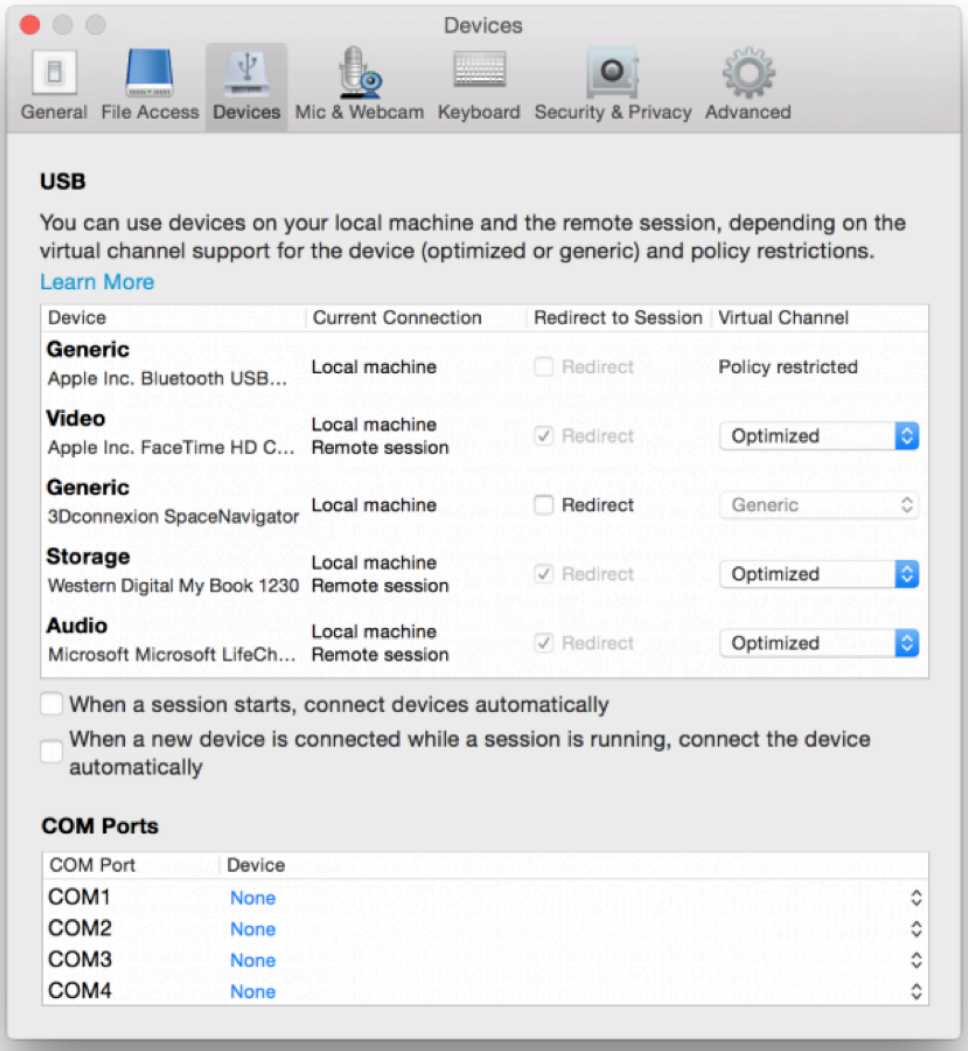
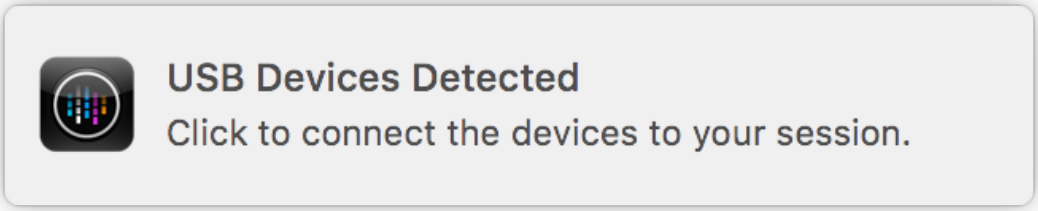


5. Select the type of virtual channel (Generic or Optimized) for the USB device.
6. A message is displayed. Click to connect the USB device to your session:



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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.

Supported USB devices

With Apple announcing the deprecation of Kernel Extensions (KEXT), Citrix Workspace app for Mac migrated to the new user mode USB framework `IOUSBHost` provided by Apple. This article lists the supported USB devices.

USB devices that are compatible with USB redirection

The following USB devices work seamlessly with USB redirection:

- 3DConnexion SpaceMouse
- Mass Storage Devices
- Kingston DataTraveler USB Flash Drive
- Seagate external HDD
- Kingston/Transcend Flash drive 32 GB/64 GB
- NIST PIV smartcard /reader
- YubiKey

USB devices that fail with USB redirection

The following device is not compatible with USB redirection:

- Transcend SSD external Hard disk

Unverified USB Devices

There are plenty of devices, unverified by Citrix, for successful USB redirection with Citrix Workspace app for Mac. Here are some of these devices:

- Other Hard Disks
- Special Keys on the keyboard and headsets that use custom HID protocol

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Support for Mass Storage devices

We have seen that not all types of Mass Storage devices can be redirected successfully. For the devices which fail to redirect, there is an optimized virtual channel called Client Drive mapping. Using the Client Drive mapping, access to the mass storage devices can be controlled through the policies on the delivery controller.

Support for Isochronous devices

Generic USB redirection doesn't support Isochronous class of USB devices in Citrix Workspace app for Mac. Isochronous mode of data transfer in a USB specification indicates devices that stream the timestamped data at a constant rate. For example: WebCams, USB Headphones, and so on

Support for Composite devices

A USB composite device is a single gadget that can perform more than one function. For example: multi-function printers, iPhone, and so on. Currently, Citrix Workspace app for Mac does not support redirection of composite devices to the Citrix Virtual Apps and Desktops and Citrix DaaS session.

Alternatives for unsupported USB devices

There are optimized virtual channels that can handle devices that are not supported with generic USB redirection. These virtual channels are optimized for speed when compared to generic USB redirection. Some examples are as follows:

- **Webcam redirection:** Optimized for raw webcam traffic. Microsoft Teams Optimization Pack has its own method of webcam redirection. Hence, it does not fall under the Webcam redirection virtual channel.
- **Audio redirection:** Optimized to transfer Audio streams.
- **Client Drive Mapping:** Optimized for redirecting mass storage devices to the Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service) session. For example: Flash Drives, Hard Disks, DVD ROM/RW, and so on.

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 HDXOverUDPAllowed -bool NO
```

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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. Session reliability reconnects users without reauthentication prompts.

> **Important**
>
> - Citrix Workspace app for Mac users cannot override the server setting.
> - With Session reliability 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**
>
> Extending session reliability timeouts might cause a user to get distracted and walk away from the device, leaving the session accessible to unauthorized users.

By default, incoming session reliability connections use port 2598, unless you change the port number in the session reliability port number policy setting.

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

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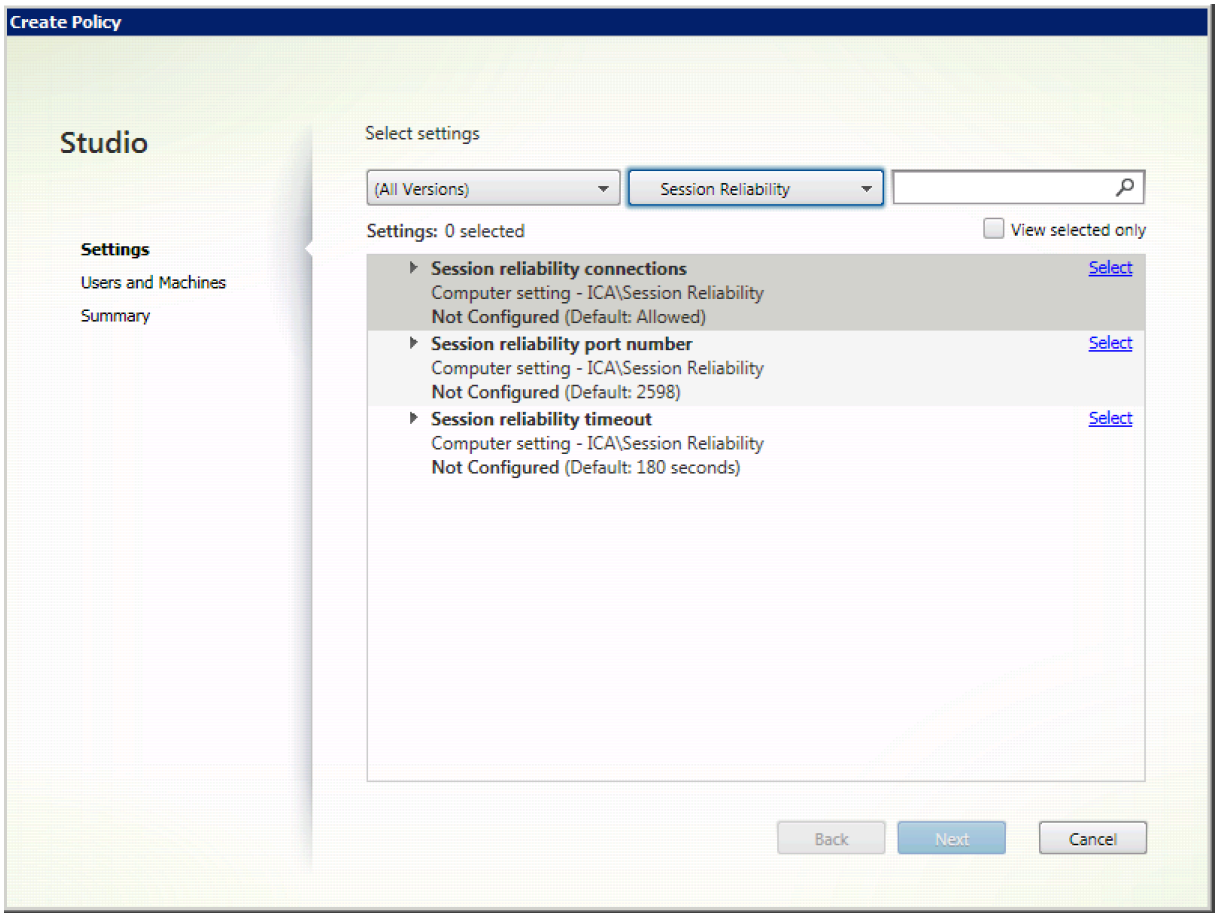
> managed by the server.

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.
   . 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:

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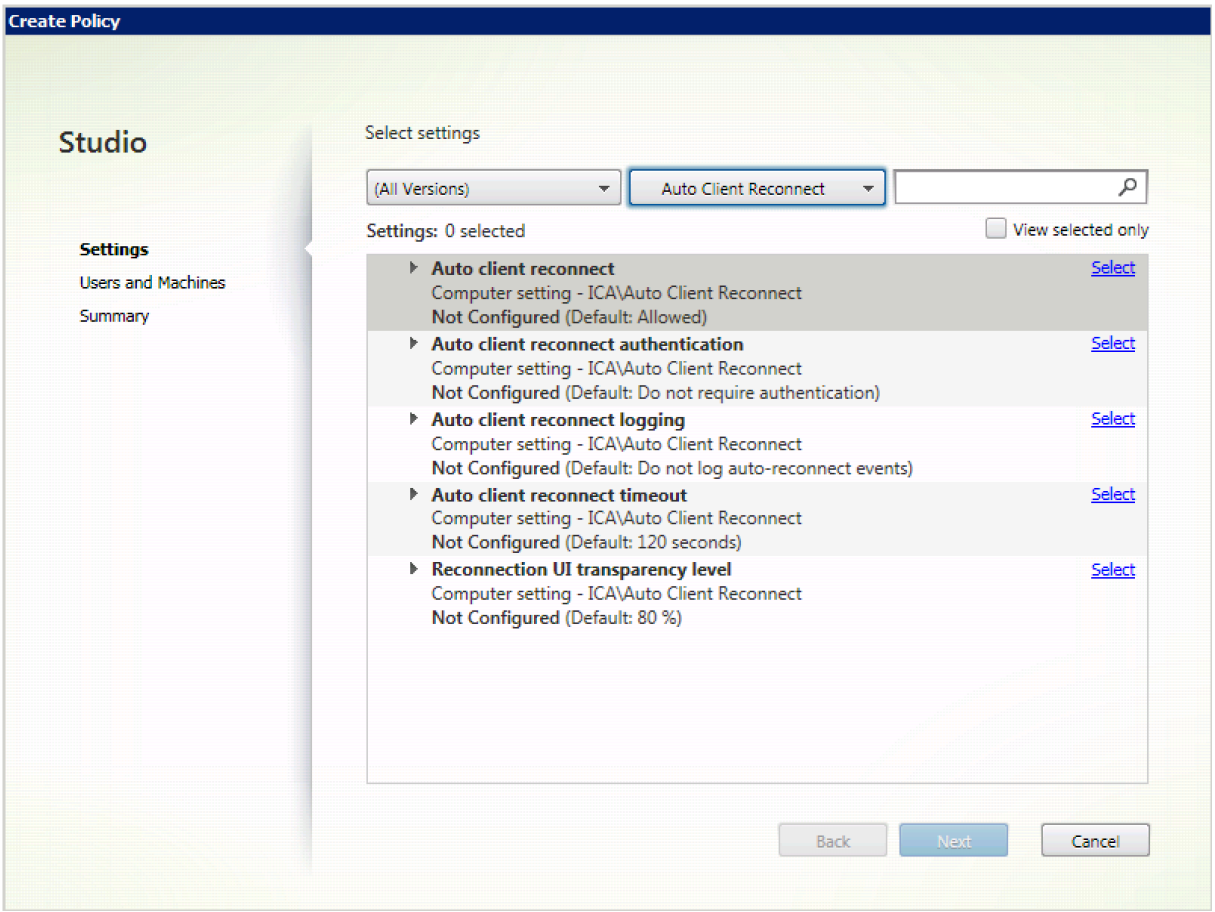
1. Launch Citrix Studio.
2. Open the **Session reliability timeout** policy.
3. Edit the timeout value.
4. Click **OK**.

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, the Auto client reconnection timeout is set to 120 seconds.

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> **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. Citrix enhanced session reliability and auto reconnection technologies resolve this issue.

This feature, allows users to reconnect to sessions automatically after recovery from network disruptions. These features, enabled by policies in Citrix Studio, can be used to improve the user experience.

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

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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 auto client reconnection section earlier in this article.

Use the default.ica file in StoreFront to modify the connection timeout for AutoClienreconnect. 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:

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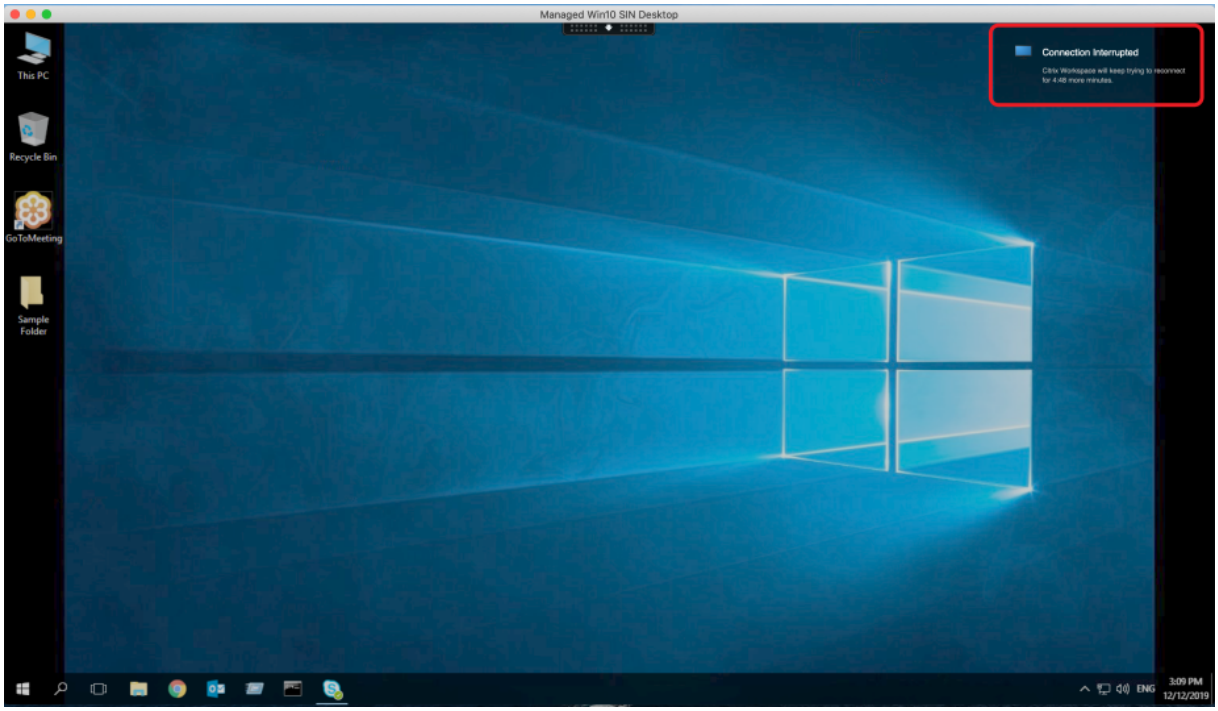

Tip

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:

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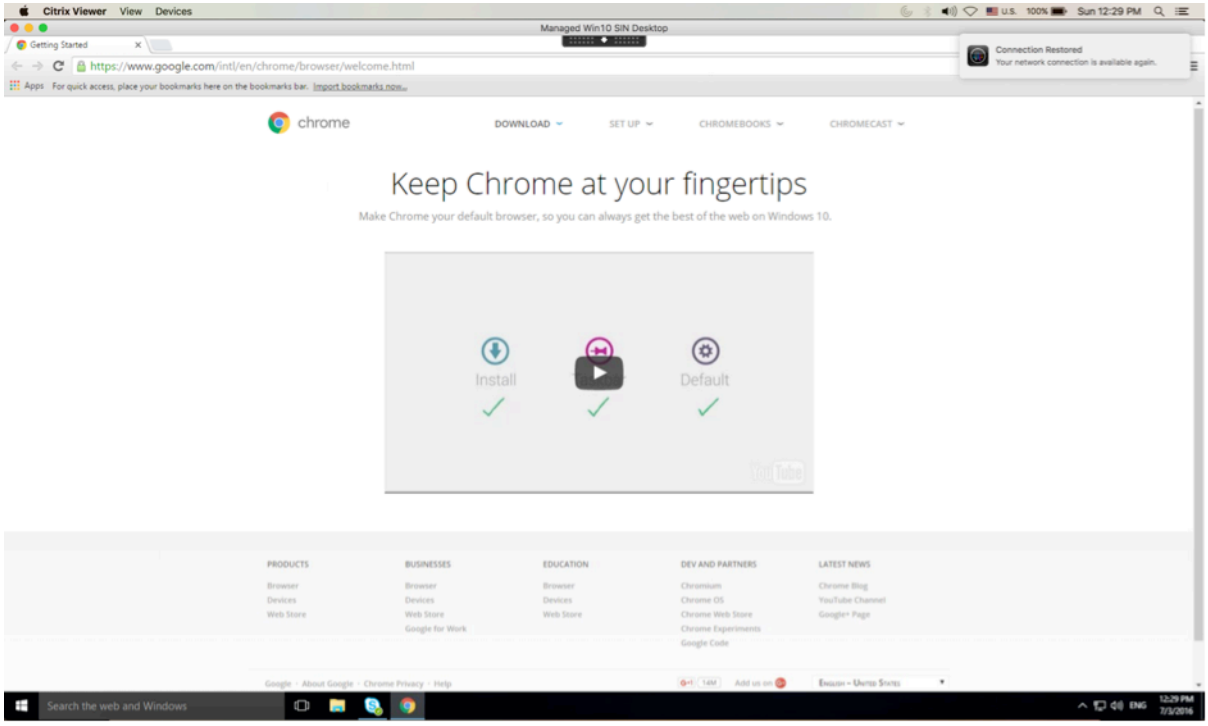

- A session window which is under auto client reconnect and session reliability control provides an informational message indicating the state of the session connection. Click **Cancel Reconnection** to move back to an active session.

Background blurring and replacement for Citrix Optimized Teams

Citrix Optimized Teams in Citrix Workspace app for Mac now supports background blurring and background replacement. You can use this by selecting **More > Apply Background Effects** when you are in a meeting or a P2P call.

Enhanced notch screen support

Starting with 2301 release, Citrix Workspace app for Mac supports Macs with a notch display. Macs support native notch screen in full screen mode for retina and multi-monitor displays. The area of the session in notch screen is now much bigger and provides the customers with more screen space. This enhancement also supports high DPI scaling. The mouse position also appears accurate in all the external monitors connected.

> **Note:**
>
> Ensure not to select the **Scale to fit below built-in camera** option in the Citrix Viewer. This option is not selected by default and can be found only on Macs with notch display.

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Enhanced menu bar support

Starting with 2301 release, the CWA fully supports the **Automatically hide and show the menu bar in full screen** option in MacOS. For versions earlier than macOS 13, you must navigate to **System Preferences > Dock & Menu Bar** and uncheck the **Automatically hide and show the menu bar in full screen** option. For macOS 13 and later versions, you must navigate to System Preferences > Desktop & Dock and uncheck the Automatically hide and show the menu bar in full screen option. You have the provision to either enable or disable this option. This enhancement also supports high DPI scaling. The mouse position also appears accurate in all the external monitors connected.

The figure below illustrates a window where the menu bar is hidden

The figure below illustrates a window where the menu bar appears

Enhancement to sleep mode for optimized Microsoft Teams call

Previously, when you are in an optimized Microsoft Teams meeting, if there is no mouse or keyboard interaction, Citrix Workspace app or the optimized Microsoft Teams screen might go to sleep mode.

Starting with release 2305, Citrix Workspace app or the optimized Microsoft Teams screen doesn't go to sleep mode even if there is no mouse or keyboard interaction during an optimized Microsoft Teams meeting.

Support for continuity camera

With the Continuity Camera, you can now use iPhone as your webcam. For a seamless connection, mount your iPhone such that its camera is available to the Mac device. You must select **Webcam > Automatic Camera Selection** for the iPhone to appear automatically on the Mac device as an external camera. You can switch to any other camera manually, for example by selecting **Webcam > FaceTime HD Camera**. The Continuity Camera works wired or wirelessly and provides a high-quality image.

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Prerequisites

- This feature is supported on a Mac device running macOS version 13.
- This feature is supported on an iOS device running iOS version 16.
- You must be signed into the same Apple account in the Citrix Workspace app on both your iOS device and Mac device.
- For a wired connection, the iPhone must be connected to the Mac device through a USB.
- For a wireless connection, the iPhone and Mac devices must be in proximity and have Bluetooth and Wi-Fi turned on.

Some of the advantages are:

- **Center Stage** - Keeps the image within the frame as you move around.
- **Portrait** mode - Blurs the background of the image.
- **Studio Light** - Provides a bright effect on the image. It dims the background and illuminates the image.
- **Desk View** – The iPhone splits the Ultra Wide camera feed into two. It shows the desk and face both at the same time.
- **Share Windows** - The iPhone splits the Ultra Wide camera feed into two. It shows the desk and face both at the same time. The share windows function available in the video conferencing apps can be used to share the Desk View feed.

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 Citrix 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 Citrix Workspace app.

Additional Information

Citrix handles your data in accordance with the terms of your contract with Citrix. Your data is protected, according to Citrix Services Security Exhibit available at the Citrix Trust Center.

Citrix uses Google Analytics to collect certain data from Citrix Workspace app as part of CEIP. Review how Google handles data collected for Google Analytics.

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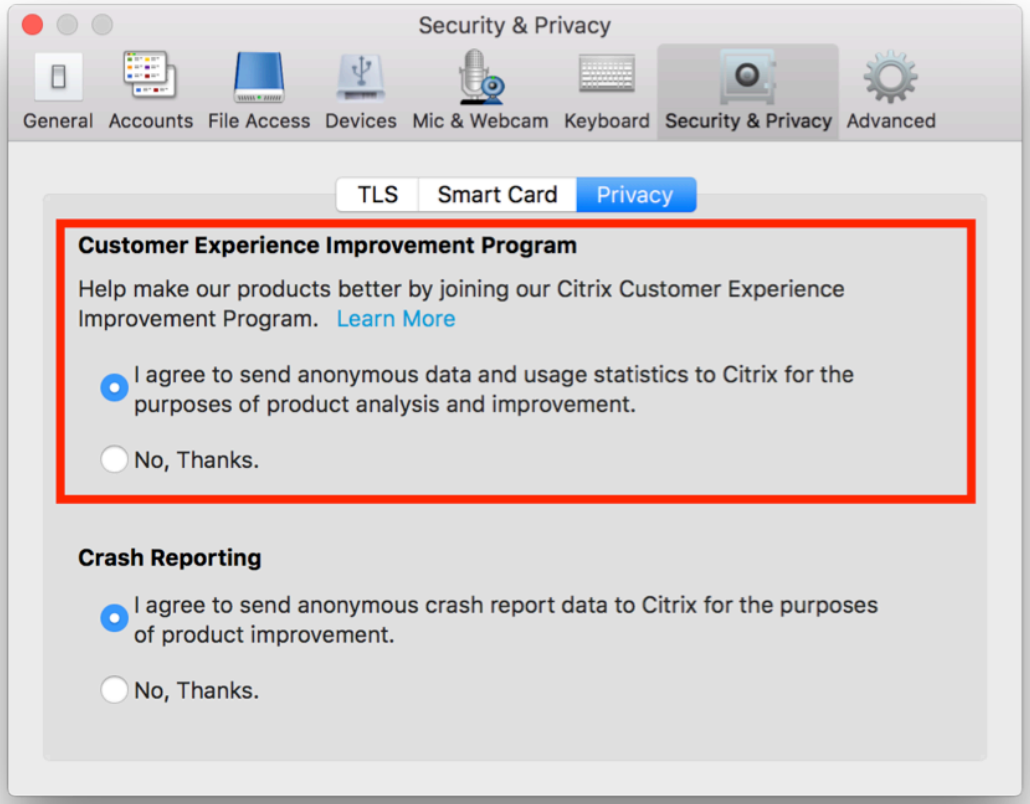
To disable sending CEIP data to Citrix and Google Analytics, perform the following steps:

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
```

> **Note:**
>
> No data is collected for the users in European Union (EU), European Economic Area (EEA), Switzerland, and United Kingdom (UK).

The specific data elements collected by Google Analytics are:

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Operating System Version	Workspace app version	Generic USB Redirection Usage	Store configuration
Citrix Enterprise Browser Usage	Citrix Virtual Apps and Desktop Session Launch Status	Auto-update preference	Auto-update Status
Session launch method	Uninstall information	Inactivity Timeout Feature Usage	Email Discovery Feature Usage
Custom Web Store Feature Usage	Reconnection preferences	Global App Config Service Usage	Restore Keyboard Usage
Delete Password Feature Usage	Auto-update channel	Connection Lease Details	

Note:

- Citrix Enterprise Browser was formerly known as Citrix Workspcace Browser.

Application delivery

When delivering applications with Citrix Virtual Apps and Desktops and Citrix DaaS, 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 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 configure 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.

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When publishing applications on your Citrix Virtual Apps farms, you can enhance the experience for users accessing those applications through StoreFront stores. Ensure that you include meaningful descriptions for the published apps. 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.

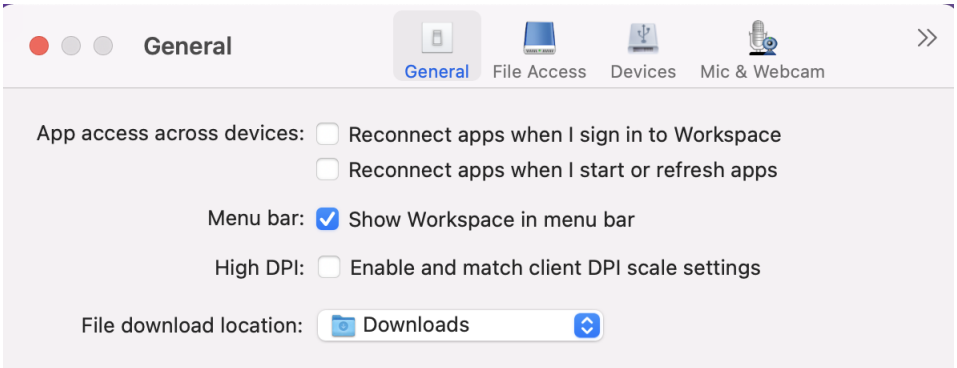
In self-service mode, you can configure mandatory, auto-provisioned, and featured app keyword settings as needed.

- Automatically subscribe all users of a store to an app by appending the string `**KEYWORDS:Auto**` to the description, while publishing the app in Citrix Virtual Apps. When users log in to the store, the app is automatically provisioned without the need for manual subscription to the app.
- 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 list apps in the Mac Featured list, append the string `**KEYWORDS:Featured**` to the app description.

For more information, see StoreFront documentation.

Support for high DPI

You can now enable and match the client DPI scale settings by launching the session toolbar and navigating to **Preferences > General > High DPI**. The High DPI option is disabled by default.



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Citrix Workspace Updates

Configuring using the GUI

An individual user can override the **Citrix Workspace Updates** setting using the **Preferences** dialog. This process 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

The auto-update check determines that Citrix Workspace app for Mac can detect if updates are available.

Valid values:

- Auto – Is used to get notifications when updates are available.

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- Manual – Is used to not get any notification when updates are available. Users must check manually for updates by selecting **Check for Updates**.
- Disabled – Is used to disable Citrix Workspace Updates.

auto-update-DeferUpdate-Count

Determines the number of times the user is notified to upgrade before forcibly updating to the latest version of Citrix Workspace app for Mac. By default, this value is 7.

Valid values:

- -1 – The user gets reminded later when an update is available.
- 0 – Force-updates the user 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

Determines how quickly a device sees that an update is available.

Valid values:

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

Keyboard layout synchronization

Keyboard layout synchronization enables you to switch between the preferred keyboard layouts on the client device. This feature is disabled by default. After you enable this feature, the client keyboard layout automatically synchronizes to the virtual apps and desktops.

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

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> 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.

Starting with version 2210, Citrix Workspace app for Mac supports three different keyboard layout synchronization modes:

- **Sync only once - when session starts** – Based on the CTXIME value in the `Config` file, the client keyboard layout is synchronized to the server when the session launches. Any changes you make to the client keyboard layout during the session do not take effect immediately. To apply the changes, sign out and sign in to the app. The Sync only once - when session starts mode is the default keyboard layout for the Citrix Workspace app on Mac.
- **Allow dynamic sync** - This option synchronizes the client keyboard layout to the server when you change the client keyboard layout.
- **Don't sync** - Indicates that the client uses the keyboard layout present on the server.

Prerequisites

- Enable the Unicode Keyboard Layout Mapping feature on the Windows VDA. For more information, see Knowledge Center article CTX226335.
- Enable the Dynamic Keyboard layout sync feature on the Linux VDA. For more information, see Dynamic keyboard layout synchronization.
- When using Windows Server 2016 or Windows Server 2019, navigate to **HKEY_LOCAL_MACHINE\Software\C** registry path and add a **DWORD** value with key name **DisableKeyboardSync** and set the value to **0**.

Configure keyboard layout

Citrix Workspace app for Mac provides UI to configure the three different keyboard layout synchronization modes.

To configure keyboard layout synchronization using the GUI:

1. From the Citrix Workspace app icon in the menu bar, click the account icon in the top-right corner and navigate to **Preferences > Keyboard**.

   The Keyboard layout synchronization settings appear.

2. Select from one of the following options:

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- **Sync only once** - when session starts - Indicates that the keyboard layout is synced to the VDA only once at the session launch. Unicode keyboard input mode is the recommended option for the Sync only once – when session starts
- **Allow dynamic sync** - Indicates that the keyboard layout is synced dynamically to the VDA when the client keyboard is changed in a session. Unicode keyboard input mode is the recommended option for the Allow dynamic sync mode.
- **Don't sync** - Indicates that the client uses the keyboard layout present on the server, irrespective of the keyboard layout that is selected in the client. Scancode keyboard input mode is the recommended option for the Don't sync You must make sure that the client keyboard layout is the same as the keyboard layout on the VDA if you select Unicode for the Don't Sync option.

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 apps that run with elevated privileges 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 a user is working within an RDP session, it's not possible to change the keyboard layout using the `Alt + Shift` shortcuts when RDP is deployed as an app. As a workaround, users can use the language bar in the RDP session to switch the keyboard layout.

Keyboard layout support for Windows VDA

Language on Mac	Input Source on Mac	Applicable Mac OS version
English	ABC	All
English	ABC - India	All
English	U.S.	All
English	U.S. International - PC	All
English	Dvorak	All
English	Dvorak - Left-Handed	All
English	Dvorak - Right-Handed	All
English	British	All

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Language on Mac	Input Source on Mac	Applicable Mac OS version
English	British - PC	All
English	Canadian English	All
English	Australian	All
English	Irish	All
French	French	All
French	French - Numerical	All
French	Canadian French - CSA	11, 12
French	Canadian – CSA	13
French	Swiss French	All
French	French - PC	All
German	German	All
German	Austrian	All
German	Swiss German	All
Spanish	Spanish	All
Spanish	Spanish - ISO	10,11
Spanish	Spanish – Legacy	12,13
Spanish	Latin American	All
Swedish	Swedish	All
Swedish	Swedish – Legacy	12,13
Swedish	Swedish - Pro	10, 11
Czech	Czech	All
Danish	Danish	All
Finnish	Finnish	All
Hungarian	Hungarian	All
Italian	Italian	All
Italian	Italian - Typewriter	10,11
Italian	Italian – QZERTY	12,13
Greek	Greek	All
Dutch	Belgian	All

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Language on Mac	Input Source on Mac	Applicable Mac OS version
Dutch	Dutch	All
Russian	Russian	All
Russian	Russian - PC	All
Croatian	Croatian - PC	All
Slovak	Slovak	All
Slovak	Slovak - QWERTY	All
Turkish	Turkish F	All
Turkish	Turkish Q	All
Portuguese	Brazilian	All
Portuguese	Brazilian - ABNT2	All
Portuguese	Brazilian – Legacy	12,13
Portuguese	Brazilian - Pro	10,11
Portuguese	Portuguese	All
Ukrainian	Ukrainian - PC	10,11
Ukrainian	Ukrainian	12,13
Belarusian	Belarusian	All
Slovenian	Slovenian	All
Estonian	Estonian	All
Latvian	Latvian	All
Polish	Polish - Pro	10,11
Polish	Polish	12,13
Icelandic	Icelandic	All
Norwegian	Norwegian	All
Japanese	Katakana	All
Japanese	Half-width Katakana	All
Japanese	Romaji	All
Japanese	Full-width Romaji	All
Japanese	Hiragana	All
Japanese	Alphanumeric (Google)	All

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Language on Mac	Input Source on Mac	Applicable Mac OS version
Japanese	Hiragana (Google)	All
Japanese	Katakana (Google)	All
Japanese	Half-width Katakana (Google)	All
Japanese	Full-width Alphanumeric (Google)	All
Korean	2-Set Korean	All
Chinese, Simplified	Pinyin - Simplified	All
Chinese, Simplified	Sogou pinyin	All
Chinese, Traditional	Pinyin - Traditional	All
Chinese, Traditional	Cangjie - Traditional	All
Chinese, Traditional	Zhuyin - Traditional	All
Chinese, Traditional	Sucheng - Traditional	All

Keyboard layout support for Linux VDA, Swiss French

Language on Mac	Input Source on Mac	Applicable Mac OS version
English	ABC	All
English	ABC - India	All
English	U.S.	All
English	U.S. International - PC	All
English	Dvorak	All
English	Dvorak - Left-Handed	All
English	Dvorak - Right-Handed	All
English	British	All
English	British - PC	All
English	Canadian English	All
English	Australian	All
English	Irish	All
French	French	All

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Language on Mac	Input Source on Mac	Applicable Mac OS version
French	French - Numerical	All
French	Canadian French - CSA	11, 12
French	Canadian – CSA	13
French	Swiss French	All
French	French - PC	All
German	German	All
German	Austrian	All
German	Swiss German	All
Spanish	Spanish	All
Spanish	Spanish - ISO	10,11
Spanish	Spanish – Legacy	12,13
Spanish	Latin American	All
Bulgarian	Bulgarian	10,11,12
Bulgarian	Bulgarian – Standard	13
Swedish	Swedish	All
Swedish	Swedish – Legacy	12,13
Swedish	Swedish - Pro	10, 11
Czech	Czech	All
Danish	Danish	All
Finnish	Finnish	All
Hungarian	Hungarian	All
Italian	Italian	All
Italian	Italian - Typewriter	10,11
Italian	Italian – QZERTY	12,13
Greek	Greek	All
Belgian	Belgian	All
Dutch	Dutch	All
Romanian	Romanian - Standard	All
Russian	Russian	All

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Language on Mac	Input Source on Mac	Applicable Mac OS version
Russian	Russian - PC	All
Croatian	Croatian - PC	All
Slovak	Slovak	All
Slovak	Slovak - QWERTY	All
Turkish	Turkish F	All
Turkish	Turkish Q	All
Portuguese	Brazilian	All
Portuguese	Brazilian - ABNT2	All
Portuguese	Brazilian – Legacy	12,13
Portuguese	Brazilian - Pro	10,11
Portuguese	Portuguese	All
Ukrainian	Ukrainian - PC	10,11
Ukrainian	Ukrainian	12,13
Belarusian	Belarusian	All
Slovenian	Slovenian	All
Estonian	Estonian	All
Polish	Polish - Pro	10,11
Polish	Polish	12,13
Icelandic	Icelandic	All
Norwegian	Norwegian	All
Japanese	Katakana	All
Japanese	Half-width Katakana	All
Japanese	Romaji	All
Japanese	Full-width Romaji	All
Japanese	Hiragana	All
Japanese	Alphanumeric (Google)	All
Japanese	Hiragana (Google)	All
Japanese	Katakana (Google)	All
Japanese	Half-width Katakana (Google)	All

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Language on Mac	Input Source on Mac	Applicable Mac OS version
Japanese	Full-width Alphanumeric (Google)	All
Korean	2-Set Korean	All
Chinese, Simplified	Pinyin - Simplified	All
Chinese, Simplified	Sogou pinyin	All
Chinese, Traditional	Pinyin - Traditional	All
Chinese, Traditional	Cangjie - Traditional	All
Chinese, Traditional	Zhuyin - Traditional	All
Chinese, Traditional	Sucheng - Traditional	All

By default, the keyboard layout synchronization feature is turned on. To control this feature alone, open the **Config** file in the ~/**Library**/**Application Support**/**Citrix Receiver**/ 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.

Keyboard input mode enhancements

Citrix Workspace app for Mac provides UI to configure the keyboard input mode.

To configure keyboard input mode by using the GUI, do the following:

1. From the Citrix Workspace app icon in the menu bar, click the account icon in the top-right corner and navigate to **Preferences > Keyboard**.

   The Keyboard input mode settings appear

2. Select from one of the following options:

   - **Scancode** – Sends the key position from client-side keyboard to VDA and VDA generates the corresponding character. Applies server-side keyboard layout.
   - **Unicode** - Sends the key from the client-side keyboard to VDA and VDA generates the same character in VDA. Applies client-side keyboard layout.

This enhancement is enabled by default.

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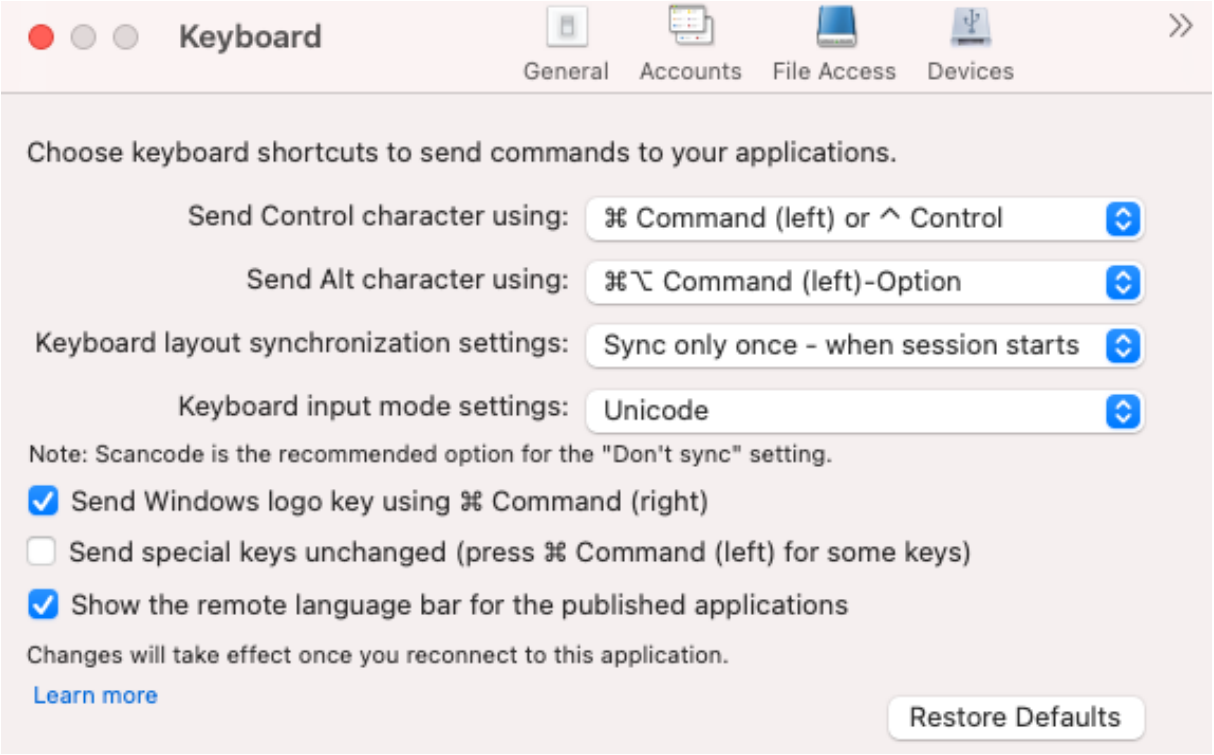

For example, consider a scenario where you're using a US international keyboard layout and the VDA is using the Russian keyboard layout. When you choose **Scancode** and type the key next to **Caps Lock**, the scancode "1E" is sent to the VDA. The VDA then uses "1E" to display the character "ф". If you choose **Unicode** and type the key next to **Caps Lock**, the character "a" is sent to the VDA. So, even if the VDA uses the Russian keyboard layout, the character "a" appears on the screen.

Citrix recommends the following keyboard input mode for the different keyboard layout sync options:

- Scancode mode for **Don't Sync** option.
- Unicode mode for **Allow dynamic sync** and **Sync only once - when session starts**

> **Note:**
>
> The keyboard configuration changes take effect once you reconnect to the application.

You can change the configuration of Keyboard input mode in the Citrix Workspace app UI. However, for best performance, use the Citrix-recommended modes for different scenarios, physical keyboards, and client devices.

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

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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 Citrix Ready workspace hub documentation.

Prerequisites

- Latest supported version of Citrix Workspace app.
- 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**.

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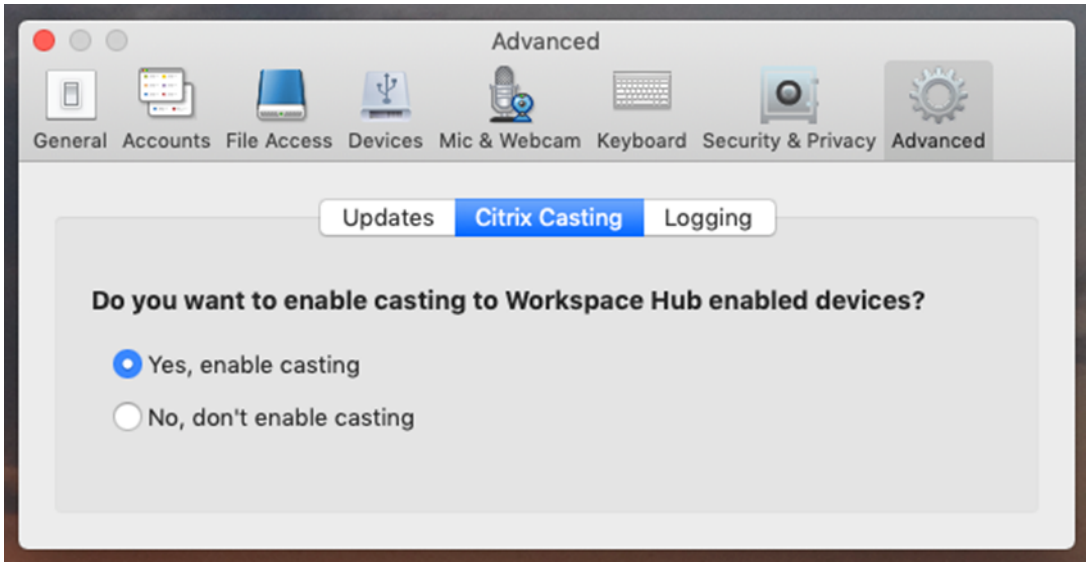
3. Select **Yes, enable casting**.



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.

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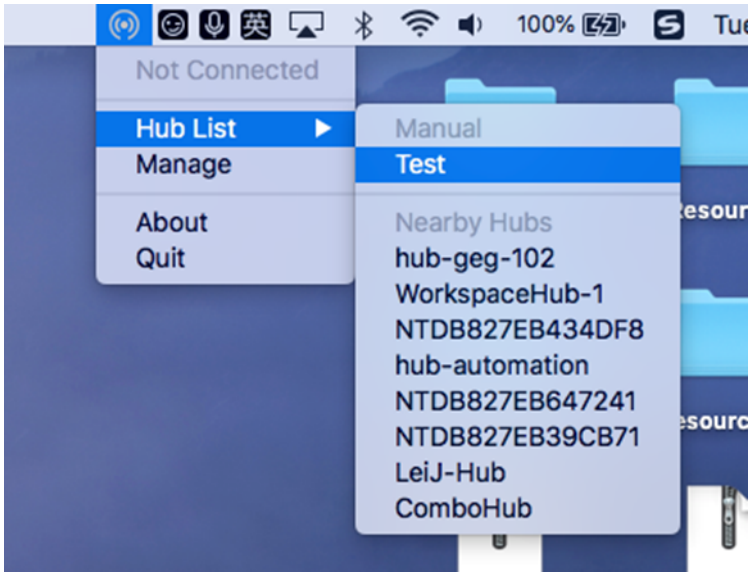

To cancel selection of a workspace hub during connection, select **Cancel**. You can also use **Cancel** if the network connection is poor and connecting is taking longer than usual.

> **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.

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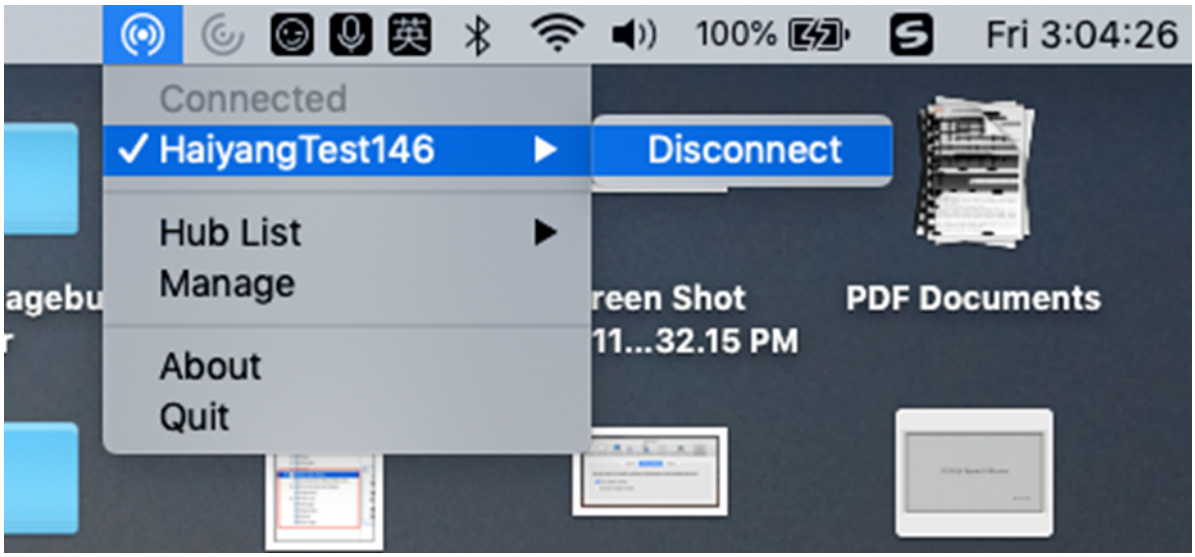
Disconnect the workspace hub device

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.

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- Video and audio recordings.

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

You can use microphones attached to your device by choosing one of the following options from the **Mic & Webcam** settings 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:

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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 **Clear** key; Option-Help
DELETE	Decimal point on the numeric keypad. Num Lock must be off; you can turn this on and off using the **Clear** 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 the Citrix Workspace app 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.

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- Hyphens between keystrokes indicate that keys must be pressed together (for example, Control-C).
- Character keys create text input and include all letters, numbers, and punctuation marks. Special keys 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
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

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Windows key or key combination	Mac equivalents
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.

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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. Open the Citrix Viewer.
2. From the menu bar, click **View** and select one of the following options, based on your requirement:
   - **Enter Full Screen** - Full screen on the primary monitor only.
   - **Use All Displays In Full Screen** - Full screen on all connected monitors.
3. Drag the Citrix Virtual Desktops screen between the monitors.

The screen is now extended to all monitors.

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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.
- Full screen mode is not available on Macs with a notch.

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. Follow one of these methods to switch from full-screen mode to windowed mode:
  - On OS X 10.10, click the green window button on the drop-down menu bar.
  - On OS X 10.9, click the blue menu button on the drop-down menu bar.
  - On all versions of OS X, select **Exit Full Screen** from the **View** menu of the drop-down menu bar.
- Support to drag between windows in full screen with multiple monitors.

Workspace Control

Workspace Control lets desktops and applications follow users as they move between devices. 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 can sign out from a device in the emergency room and sign-in to a workstation in the 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 in the X-ray laboratory.

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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 such as CD-ROM drives, DVDs, and USB memory sticks, during sessions. When a server configuration allows client drive mapping, users can access locally stored files and work on them during sessions. Users can also 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.

Custom web store

You can access your organization's custom web store from the Citrix Workspace app for Mac. To use this feature, the admin must add the custom web store to the list of allowed URLs in the

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`allowedWebStoreURLs` property in the Global App Configuration Service.

For more information about configuring web store URLs for end-users, see Global App Configuration Service.

To add a custom web store URL, perform the following steps:

1. Open the Citrix Workspace app and navigate to **Accounts**.
2. In the **Accounts** window, click the **+** icon and type the URL.

To delete a custom web store URL, perform the following steps:

1. Open the Citrix Workspace app and navigate to **Accounts**.
2. In the **Accounts** window, select the account you want to delete and click the **-** icon.

Inactivity Timeout for Citrix Workspace app

The inactivity timeout feature logs you out of the Citrix Workspace app based on a value that the admin sets. Admins can specify the amount of idle time that is allowed before a user is automatically signed out of the Citrix Workspace app. You're automatically signed out when no activity from the mouse, keyboard, or touch occurs for the specified interval of time, within the Citrix Workspace app window. The inactivity timeout does not affect the already running Citrix Virtual Apps and Desktops and Citrix DaaS sessions or the Citrix StoreFront stores.

The inactivity timeout value can be set starting from 1 minute to 1440 minutes. By default, the inactivity timeout isn't configured. Admins can configure the inactivityTimeoutInMinutes property by using a PowerShell module. Click here to download the PowerShell modules for Citrix Workspace Configuration.

The end-user experience is as follows:

- A notification appears three minutes before you're signed out, with an option to stay signed in, or sign out. The notification appears if you've enabled Citrix Workspace app notifications in the system preferences of your Mac.
- The notification appears only if the configured inactivity timeout value is greater than 5 minutes. For example, if the configured value is 6 minutes, a notification appears when 3 minutes of inactivity is detected. If the configured inactivity timeout value is less than or equal to 5 minutes, the user is signed out without a notification.
- Users can click **Stay signed in** to dismiss the notification and continue using the app, in which case the inactivity timer is reset to its configured value. You can also click Sign out to end the session for the current store.

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StoreFront to Workspace migration

StoreFront to Workspace URL migration enables you to seamlessly migrate your end users from a StoreFront store to Workspace store with minimal user interaction.

Consider, all your end users have a StoreFront store `storefront.com` added to their Workspace app. As an administrator, you can configure a StoreFront URL to Workspace URL Mapping {'storefront.com':'xyz.cloud.com'} in the Global App Configuration Service. The Global App Config Service pushes the setting to all Citrix Workspace app instances, on both managed and unmanaged devices, that have the StoreFront URL `storefront.com` added.

Once the setting is detected, Citrix Workspace app adds the mapped Workspace URL `xyz.cloud.com` as another store. When the end user launches the Citrix Workspace app, the Citrix Workspace store opens. The previously added StoreFront store `storefront.com` remains added to the Citrix Workspace app. Users can always switch back to the StoreFront store `storefront.com` using the **Switch Accounts** option in the Citrix Workspace app. Admins can control the removal of the StoreFront store `storefront.com` from the Citrix Workspace app at the users' end points. The removal can be done through the global app config service.

To enable the feature, do the following steps:

1. Configure StoreFront to Workspace mapping using the Global App Config Service. For more information on Global App config service, see Global App Configuration Service.
2. Edit the payload in the app config service:

```
{
  "serviceURL": Unknown macro: \{
  "url" }

,
"settings":{

"name":"Productivity Apps", [New Store Name]
"description":"Provides access StoreFront to Workspace Migration",
"useForAppConfig":true,
"appSettings":
{
  "macos":[ Unknown macro: \{
  "category" }

]
 }

 }

```

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```
21   }
22
23 <!--NeedCopy-->
```

> **Note:**
>
> If you're configuring the payload for the first time, use `POST`.
> If you're editing the existing payload configuration, use `PUT` and check that you have the payload that consists of all the supported settings.

3. Specify the StoreFront URL `storefront.com` as the value for **URL** in the **serviceURL** section.
4. Configure the Workspace URL `xyz.cloud.com` inside the section **migrationUrl**.
5. Use **storeFrontValidUntil** to set the timeline for the removal of the StoreFront store from the Citrix Workspace app. This field is optional. You can set the following value based on your requirement:
   - Valid date in the format (YYYY-MM-DD)

     > **Note:**
     >
     > If you have provided a past date, then the StoreFront store is removed immediately upon URL migration. If you have provided a future date, then the StoreFront store is removed on the set date.

Once the app config service settings are pushed, the following screen appears:

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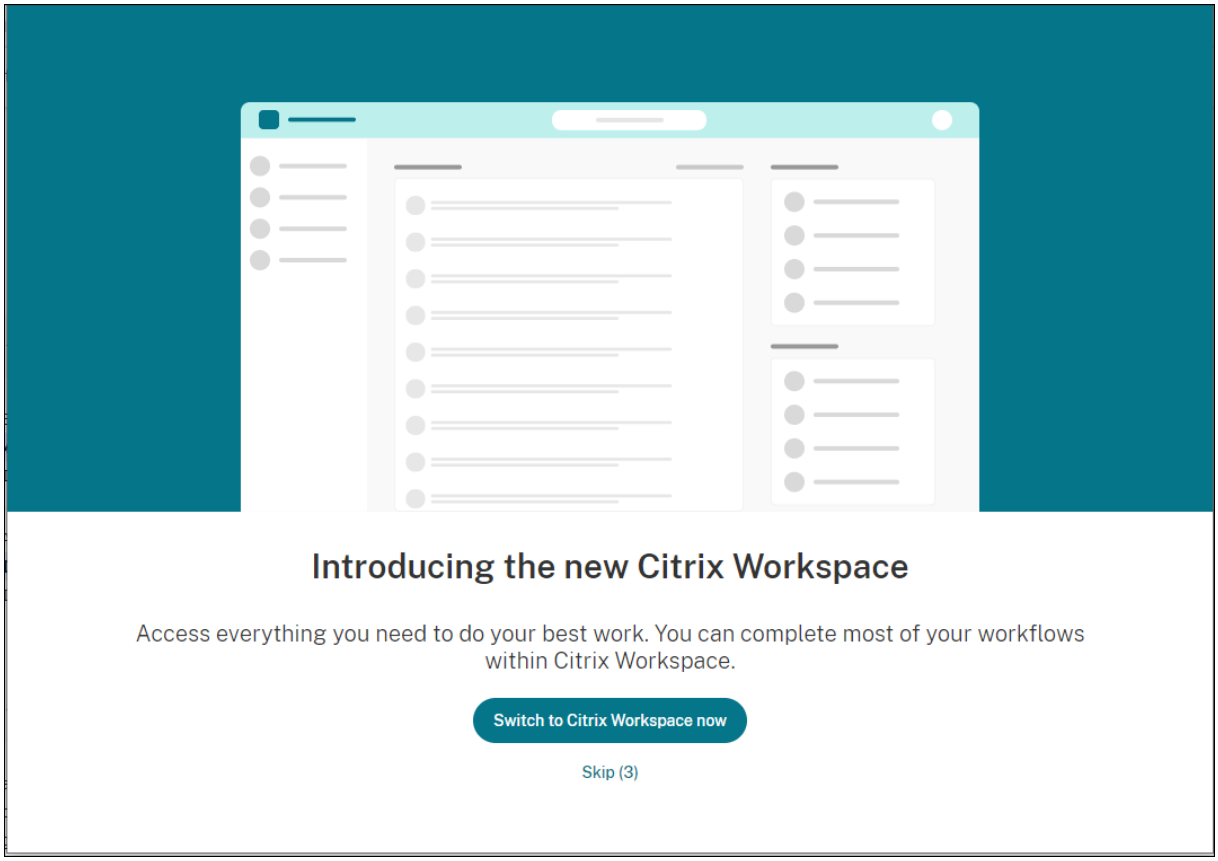

When the user clicks **Switch to Citrix Workspace now**, the Workspace URL is added to Citrix Workspace app and the authentication prompt appears. Users have a limited option to delay the transition up to three times.

Microsoft Teams enhancement

Configuring a preferred network interface

You can now configure a preferred network interface for media traffic. Run the following command in a terminal:

```
defaults write com.citrix.HdxRtcEngine NetworkPreference -int <value>
```

Select one of the following values as required:

- 1: Ethernet
- 2: Wi-Fi
- 3: Cellular
- 4: Vpn
- 5: Loopback
- 6: Any

By default and if no value is set, the WebRTC media engine chooses the best available route.

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Microsoft Teams

Encoder performance estimator

The `HdxRtcEngine.exe` is the WebRTC media engine embedded in Citrix Workspace app that handles Microsoft Teams redirection. The `HdxRtcEngine.exe` can estimate the best encoding resolution that the endpoint's CPU can sustain without overloading. Possible values are 240p, 360p, 480p, 720p, and 1080p.

The performance estimation process uses macroblock code to determine the best resolution that can be achieved with the particular endpoint. The Codec negotiation includes the highest possible resolution. The Codec negotiation can be between the peers, or between the peer and the conference server.

There are four performance categories for endpoints that have its own **maximum** available resolution:

Endpoint performance	Maximum resolution	Registry key value
Fast	1080p (1920x1080 16:9 @ 30 fps)	3
Medium	720p (1280x720 16:9 @ 30 fps)	2
Slow	360p (640x360 16:9 @ 30 fps or 640x480 4:3 @ 30 fps)	1
Very slow	240p (320x180 16:9 @ 30 fps or 320x240 4:3 @ 30 fps)	0

To set the video encoding resolution value, to, for example 360p, run the following command from the terminal:

```
defaults write com.citrix.HdxRtcEngine OverridePerformance -int 1
```

For more information about Microsoft Teams optimization, see Optimization for Microsoft Teams.

Printing

You can now use PDF universal printing when printing from a MAC. You no longer need to install the HP Color LaserJet 2800 Series PS driver when auto-creating printers with Universal Print Driver if you chose to use PDF Universal Printing.

PostScript Printing

By default, the auto-redirected client printers are created with the Citrix UPD with PostScript support. For more information, see support article CTX296662.

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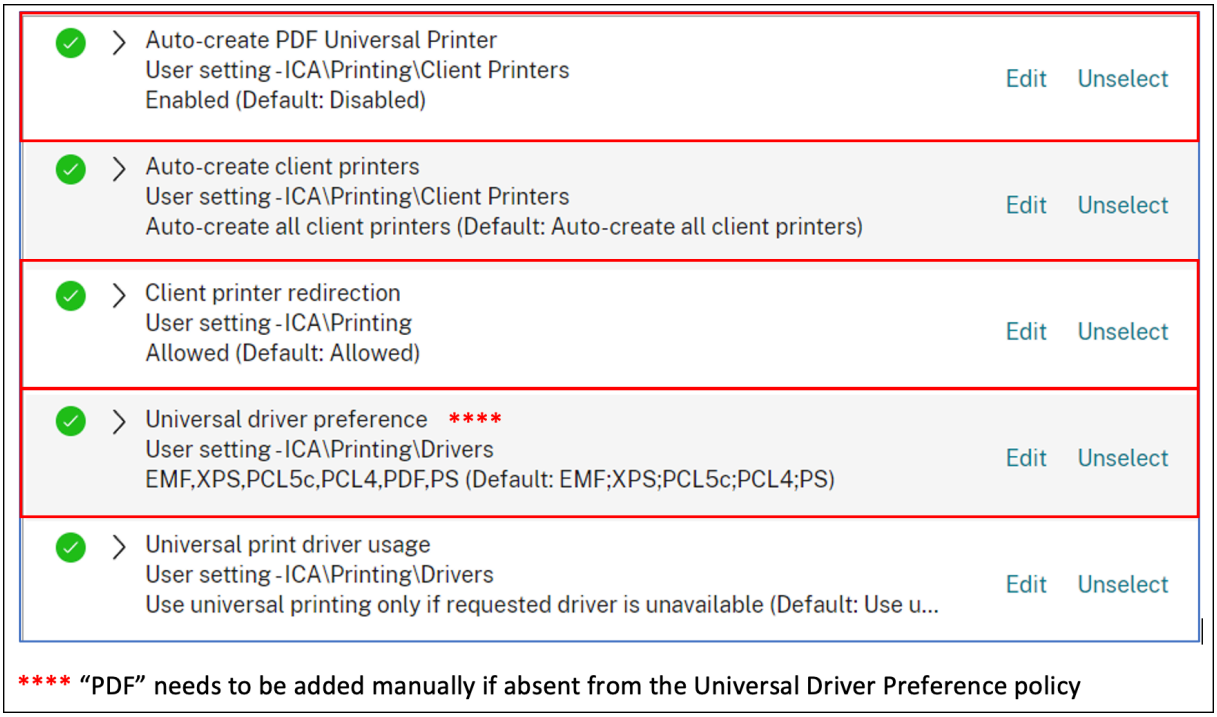
Ensure that the Client printer redirection, the Universal Print Driver Usage, and the Universal print driver priority policies are set to default. Also ensure that you've installed the HP Color LaserJet 2800 Series PS driver on the VDA.
For more information about installing the driver, see support article CTX140208.

PDF Universal Printing

Prerequisites:

- Citrix Workspace app for Mac version 2112 or later - Enables consumption of PDF print streams for Citrix Workspace app for Mac.
- Citrix Virtual Apps and Desktops version 2112 or later - Enables PDF universal printing for auto-created client printers.
- Enable the Client printer redirection policy in the Citrix Studio or web console.



**** "PDF" needs to be added manually if absent from the Universal Driver Preference policy

You can print via PDF once you configure either or both of the following options:

1. Provide a single PDF Universal Printer created in each session.
2. Use the UPD for regular auto-created printers.

Provide a single PDF Universal Printer created in each session

To enable creation of the **PDF Universal Printer** in sessions from a Mac client or any other PDF enabled client endpoint, go to Citrix Studio or the web console and enable the **Auto-Create PDF universal printer** policy.

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Once the policy is enabled, the PDF universal printer is created in the session. The printer is called **Citrix PDF Printer**.

Using this printer in a session generates a PDF output that's delivered to the client and handed to the default PDF handling application on the endpoint. For the macOS client, this is typically the built-in **Preview** application, but it could be any registered PDF handling application such as Adobe Acrobat Reader.

Use the UPD for regular auto-created printers

To enable PDF universal printing for all redirected client printers in a session from a Mac client, visit Citrix Studio or a web console and configure the Universal print driver priority policy to place the PDF metafile format in before PS within the priority list.

After you make this change, auto-created printers that use a universal driver with a PDF-capable Mac client uses the Citrix PDF Universal Driver instead of the HP Color LaserJet 2800 Series PS driver on the host.
When using one of the auto-created printers in a session, PDF is used as the intermediate format of the print job; but the print output flows directly to the selected client-attached printer.

Mobile Device Management (MDM)

August 31, 2023

Citrix Workspace app now supports Mobile Device Management (MDM) that allows the administrators to configure, secure, and support Citrix Workspace app for Mac by enforcing policies through any MDM tool.

Settings supported on MDM

Setting	Description	Key	Value	Value type	Default Value	Supported release
Show/Hide menu bar	Shows or hides Citrix Workspace menu on the Mac menu bar.	ShowHelperI	true/false	Boolean	True	2208.1

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Setting	Description	Key	Value	Value type	Default Value	Supported release
Auto start of Citrix Workspace App	Controls Citrix Workspace app for Mac to start automatically whenever a computer is turned on by an end user.	AutoLaunchApp	true/false	Boolean	True	2304
Pre-configuration of Store URL	Allows administrators to preconfigure and add the store details to the Workspace app so that the end users don't have to do it.	StoreURLs	<Store URL>	String	NA	2210
Block new Store addition by end-user	Prevents the end user from adding a store in the Workspace app on their endpoint devices.	BlockStoreAddition	true/false	Boolean	False	2210

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Setting	Description	Key	Value	Value type	Default Value	Supported release
Auto update – AutoUpdat-eState	Updates Citrix Workspace app to the latest version without any user inter-vention automati-cally.	AutoUpdateS	Auto/Manual/	String	Auto	2305
Auto update - AutoUpdat-eChannel	Allows administra-tors to ensure whether a Workspace app receives GA updates or Beta updates when the auto-update is enabled.	AutoUpdateChannel	PROD/EAR	String	PROD	2201

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Setting	Description	Key	Value	Value type	Default Value	Supported release
Enable Azure Active Directory	Allows administrators to configure and enforce Azure Active Directory conditional access policies for users authenticating to Citrix Workspace app.	enableAAD	true/false	Boolean	False	2305

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Setting	Description	Key	Value	Value type	Default Value	Supported release
Select browser for FIDO2 web Authentication	Allows administrators to select the type of browser used for authenticating an end user into Citrix Workspace app. For more information about decription of values, see FIDO2 based authentication when connecting to cloud store	WebBrowserFor	SystemSystemWithPrivateSession/EmbeddedWithPrivat	Enable/Enabled	2307	2307
Enable/disab FIDO2 authentication for HDX session	Allows administrators to enable or disable FIDO2 authentication within an HDX session.	Fido2Enablec	true/false	Boolean	true	2307

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Setting	Description	Key	Value	Value type	Default Value	Supported release
Quick access menu for storefront	Allows administrators to enable or disable Quick access menu for On-prem stores.	ShowQuickAccessForStoreFront	true/false	Boolean	false	2307

Schema for reference

```
<array>
            <dict>
             <key>ShowHelperInMenuBar</key>
             <true/>
             <key>AutoLaunchAppOnRestart</key>
             <true/>
             <key>StoreURLs</key>
             <array>
               <string>PROVIDE STORE URL HERE</string>
             </array>
             <key>BlockStoreAddition</key>
             <false/>
             <key>CEIPEnabled</key>
             <true/>
             <key>AutoUpdateState</key>
             <string>Enable</string>
             <key>AutoUpdateChannel</key>
             <string>PROD</string>
             <key>PayloadDisplayName</key>
             <string>Citrix Workspace</string>
             <key>PayloadIdentifier</key>
             <string>com.citrix.receiver.nomas</string>
             <key>PayloadType</key>
             <string>com.citrix.receiver.nomas</string>
             <key>PayloadUUID</key>
             <string>3BE38AD3-7D95-423F-BD7B-8A4D1F5208EF</string>
             <key>PayloadVersion</key>
             <integer>1</integer>
```

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```
                <key>WebBrowserForAuthentication</key>
                <string>System</string>
                <key>Fido2Enabled</key>
                <false/>
                <key>ShowQuickAccessForStoreFront</key>
                <true/>
              </dict>
</array>

<!--NeedCopy-->
```

Authenticate

August 10, 2023

Smart card

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

- Smart card authentication to Workspace for Web or StoreFront 3.12 and later.
- Citrix Virtual Apps and Desktops 7 2203 and later.
- XenApp and XenDesktop 7.15 and later.
- Smart card-enabled applications, such as Microsoft Outlook and Microsoft Office that 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.

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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.

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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.

Conditional Access with Azure Active Directory

This authentication method is currently not supported on Citrix Workspace app for Mac.

User-Agent

Citrix Workspace app sends a user agent in network requests that can be used to configure authentication policies including redirection of authentication to other Identity Providers (IdPs).

> **Note:**
>
> Don't mention the version numbers while configuring the policies.

Scenario	User-Agent
Regular HTTP Requests – In general, a network request made by Citrix Workspace app contains a general User-Agent. For example, network requests like: GET /Citrix/Roaming/Accounts and GET / AGServices/discover contains the User-Agent:	CitrixReceiver/23.05.0.36 MacOSX/13.4.0 com.citrix.receiver.nomas X1Class CWACapable
Cloud Store – When a user adds a cloud store to Citrix Workspace app, network requests are made which has a specific User-Agent. For example, network requests with path /core/connect/authorize. The User-Agent sent by Citrix Workspace app is:	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/605.1.15 (KHTML, like Gecko) Citrix Workspace/23.05.0.36 MacOSX/13.4.0 com.citrix.receiver.nomas X1Class CWACapable

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Scenario	User-Agent
OnPrem Store with Gateway Advanced Auth – When a user adds an on-premises store with Advanced Auth configured on Gateway to Citrix Workspace app, network requests are made which has a specific User-Agent. For example, network requests with requests containing: GET /nf/auth/doWebview.do and GET /logon/LogonPoint/tmindex.html. The User-Agent sent by Citrix Workspace app is:	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/605.1.15 (KHTML, like Gecko), CWAWEBVIEW/23.05.0.36
Custom Web Store – When a user adds a custom web store to Citrix Workspace app, the User-Agent sent by Citrix Workspace app is:	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/605.1.15 (KHTML, like Gecko) Safari CWA/23.05.0.18 MacOSX/13.4.0

Secure communications

September 1, 2023

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 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 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 use a firewall that maps the server's internal IP address to an external internet address such as network address translation (NAT), configure the external address.

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> **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

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 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.

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When the Citrix Workspace app for Mac communicates with the Web server, it uses the proxy server settings 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.

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)

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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:

		Direct connections								
		TLS			DTLS v1.0			DTLS v1.2		
Client cipher set	VDA cipher set	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		

		External connections with Citrix Gateway								
		TLS			DTLS v1.0			DTLS v1.2		
Client cipher set	VDA cipher set	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		

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> **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 doesn't support DTLS 1.2. So, `TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384` and `TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384` aren't 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 Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service) 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.

Install the root certificate on each device, depending on your organization's policies and procedures, instead of prompting 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 action 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 used by TLS-enabled clients and by any other application using TLS.

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About TLS policies

This section provides information for configuring security policies for ICA sessions over TLS. 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 are managed in other ways - by devices controlled by an 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. 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. 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 the handling of a trusted root certificate authority (CA) while opening 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 admins to revoke security certificates (invalidated before their expiry date) if there is cryptographic compromise of certificate private keys, or unexpected changes in the DNS name.

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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 isn't 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 certificate authority. 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 earlier.

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

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<value>: The value for the setting. If the value is an array and multiple values need to be specified, separate the values with 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

Security improvements and enhancements were introduced with Citrix Receiver for Mac version 12.3, including the following:

- 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. This improvement improves the user experience while creating a seamless method for the adoption of security-related preferences.
- view TLS connections. You can verify connections that use a specific TLS version, encryption algorithms, 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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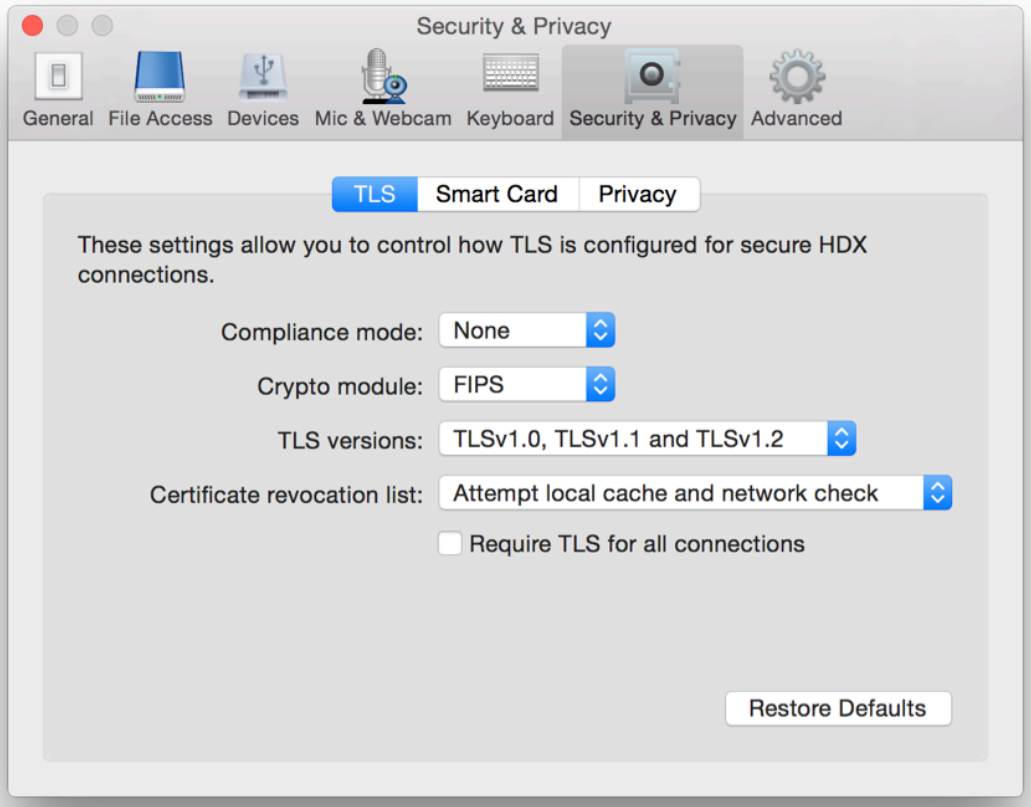

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