

Citrix Workspace app for Windows

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About this release

September 18, 2023

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

Note:

Looking for features in Technical Preview? We have curated a list so that you can find them in one place. Explore our Features in Technical Preview page and share your feedback using the attached Podio form link.

What's new in 2307.1

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

Fixed issues in 2307.1

• In Microsoft Teams, while you share screen or app and resize it, the aspect ratios displayed might not be correct on the recipient's (other meeting participants) side. This issue also occurs when you share screen or apps that are ordered using **Snap Windows** feature option. [HDX-54395]

Known issues in 2307.1

There are no new known issues in this release.

Note:

For a complete list of issues in the earlier releases, see Known issues.

Earlier releases

This section provides information about the new features and fixed issues in the previous releases that we support as per the Lifecycle Milestones for Citrix Workspace app.

2307

What's new

Added support for playing short tones in optimized Microsoft Teams

Earlier, with the secondary ringtone feature enabled, short tones such as beeps or notifications were playing repeatedly. For example, the tone that was played when a guest joins the Microsoft Teams

meeting was repeated. The only workaround was to quit and restart Microsoft Teams. This issue resulted in a poor end-user experience.

With this release, Citrix Workspace app supports playing the short tones as desired. This support also enables the secondary ringtone feature.

Prerequisites:

Update to the latest version of Microsoft Teams.

Note:

The preceding feature is available only after the roll-out of a corresponding update from Microsoft Teams. Check the documentation update and the announcement in CTX253754.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 112.1.1.24, based on Chromium version 112. For more information about the Citrix Enterprise Browser, see the Citrix Enterprise Browser documentation.

Citrix Enterprise Browser shortcut

Starting with the Citrix Workspace app for Windows 2307 version, an administrator can configure and control the presence of the Citrix Enterprise Browser shortcut on the **Start** menu.

Note:

By default, this setting is enabled for Workspace stores.

Configuration

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

- Group Policy Object (GPO)
- Global App Configuration Service (GACS)
- web.config.file.

Notes:

- 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 the following settings in any one of the following:
 - set the **CEBShortcutEnabled** attribute to **false** in the web.config file.
 - disable the **Enable Citrix Enterprise Browser shortcut** property in GPO and GACS.

Using Group Policy Object

Administrators can use the **Enable Citrix Enterprise Browser shortcut** property to control the display of the Citrix Enterprise Browser shortcut on the Start menu.

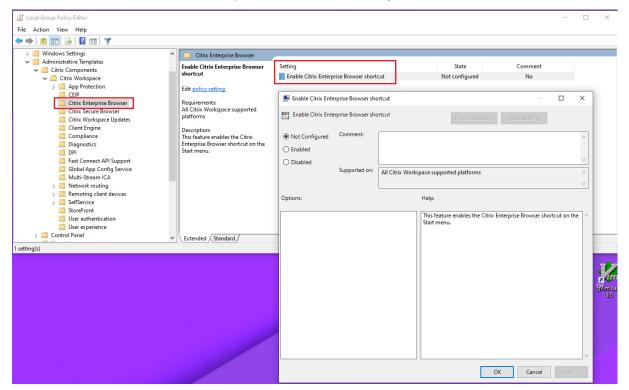
Note:

Configuration through GPO is applicable on Workspace and StoreFront.

To enable the Citrix Enterprise Browser shortcut, do the following:

- Open the Citrix Workspace app Group Policy Object administrative template by running gpedit

 msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Citrix Enterprise Browser.
- 3. Select the **Enable Citrix Enterprise Browser** shortcut option.



For more information on how to use the GPO, see Group Policy Object administrative template page.

Global App Configuration service (GACS)

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

For more information on 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.

Note:

Configuration through web.config is applicable on StoreFront.

Using web.config:

To enable the 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:

Following is an example of the web.config file:

```
1 <account>
```

```
2
3
         <clear />
4
              <account id="d1197d2c-ac82-4f13-9346-2ee14d4b0202" name="</pre>
5
                 F84Store"
6
              description="" published="true" updaterType="Citrix"
7
                  remoteAccessType="None">
8
             <annotatedServices>
         <clear />
9
10
         <annotatedServiceRecord serviceRef="1__Citrix_F84Store">
11
                <metadata>
12
                        <plugins>
13
                             <clear />
                         </plugins>
14
                 <trustSettings>
15
16
                             <clear />
                  </trustSettings>
17
18
                  properties>
                             cproperty name="CEBShortcutEnabled" value="True
19
                                 " />
20
                   </properties>
                </metadata>
21
22
           </annotatedServiceRecord>
23
   </annotatedServices>
24
   <metadata>
25
              <plugins>
                      <clear />
26
27
              </plugins>
             <trustSettings>
28
                          <clear />
29
             </trustSettings>
             properties>
32
                    <clear />
33
             </properties>
34
         </metadata>
   </account>
37 <!--NeedCopy-->
```

Fixed issues

• On Citrix Workspace app for Windows version 2212 and later, the first launch of the anti-screen capture enabled virtual desktop in a custom web store is not protected in the following case:

If you haven't selected the **Start App Protection after installation** checkbox, and launch the virtual desktop. The desktop is protected from the subsequent launches. [CVADHELP-23189]

- Citrix Workspace app sessions might get disconnected due to a possible failure in wfica32.exe.
 This issue occurs rarely and you might get an error message with event ID 1000. [CVADHELP-23341]
- When you access Linux VDA from the Citrix Workspace app for Windows version 2303 or later, the Wfica32.exe might fail. This issue occurs when the session is left opened for a long time. [CVADHELP-23037]
- If you use the Citrix Workspace app version 2305.1 or earlier to personalize the app as per your organization, the brand personalization might not be reflected. This issue occurs due to certificate update in Citrix Workspace app done recently. [RFWIN-30798]

2305.1

What's new

Improved virtual apps and desktops launch experience

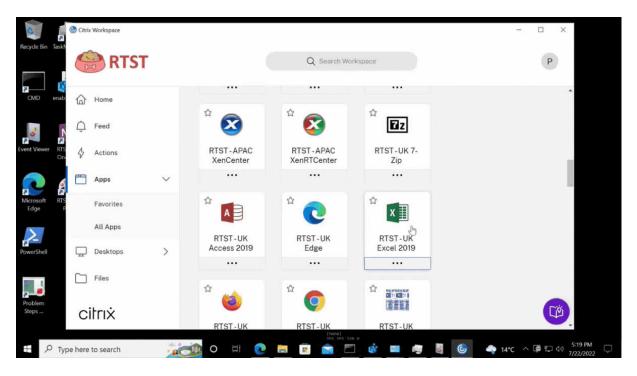
Note:

This feature is generally available for cloud stores and it is in technical preview for on-premises stores.

Previously, the launch progress dialog box wasn't intuitive to the users. It made the users assume that the launch process is not responding and they closed the dialog box, as the notification messages were static.



The improved app and desktop launch experience is more informative, modern, and provides a user-friendly experience on Citrix Workspace app for Windows. This feature helps to keep the users engaged with timely and relevant information about the launch status. The notification appears in the bottom-right corner of your screen.



Users can view meaningful notifications about the launch progress, instead of just a spinner. If a launch is in progress and the user attempts to close the browser, a warning message is shown.

Starting with Citrix Workspace app for Windows 2305.1, this feature is enabled by default in cloud sessions.

You can enable this feature using the registry key for the StoreFront (on-premises) session. For more information, see Improved virtual apps and desktops launch experience.

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.

You can provide feedback on this feature via the Podio.

Tracking Storebrowse command status

You can track the execution status of a Storebrowse command in a file. To track the success status, provide a unique file name with the -f launch command. This command generates a file with the name that you have provided. The failure status is present in the ica.error file, which is created automatically.

Note:

Ensure that you add an .ica extension to the file name with -f launch command. Otherwise, the file isn't generated.

The files to track both success and failure are present at %LOCALAPPDATA%\citrix\selfservice \cache and you can monitor these files as needed.

This enhancement is enabled by default.

Following is an example to use the launch command with -f option:

Support for modern authentication methods for StoreFront stores

Citrix Workspace app 2305.1 for Windows support modern authentication methods for StoreFront stores. You can authenticate to Citrix StoreFront stores using any of the following ways:

- Using Windows Hello and FIDO2 security keys. For more information, see Other ways to authenticate.
- Single sign-on to Citrix StoreFront stores from Azure Active Directory (AAD) joined machines with AAD as the identity provider. For more information, see Other ways to authenticate.
- Workspace administrators can configure and enforce Azure Active Directory conditional access
 policies for users authenticating to Citrix StoreFront stores. For more information, see Support
 for Conditional access with Azure AD.

To enable this feature, you must use Microsoft Edge WebView2 as the underlying browser for direct StoreFront and gateway authentication.

Note:

Ensure that the Microsoft Edge WebView2 Runtime version is 102 or later.

You can enable modern authentication methods for StoreFront stores using Global App Config service and Group Policy Object (GPO) template. For more information, see Support for modern authentication methods for StoreFront stores section.

Support for more than 200 groups in Azure AD

With this release, an Azure AD user who is part of more than 200 groups can view apps and desktops assigned to the user. Previously, the same user wasn't able to view these apps and desktops.

Note:

Users must sign out from Citrix Workspace app and sign in back to enable this feature.

App Protection

Enhancement on anti-keylogging

With this enhancement, anti-keylogging is enabled on the authentication and self-service plug-in (SSP) screens if one of the following criteria is met:

- You have enabled App Protection using one of the following:
 - Select the **Start App Protection** checkbox during installation.
 - Start the App Protection component using the /startappprotection command line parameter.
- If you haven't selected the **Start App Protection** checkbox or used the /startappprotection command line parameter during the installation, then the anti-keylogging protection is enabled after launching the first protected resource.

Note:

The Global App Configuration service (GACS) and Group policy objects (GPO) settings override the preceding behavior. For example, if you've disabled the GACS or GPO policy for these screens, the anti-keylogging is not enabled on the authentication and SSP screens.

Important update on file names

In a future release for Citrix Workspace app for Windows, the following file names will be updated:

- EntryProtect.dll
- · entryprotect.sys
- epclient32.dll
- epclient64.dll
- · epinject.sys
- · epusbfilter.sys
- entryprotectdrv
- epinject6

These files are installed at %ProgramFiles(x86)%\Citrix\ICA Client\.

If you've added any of these file names to the allow list in your environment, update the allow list when the new file names are announced.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 105.1.1.27, based on Chromium version 105. For more information about the Citrix Enterprise Browser, see the Citrix Enterprise Browser documentation.

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

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.

Use Global App Config service 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 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 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 an 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 uses 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:

```
1 {
2
3    "category": "browser",
4    "userOverride": false,
5    "assignedTo": [
6    "AllUsersNoAuthentication"
7    ]
8 }
9
10
11 <!--NeedCopy-->
```

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

User interface

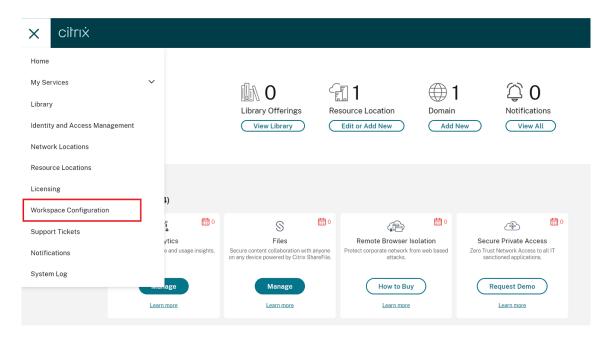
To configure Citrix Enterprise Browser through the GACS Admin UI, do the following:

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**.



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

Sustainability initiative from Citrix Workspace app

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

Fixed issues

- You might get the following error message when the AllowAddStore parameter is set to N value and an HTTP store is added using the Group Policy Object (GPO) or command line interface:
 - "Unable to connect to the server" [CVADHELP-22184]
- When you use the Workspace Environment Management (WEM) transformer with desktops, instead of automatically opening the desktop, you might be asked to download, run, and open the ICA file. This issue occurs with Citrix Workspace app versions 2209, 2212, and 2302. [CVADHELP-22318]
- The icons created on the desktop might be enabled even after setting the value of PutShortcutsOnDesktop to False under the registry key HKEY_LOCAL_MACHINE\ SOFTWARE\Policies\Citrix\Dazzle\. [CVADHELP-15550]

- You might not be able to use Pega Robot Studio, a third party app, even if you don't have any
 protected apps or desktops opened. This issue occurs when Citrix Workspace app is installed
 with App Protection enabled. [CVADHELP-21146]
- If the Windows 10 OS is installed in a language other than English, Citrix Workspace app might fail to access the local apps of the OS. [CVADHELP-21986]
- When Citrix Workspace app that is opened on a published desktop freezes, the published apps running on the published desktop might fail to start. The issue occurs when there is a deadlock within the receiver.exe file. [CVADHELP-21604]
- When you sign in to the Citrix Workspace app, apps and desktops corresponding to multiple accounts configured through GPO or command line might not be displayed. This issue occurs when the registry key value of CurrentAccount is set to AllAccount at 'Computer\HKLM\Software\wow6432Node\Citrix\Dazzle' [CVADHELP-21124]
- You might not be able to take screenshots using the Print Screen key (PrtSc) when there are no
 protected apps on screen. This issue occurs when App Protection is enabled for self-service on
 Citrix Workspace app. [CVADHELP-21979]
- For cloud stores, you might fail to add an account using redirect URLs. [CVADHELP-22438]
- After upgrading to Citrix Workspace app for Windows 2203 LTSR, you might see a white screen.
 This issue occurs when you add and configure a store for the first time and simultaneously refresh and open the SelfService UI. [CVADHELP-22696]
- Sometimes, you might fail to start a virtual desktop from Citrix Workspace app version 2305.
 You might also notice that the session quits silently, the session disconnects with a gray screen, or the session fails with an error message: 'SSL Error 27: No local security certificates could be loaded.' [CVADHELP-23095]
- When you install either Citrix Workspace app for Windows 2212, 2202, or 2303 version with App Protection enabled, the installation might fail intermittently with the following error message:
 - "Service '@C:\Program Files (x86)\Citrix\ICA Client esources.dll, -104' (appprotectionsvc) could not be installed. Verify that you have sufficient privileges to install system services."

[CVADHELP-21995]

- The Citrix Workspace app might stop responding if you have any mouse interaction (mouse action or movements) on the **Restore session** dialog box. This issue occurs when you start a session after upgrading from the Citrix Workspace app version 2302 to 2303 and if there are disconnected sessions previously. [RFWIN-29663]
- You might notice that the HTTP requests during auto-update are sent to the Content Delivery Network (CDN) even when a proxy is configured using the proxy auto-configuration (PAC) file. [RFWIN-29203]

- When the Microsoft Edge WebView for StoreFront authentication policy is enabled and if the sign-in needs HTTP authentication (basic or proxy), instead of asking for user credentials, the Edge WebView browser authentication window might close. [RFWIN-30061]
- You might not be able to see the name of an opened virtual desktop on the connecting screen in the Desktop Viewer when the desktop is opened in full screen. [RFWIN-29875]
- An extra entry for Citrix Workspace without the default Citrix Workspace app icon appears on the Windows 11 control panel. [APPP-1263]
- The names in the Properties of Network Connections (in the control panel) might be corrupted when Citrix Workspace app is installed with App Protection enabled. [APPP-1242]

2303

What's new

Configure path for Browser Content Redirection overlay Browser temp data storage

Starting with Citrix Workspace app 2303 version, you are requested to configure temp data storage path for Chromium Embedded Framework (CEF) based browser.

For more information, see Configure path for Browser Content Redirection overlay Browser temp data storage.

Support for modern authentication methods for StoreFront stores

Citrix Workspace app 2303 for Windows support modern authentication methods for StoreFront stores. You can authenticate to Citrix StoreFront stores using any of the following ways:

- Using Windows Hello and FIDO2 security keys. For more information, see Other ways to authenticate.
- Single sign-on to Citrix StoreFront stores from Azure Active Directory (AAD) joined machines with AAD as the identity provider. For more information, see Other ways to authenticate.
- Workspace administrators can configure and enforce Azure Active Directory conditional access
 policies for users authenticating to Citrix StoreFront stores. For more information, see Support
 for Conditional access with Azure AD.

To enable this feature, you must use Microsoft Edge WebView2 as the underlying browser for direct StoreFront and gateway authentication.

Note:

Ensure that the Microsoft Edge WebView2 Runtime version is 102 or later.

You can enable modern authentication methods for StoreFront stores using the GPO template. For more information, see Support for modern authentication methods for StoreFront stores section.

Improved experience for optimized Microsoft Teams video conference calls

Starting with this 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.

Enhancement to App Protection: Anti-DLL Injection

As part of App Protection, we now have a security enhancement that helps to protect the Citrix Workspace app from certain unauthorized dynamic-link libraries (DLL) or untrusted modules. If such untrusted modules are injected, the Citrix Workspace app detects these interventions and stops the modules from loading.

The anti-DLL injection can be enabled for the following components:

- Citrix Auth Manager
- Citrix Workspace app UI
- Citrix Virtual Apps and Desktops

For more information, see the App Protection documentation.

Disclaimer:

This capability works by filtering access to required functions of the underlying operating system (specific API calls required to load DLLs). Doing so means that it can provide protection even against certain custom and purpose-built hacker tools. However, as operating systems evolve, new ways of loading DLLs can emerge. While we continue to identify and address them, we cannot guarantee full protection in specific configurations and deployments.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 109.1.1.29, based on Chromium version 109.

For more information about the Citrix Enterprise Browser, see the Citrix Enterprise Browser documentation.

Secure Private Access support for StoreFront

As an administrator, you can now configure Web and SaaS apps in StoreFront using a Secure Private Access solution. After the administrator configures the app, end users can open the Web and SaaS apps using Citrix Enterprise Browser with enhanced security.

For more information, see Secure Private Access for on-premises in the Citrix Secure Private Access documentation.

Technical Preview

• Client App Management for WebEx plug-in

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

Fixed issues

- The published URLs open through the Citrix Enterprise Browser instead of the device's default browser. [CTXBR-4718]
- You might experience delay in enumerating apps and starting apps or desktops when using SSON in an environment that has no active access to external sites. This issue occurs from the Citrix Workspace app version 2210.5 onwards and from the Citrix Workspace app version 2203 CU2 onwards. [CVADHELP-21786]
- The wfica32.exe process might stop unexpectedly and get an error when you open an app from the Citrix Workspace. This issue occurs only when you have the adaptive audio feature enabled. [CVADHELP-20999]
- When you install Citrix Workspace app 2212 on remote machines using a PowerShell script, the Citrix Workspace app installer might stop. This issue occurs before the installation begins on the remote machine. [CVADHELP-22278]
- When you attempt to configure multiple stores through a Group Policy Object (GPO) or command line, one of the stores might not be fully configured. [CVADHELP-22034]
- The screen might display the authentication pop-up window on the upper left corner instead of displaying on the center. [CVADHELP-21835]
- After a store is added with the store authentication token set to true, Citrix Workspace might become unresponsive at the white screen and the store authentication token is set to false.
 [CVADHELP-21582]

- Attempts to access Citrix Workspace app for Windows might fail when the VPN disconnects or reconnects. [CVADHELP-21662]
- When you share a screen using Microsoft Teams from the HP EliteBook G6 endpoints, you might see a red window instead of a red border. [CVADHELP-20763]
- You might not be able to use the Bloomberg Terminal application with the Bloomberg Keyboard
 5 or Bloomberg Keyboard 2013. This issue occurs when Citrix Workspace app version 2302 is installed on your system with the App Protection feature enabled. [CVADHELP-22221]
- A published application might open in a non-visible state when you start the application. [CVADHELP-21618]
- The msedgewebview2.exe' process can cause high CPU usage when selfservice is running.
 [CVADHELP-21610]
- There might be delay in adding a store due to certificate revocation check requests for the store's certificate. As a workaround, you can skip checking certificate revocation using the following registry:

Path: HKLM/Software/wow6432node/Citrix/Receiver

Name: SkipStoreCertificateRevocationCheck

Type: DWORD

Value: 1

or

Path: HKCU/Software/Citrix/Receiver

Name: Skip Store Certificate Revocation Check

Type: DWORD

Value: 1

[CVADHELP-21931]

- The position of the window and size might not be persistent when you reconnect the desktop. This issue occurs when the desktop is in a window mode and using a non-primary monitor. [HDX-44997]
- Desktop Viewer toolbar might cover the screen when the desktop is in normal resolution and DPI. [HDX-45206]
- In a multi-session scenario, when you open a second session, the session might be hidden behind the first session. Also, the Citrix Workspace app icon for the second session might not be present on the taskbar. [RFWIN-29773]

2302

What's new

Improved virtual apps and desktops reconnection experience

This release provides an enhanced user experience while reconnecting to virtual apps and desktops from which you got disconnected.

When Citrix Workspace app attempts to refresh the disconnected Citrix Workspace app or start new virtual apps or desktops as a part of the Workspace Control feature, the following prompt appears:

Restore session?

You have one or more apps/desktops running from the previous session in Citrix Workspace app. Would you like to restore them?

Remember my preference



This prompt appears only when the **show reconnection prompt to reconnect sessions** is set to true in the Global App Configuration service.

Click **Restore** to reconnect to open new and disconnected virtual apps and desktops. If you want to start only newly selected apps and desktops, click **Cancel**.

You can also select **Remember my preference** to apply the selected preference for the next login.

The preceding new **Restore session?** prompt appears only if:

- the user tries to start an app belonging to a workspace store,
- admin policies or app config settings are not configured for the Workspace Control feature,
- Workspace Control Reconnect options are set to default on the client.

Note:

Reconnect settings in the **Reconnect Options** takes precedence over the preferences set in the dialog box. For more information, see Configure reconnect options using Advanced Preferences

dialog.

Client App Management for Zoom plug-in

You can now manage the Zoom plug-in using Client App Management capability.

For more information, see Client App Management for Zoom plug-in.

Support for modern authentication methods for StoreFront stores [Technical Preview]

Starting with this release, Citrix Workspace app for Windows support modern authentication methods for StoreFront stores. You can authenticate to Citrix StoreFront stores using any of the following ways:

- Using Windows Hello and FIDO2 security keys. For more information, see Other ways to authenticate.
- Single sign-on to Citrix StoreFront stores from Azure Active Directory (AAD) joined machines with AAD as the identity provider. For more information, see Other ways to authenticate.
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 policies for users authenticating to Citrix StoreFront stores. For more information, see Support
 for Conditional access with Azure AD.

To enable this feature, you must use Microsoft Edge WebView2 as the underlying browser for direct StoreFront and gateway authentication.

Note:

Ensure that the Microsoft Edge WebView2 Runtime version is 102 or later.

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Note:

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You can provide feedback on this feature via the Podio form.

Updated audio device selection behavior for optimized Microsoft Teams

Starting with this release, when you change the default audio devices in the sound settings on the endpoint, the optimized Microsoft Teams in the Citrix VDI changes the current audio devices selection to match the endpoint defaults.

However, if you make an explicit device selection in Microsoft Teams, your selection takes precedence and does not follow the endpoint defaults. Your selection is persistent until you clear the Microsoft Teams cache.

App Protection enhancement

Starting with this release, Citrix Workspace app for Windows allows you to configure App Protection for Authentication and Self-Service plug-in using Global App Configuration. Previously, you were able to configure these components only using the Group Policy Object.

If you enable the anti-keylogging and the anti-screen capturing functionality using Global App Configuration service, they are applicable to both Authentication and Self-Service plug-in.

Note:

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 the configure section in the App Protection documentation.

For more information, see App Protection enhancement section.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 108.1.1.97, based on Chromium version 108. For more information about the Citrix Enterprise Browser, see the Citrix Enterprise Browser documentation.

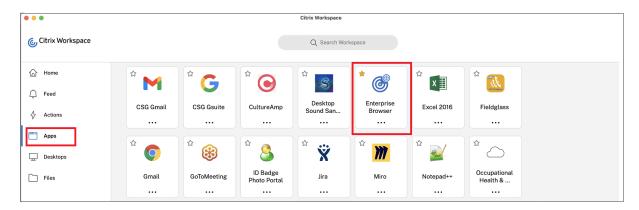
Open all web and SaaS apps through the Citrix Enterprise Browser

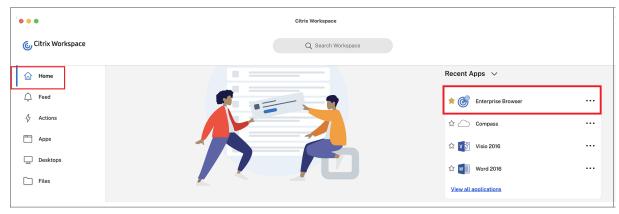
In this release of the Enterprise Browser (in Citrix Workspace app for Windows), all internal web apps and external SaaS apps available in the Citrix Workspace app open in Citrix Enterprise Browser.

Option to start Citrix Enterprise Browser from within Citrix Workspace app

Previously, you can open the Citrix Enterprise Browser from the Citrix Workspace app after opening a web or SaaS app.

Starting with this release, you can open the Citrix Enterprise Browser directly from the Citrix Workspace app without requiring you to open a web or SaaS app. This feature provides easy access to the Citrix Enterprise Browser and doesn't require any configurations from administrators. This feature is available by default.





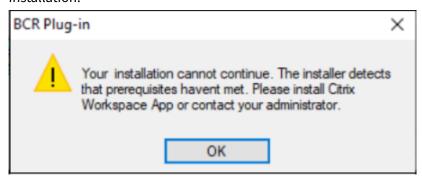
Note:

The end user must have entitlements to at least one web or SaaS app through Secure Private Access.

Fixed issues

- Some SaaS apps which have enhanced security set to OFF fail to open in Citrix Enterprise Browser if Citrix Enterprise Browser is the default browser. [CTXBR-4106] [CTXBR-4405]
- Attempts to start apps or desktops from custom web stores might fail when using Microsoft Edge WebView2 Runtime version 109 and later. [RFWIN-29200].
- You might fail to add a hidden store to the Citrix Workspace app. This issue occurs when you try to add Citrix Gateway FQDN that requires smartcard authentication or when the StoreFront store name has spaces, for example, https://servername.company.com?Store Service. [CVADHELP-21516]
- The inactivity timeout value might not expire if you exit from the Citrix Workspace app before
 reaching the set time out value. As a result, you might later be able to start Citrix Workspace
 app without entering any credentials. [CVADHELP-20912]
- You might fail to see the authentication pop-up page automatically after installing the Citrix Workspace app. [CVADHELP-20593]

- On a multi-monitor setup, the application windows move to a different monitor whenever the user disconnects and reconnects to the session. [HDX-45043]
- With certain older AMD GPU series, purple video content or flashing screens might be seen with Citrix Workspace app 2206 or newer. [HDX-46264]
- Unable to repair BCRClient.msi and the following error appears during the Citrix Workspace app installation:



[HDX-46964]

2212

What's new

Note:

From this release onward, ensure that Microsoft Edge WebView2 Runtime version is 102 or later. For more information, see System requirements and compatibility.

Client App Management

Citrix Workspace app 2212 for Windows 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 Secure Access Agent and End Point Analysis (EPA) plug-in.

With this capability, administrators can easily deploy and manage required agents from a single management console.

For more information, see Client App Management.

Client App Management for Zoom plug-in [Technical Preview]

Starting from Citrix Workspace app 2212 for Windows, you can now manage Zoom plug-in using Client App Management capability.

For more information, see Client App Management.

You can record your feedback 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.

Auto-update version control

Administrators can now manage the auto-update version for the devices in the organization.

Administrators can control the version by setting the version in the maximumAllowedVersion property in the Global App Config Service.

Example JSON file in Global App Config Service:

```
1 {
2
3
     "category": "AutoUpdate",
4
     "userOverride": false,
5
     "assignedTo": [
       "AllUsersNoAuthentication"
6
7
     ],
     "settings": [
8
9
       {
11
         "name": "Auto Update plugins settings",
         "value": [
12
            {
13
14
              "pluginSettings": {
15
16
                "upgradeToLatest": false,
17
                "deploymentMode": "InstallAndUpdate",
18
                "stream": "Current",
19
                "maximumAllowedVersion": "23.03.0.49",
20
                "minimumAllowedVersion": "0.0.0.0",
21
                "delayGroup": "Fast"
22
23
               }
24
              "pluginName": "WorkspaceApp",
25
              "pluginId": "1CDF566D-B2C7-47CA-802F-6283C862E1D6"
26
             }
27
28
```

```
29 ]
30 }
31 
32 ]
33 }
34 
35 
36 <!--NeedCopy-->
```

When the version is set, Citrix Workspace app on the user's device is automatically updated to the version specified in the maximumAllowedVersion property.

Notes:

- Currently all the parameters mentioned in the preceding JSON file are mandatory. You
 must provide values for upgradeToLatest setting and the maximumAllowedVersion
 setting based on the requirement of your organization. However, for the remaining parameters, you can use values similiar to the example JSON file.
- To achieve auto-update version control, upgradeToLatest setting in the Global App Config Service must be set to false. If this setting is true, maximumAllowedVersion is ignored.
- Do not modify the pluginId as this ID 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.

Force login prompt for Federated identity provider

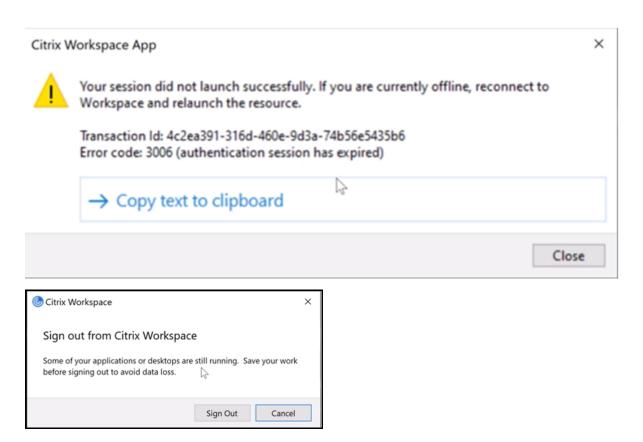
Citrix Workspace app now honors Federated Identity Provider Sessions setting. For more information, see Knowledge Center article CTX253779.

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

Improved reconnect experience after connection lease file expiry

Previously, there was no notification to the end user when the connection lease file and authentication token expired.

Starting from this release, you are prompted with an error message and a consent dialog box. The consent dialog box appears only when you have resources running in the session. If there are no resources running, only error dialog box appears. You are signed out without being prompted with the consent dialog box.



You can click **Sign Out** to sign out from the current Citrix Workspace app session or click **Cancel** to continue with the session.

Note:

Save your data before clicking **Sign Out**.

Enhancement to App Protection: Anti-DLL Injection [Technical Preview]

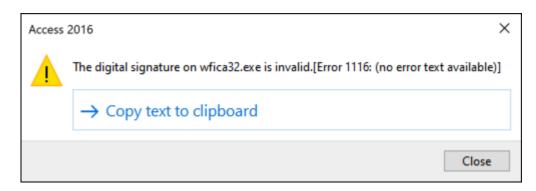
As part of App Protection, we now have a security enhancement that helps protect the Citrix Workspace app from certain unauthorized dynamic-link libraries (DLL) or untrusted modules. If such untrusted modules are injected, the Citrix Workspace app detects these interventions and stops the modules from loading.

Previously, this technical preview feature was applicable only for protected virtual apps and desktops. With this release, we have enhanced its scope to now include:

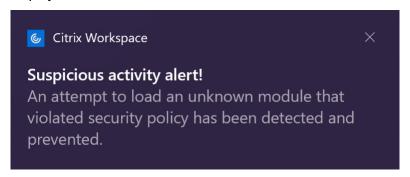
- all virtual apps and desktop sessions
- the Citrix Workspace app authentication window (on-premises deployment/StoreFront)

Additionally, this enhancement now:

• exits the session immediately when certain untrusted or malicious DLLs exist on the protected component



• displays a notification when an untrusted or malicious DLL is blocked.



Disclaimer:

This capability works by filtering access to required functions of the underlying operating system (specific API calls required to load DLLs). Doing so means that it can provide protection even against certain custom and purpose-built hacker tools. However, as operating systems evolve, new ways of loading DLLs can emerge. While we continue to identify and address them, we cannot guarantee full protection in specific configurations and deployments.

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.

Support for default installation of App Protection

App Protection component is now installed by default during the Citrix Workspace app installation.

The Enable app protection check box that appears during the installation is replaced with Start App Protection after installation.



When you select this check box, App Protection starts immediately after the installation.

Note:

If you do not enable this check box, App Protection automatically starts upon the first start of a protected resource or component for customers who have entitled to App Protection.

You can also start the App Protection component using the /startappprotection command line parameter. However, the previous /includeappprotection switch is deprecated.

Note:

Previously, anti-screen capture and anti-keylogging capabilities were enforced by default for Citrix authentication and Citrix Workspace app screens. However, starting from 2212, these capabilities are disabled by default and need to be configured using the Group Policy Object. For information on the GPO configuration, see Enhancement to App Protection configuration.

App Protection enhancement: Screen capture detection and notification

Starting from this release, you can view a notification when a possible attempt of screen capture is made on any protected resources. For information on the resources protected by App Protection, see What does App Protection protect?.

The notification appears when there is an:

- attempt to take a screenshot or record video through a screen-capturing tool.
- attempt to take a screenshot through the Print Screen key.

Note:

The notification appears only once per running instance of the screen capture tool. The notification appears again if you relaunch the tool and attempt screen capture.

Desktop Viewer optimization

This release optimizes the Desktop Viewer experience by reducing the launch time by 5 seconds. The Desktop Viewer toolbar opens quickly and might display the default Windows session sign-in screen. Administrators can hide this experience by configuring the following registry to introduce some delay in milliseconds:

• Location: HKEY_CURRENT_USER\SOFTWARE\Citrix\XenDesktop\DesktopViewer

Name: ExtendConnectScreenMS

Type: DWORD

• Value: 00000000 (Delay in Milliseconds)

Note:

The registry configuration is optional.

Citrix Enterprise Browser

Note:

From Citrix Workspace app for Windows version 2210, **Open all web and SaaS apps through the Citrix Enterprise Browser** feature is disabled.

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 the 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.

Fixed issues

Citrix Workspace app prompts you to select a certificate even when only one certificate exists.
 This issue occurs while authenticating to the Workspace (cloud) store.
 You can suppress this certificate prompt by adding the following registry:

On 32-bit systems:

- Location: HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle or HKEY_CURRENT_USER\Software\Citrix\Dazzle or HKEY\Citrix\Dazzle or HKEY\Citrix\Dazzle or HKEY\Citrix\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxidox\Oxi
- Name: SuppressCertSelectionPrompt
- Type: StringValue: True

On 64-bit systems

- Name: SuppressCertSelectionPrompt
- Type: StringValue: True

[CVADHELP-20844]

- Attempts to access Citrix Workspace app for Windows might fail when the VPN disconnects or reconnects [CVADHELP-20376]
- Unable to detect End Point Analysis (EPA) while authenticating to the store configured with EPA.
 This issue occurs when you update Citrix Workspace app from the previous version to 2210 or later. [CVADHELP-21387]
- During an optimized Microsoft Teams calls, the endpoint might go into Sleep state. [HDX-44438]
- Citrix Analytics is unable to receive network related metrics from end users. This issue occurs even when these prerequisites are met:
 - App or desktop sessions are in running state for more than 15 minutes using Citrix Workspace app.
 - Store or account used is CAS enabled.

Note:

Network related CAS events are not sent for browser-based launch of apps or desktops. It is sent only when you open app or desktop via web and from the same store that is added via native Citrix Workspace app.

[CVADHELP-21448]

• When you open a published app in seamless mode, other local or seamless apps might appear in the foreground and cover the published app. [CVADHELP-20742, CVADHELP-21277]

2210.5

What's new

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

Client App Management [Technical Preview]

Citrix Workspace app 2210.5 for Windows 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 Secure Access Agent and End Point Analysis (EPA) plug-in.

With this capability, administrators can easily deploy and manage required agents from a single management console.

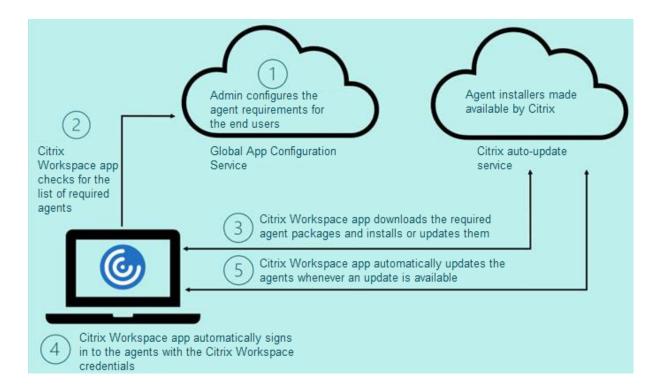
Client App Management includes the following steps:

- Administrators must specify the agents required on end users' devices in the Global App Configuration Service. With this technical preview, administrators can specify Secure Access Agent and 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.

Citrix Workspace app automatically signs in to the agents with the Citrix Workspace credentials.

The following diagram illustrates the workflow:



You can register for this technical preview by using the Podio form. Submit a request and we reach out to you with more details.

Note:

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Enhancement to auto-update

Citrix Workspace app now supports auto-update when Proxy auto-configuration (PAC) and Web Proxy Auto-Discovery Protocol (WPAD) detection is enabled.

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 the Citrix Enterprise Browser documentation.

Fixed issues

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

2210

What's new

Background blurring for webcam redirection

Citrix Workspace app for Windows now supports background blurring for webcam redirection. You can enable this feature by selecting **Preferences** > **Connections** > **Enable background blur** check box.

App Protection enhancements for web and SaaS apps on Windows 11

This App Protection enhancement optimizes the experience and security capabilities for web and SaaS app users on Windows 11. This enhancement is available via the Citrix Enterprise Browser for Secure Private Access customers.

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 2010 for Windows, 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 2210. To enable, administrators must set the following client-side configurations in the HKEY_CURRENT_USER\SOFTWARE\Citrix\HDX

Name	Туре	Mandatory	Accepted Values
EnableSimulcast	Int	YES	1–3 (Set it to 1)
MaxOutgoingResolution	Int	YES	180,240,360,540,720,108 (Microsoft Teams supported Resolutions)

Name	Туре	Mandatory	Accepted Values
MaxIncomingResolutio	Int	YES	180,240,360,540,720,10 (Microsoft Teams supported Resolutions)
MaxIncomingStreams	Int	YES	1-8
MaxSimulcastLayers	Int	YES	1-3 (set it to 1)
MaxVideoFrameRate	Int	NO	1-30
MaxScreenshareFramel	Int	NO	1-15

All keys are DWORDs.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 105.1.1.27, based on Chromium version 105. For more information about the Citrix Enterprise Browser, see the Citrix Enterprise Browser documentation.

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 the 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 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.

Note:

From Citrix Workspace app for Windows version 2210, **Open all web and SaaS apps through the Citrix Enterprise Browser** feature is disabled.

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 CWB 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.
- "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:

```
1 {
2
3    "category": "browser",
4    "userOverride": false,
5    "assignedTo": [
6    "AllUsersNoAuthentication"
7    ]
8 }
9
10
11 <!--NeedCopy-->
```

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

Technical Preview

• Local App Protection

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

Fixed issues

- The High DPI menu under Advanced Preferences is reintroduced.
 - The default new value is **No, use the native resolution**, also known as DPI matching.

When you select this option, Citrix Workspace app attempts to match display resolution and DPI scale settings of the local Windows client to the HDX session automatically. DPI matching is recommended in all cases, especially when high-resolution monitors (above 1920x1080) are in use.

- The Yes option, also known as Client-side scaling or compatibility mode is only recommended for legacy applications that are not DPI-aware and should only be used in special circumstances. This option might introduce some side effects while displaying the legacy apps, like blurry text because of the upscaling or stretching of the HDX session.

It is also a viable option when two monitors with different DPI settings (or mixed DPI) are connected to the local Windows client.

Note:

This option is not compatible with HDX optimization for Microsoft Teams.

- With the third option Let the operating system scale the resolution also known as DPI unaware, Citrix Workspace app for Windows ignores the DPI scale settings on the local Windows client. In this mode, Windows OS need to manage scaling of Workspace app and the HDX session, same as for any other application that is not DPI-aware. This mode is not recommended for use with DPI scales over 100%.

[HDX-43720]

- When you add a disabled store via GPO and a different store from the same StoreFront server via GUI, a loading screen might appear and adding an account might fail. [CVADHELP-20776]
- When you add two stores from the same StoreFront server via GPO, configuring the second store might fail intermittently. [CVADHELP-20655]
- Citrix Workspace app tries to connect to Global App Config server even when the Global App Config Service policy is disabled via GPO. [CVADHELP-20775]
- When using Citrix Workspace app for Windows 2106 or later, Outbound ICA Proxy feature might not work. [CVADHELP-20824]
- For domain users, receiver.exe process might fail unexpectedly. You might see this issue on the Citrix Workspace app for Windows 2206 or later. [CVADHELP-20986]
- In the optimized Microsoft Teams video meeting, call joined with video ON, you might observe
 a call drop. This issue occurs sporadically and when the HdxRtcEngine.exe process fails on the
 client side. [CVADHELP-21095]

2209

What's new

Auto-update version control [Technical Preview]

Administrators can now manage the auto-update version 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:

```
1 {
2
3
     "category": "AutoUpdate",
4
     "userOverride": false,
     "assignedTo": [
5
       "AllUsersNoAuthentication"
6
7
     ],
     "settings": [
8
9
       {
10
          "name": "Auto Update plugins settings",
11
12
          "value": [
13
            {
14
              "pluginSettings": {
15
16
17
                "upgradeToLatest": false,
                "deploymentMode": "InstallAndUpdate",
18
                "stream": "Current",
19
20
                "maximumAllowedVersion": "23.03.0.49",
21
                "minimumAllowedVersion": "0.0.0.0",
                "delayGroup": "Fast"
22
23
               }
24
              "pluginName": "WorkspaceApp",
25
              "pluginId": "1CDF566D-B2C7-47CA-802F-6283C862E1D6"
26
27
             }
28
29
         ]
         }
31
32
     ]
33
    }
34
```

```
35
36 <!--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:

- Currently all the parameters mentioned in the preceding JSON file are mandatory. You must provide values for upgradeToLatest setting and the maximumAllowedVersion setting based on the requirement of your organization. However, for the remaining parameters, you can use values similar to the example JSON file.
- 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 minimumAllowed-Version 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.

To enable this feature:

- 1. Launch the registry editor.
- 2. Navigate to the Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\ Dazzle registry path.
- 3. Create a registry value with the following attributes:
 - Registry key name: Test-EnableAUVersionControl
 - · Type: DWORD
 - Value: 0 is disabled and greater than 0 is enabled
- 4. Restart the Citrix Workspace app for the changes to take effect.

You can provide feedback on this feature via the Podio form.

Note:

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Upgraded version of WebRTC for the optimized Microsoft Teams

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

Supporting auto-update of Citrix Workspace app on VDA

You can now enable auto-update feature on VDA by creating the following registry value:

On 32-bit machine:

Registry Key: HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\AutoUpdate

• Registry Value: AllowAutoUpdateOnVDA

Registry Type: REG_SZRegistry Data: True

On 64-bit machine:

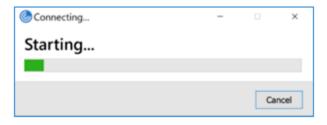
• Registry Key: HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\ICA Client\AutoUpdate

Registry Value: AllowAutoUpdateOnVDA

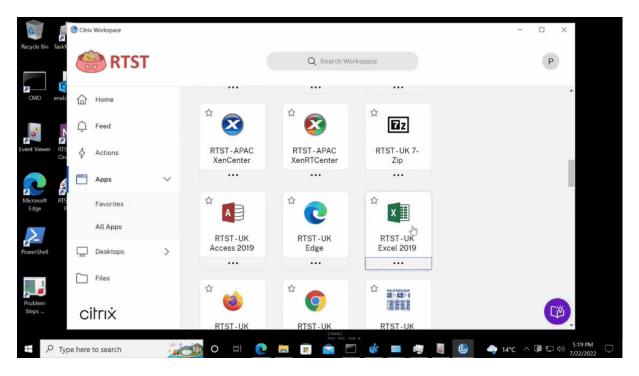
Registry Type: REG_SZRegistry Data: True

Improved virtual apps and desktops launch experience [Technical Preview]

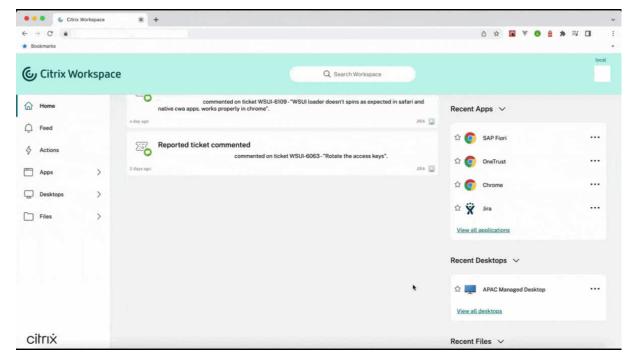
Previously, the launch progress dialog box wasn't intuitive to the users. It made the users assume that the launch process is not responding and they closed the dialog box, as the notification messages were static.



The improved app and desktop launch experience is more informative, modern, and provides a user-friendly experience on Citrix Workspace app for Windows. This helps to keep the users engaged with timely and relevant information about the launch status. The notification appears in the bottom-right corner of your screen.



This feature is also supported on Workspace for Web. Users can view meaningful notifications about the launch progress, instead of just a spinner. If a launch is in progress and the user attempts to close the browser, a warning message is shown.



You can enable this feature using the registry.

- 1. Open the registry editor.
- 2. Navigate to HKLM\SOFTWARE\WOW6432Node\Citrix\Dazzle.

- 3. Create and add a registry string with the name as NewLaunchExpSupport and set its value as True.
- 4. Restart Citrix Workspace app for the changes to take effect.

Note:

This is applicable to Workspace (cloud) sessions only.

Known issues:

- On a multi-monitor setup, the application windows in a desktop session of the Citrix Workspace app move to a different monitor. This issue occurs when you disconnect and reconnect a session.
- This feature is not supported for browser-based launch.

You can provide feedback on this feature via the 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.

Citrix Enterprise Browser (formerly Citrix Workspace Browser)

This release includes Citrix Enterprise Browser version 103.2.1.10, based on Chromium version 103. For more information about the Citrix Enterprise Browser, see the 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 on your Workspace store, a profile is created, allowing you to have a unique and personalized browsing experience.

Note:

After you upgrade to version 103.2.1.10 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.

Technical Preview

Quick Launch of Disconnected Desktops

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

Fixed issues

• With this fix, a sign-in page appears when you sign out from Citrix Workspace app for Windows, specific to on-premises stores.

To enable the fix, set the following registry values:

On 32-bit systems:

- HKEY_LOCAL_MACHINE/Software/Citrix/Dazzle

- Name: ShowSignInPageOnLogOff

Type: REG_SZValue: True

On 64-bit systems:

HKEY_LOCAL_MACHINE/Software/Wow6432Node/Citrix/Dazzle

- Name: ShowSignInPageOnLogOff

Type: REG_SZValue: True

[CVADHELP-19967]

- The Applocker rule in Group Policy Object blocks the integration of the Citrix Gateway
 plug-in with Citrix Workspace. As a result, several temporary files of the format VPNXXXX.tmp are created in the temp folder. The files are created even when the registry
 key, HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\Secure Access Client has DisableIconHide
 value. [CVADHELP-19709]
- When you start a published app through a PNAgent site, Citrix Workspace app for Windows displays the following message:

A fatal error occurred.

[RFWIN-28208]

• Citrix Workspace app might not be responsive after the launch. {CVADHELP-20317]

2207

What's new

Background blurring and effects for Microsoft Teams optimization with HDX

Citrix Workspace app for Windows now supports background blurring and effects in Microsoft Teams optimization with HDX.

You can either blur or replace the background with a custom image and avoid unexpected distractions by helping the conversation stay focused on the silhouette (body and face). The feature can be used with either P2P or conference calls.

Note:

This feature is now integrated with the Microsoft Teams UI/buttons. MultiWindow support is a prerequisite that requires a VDA update to 2112 or higher. For more information, see Multi-window meetings and chat.

Limitations:

- Admin and user-defined background replacement isn't supported.
- The background effect doesn't persist between sessions. When you close and relaunch Microsoft Teams or VDA is reconnected, the background effect is reset to off.
- After the ICA session is reconnected, the effect is off. However, the Microsoft Teams UI shows
 that the previous effect is still On by a tick mark. Citrix and Microsoft are working together to
 resolve this issue.
- The device must be connected to the internet while replacing the background image.

Note:

This feature is available only after the future update roll-out from Microsoft Teams. When the update is rolled-out by Microsoft, you can check Knowledge Center articleCTX253754 and the Microsoft 365 Public roadmap for the documentation update and the announcement.

Background blurring for webcam redirection [Technical Preview]

Citrix Workspace app for Windows now supports background blurring for webcam redirection. You can enable this feature using the registry:

- Location HKCU\Software\Citrix\HdxRealTime.
- Name: EnableBackgroundEffectFilter.
- Type: DWORD.
- Value: 0 is disabled. Any other value is enabled. If the value doesn't exist or is 0, all background blur settings are ignored, and the **Preferences > Connections > Enable background blur** check box that handles the blur effect is disabled.

Recommendation:

Close the webcam application on VDA before closing the ICA session.

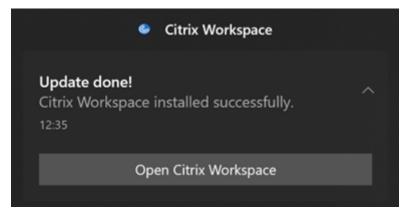
You can provide feedback on this feature via the Podio form.

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.

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, a notification prompt appears.

Enhancement to auto-update [Technical Preview]

Citrix Workspace app now supports auto-update when Proxy auto-configuration (PAC) and Web Proxy Auto-Discovery Protocol (WPAD) detection is enabled.

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's advised that Beta builds aren't deployed in production environments.

You can provide feedback on this feature via the Podio form.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 102.1.1.14, based on Chromium version 102.

• 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 the Citrix Enterprise Browser. You can register 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 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.

Note on Citrix Workspace app update

While updating Citrix Workspace app for Windows from the previous version to 2207, user is prompted to sign in. The sign-in is prompted only for the workspace store.

Fixed issues

Session/Connection

 Optimized Microsoft Teams might not select a new default audio device connected to the endpoint. [CVADHELP-20528]

Note:

This fix is available only after the future update roll-out from Microsoft Teams.

- Configuring stores with geo DNS URL via Group Policy Object or command line might fail if you have set AllowAddStore=N during the Citrix Workspace app installation. [CVADPHELP-19853]
- Citrix Authentication Manager (AuthManSvr.exe) might exit unexpectedly during logon.
 [CVADHELP-18901]

User Interface

• When you're using custom web stores, links in the Citrix Workspace app opens in the system browser. [RFWIN-27855]

2206

What's new

Background blurring and effects for Microsoft Teams optimization with HDX [Technical Preview]

In Citrix Workspace app 2206 for Windows, Citrix is introducing a technical preview for background blurring and effects in Microsoft Teams optimization with HDX.

Now, you can either blur or replace the background with a custom image and avoid unexpected distractions by helping the conversation stay focused on the silhouette (body and face). The feature can be used with either P2P or conference calls.

Note:

- In this technical preview, the feature can only be controlled via the registry keys and it isn't integrated with the Microsoft Teams UI/buttons.
- The new background persists in all Microsoft Teams meetings and calls until you change it again via a registry key. For the change to take effect, you only must restart Microsoft Teams. This limitation is removed once the feature is GA, and for that it requires Multi-window support (VDA 2112 or higher).

To activate or deactivate background blurring and effects, administrators or users must configure the following registry key on the client/endpoint:

Location: HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream

• Name: VideoBackgroundEffect

• Type: DWORD

• Value: 0 (disabled), 1 (enabled), 2 (background image replacement, which requires the **VideoBackgroundImage** key to be present as well)

The following key is required only if you want to replace the background image and not for blurring:

Name: VideoBackgroundImage

Type: REG_SZ

Value: my_image_name.jpeg

Note:

The file name, for example, my_image_name.jpg (or name you provide for the file) must be placed in the user's device, Citrix Workspace app install directory, C:\Program Files (x86)\Citrix\ICA Client.

Improved graphics performance

Citrix Workspace app 2206 introduces significant performance improvements for Intel integrated GPUs:

• Graphics GPU consumption has been reduced, improving overall performance.

The following issues are fixed:

- Low frames per second after playing a video on the Intel 10th Generation GPU or higher.
- Brightness difference in Build-To-Lossless or for Actively Changing Regions on Intel and AMD GPUs.

Enhancement to App Protection: Anti-code Injection [Technical Preview]

Citrix Workspace app now ensures that no unauthorized dynamic-link libraries (DLL) or untrusted modules get access to the session.

If any untrusted module gets injected during a session, the Citrix Workspace app detects such intervention and stops the module from loading.

Also, if any untrusted or malicious DLL is detected before the session launch, App Protection blocks the session launch and displays an error message. Closing the error message exits the virtual app and desktop session.

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.

App Protection enhancements for web and SaaS apps on Windows 11 [Technical Preview]

This App Protection enhancement optimizes the experience and security capabilities for web and SaaS app users on Windows 11. This enhancement is available via the Citrix Enterprise Browser for Secure Private Access customers. You can register for the Technical Preview via the Podio form. For more information, see App Protection documentation.

Note:

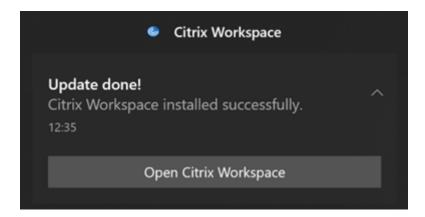
Technical previews are available for customers to test in their non-production or limited production environments, and to give customers an opportunity to share feedback. Citrix does not accept support cases for feature previews but welcomes feedback for improving them. Citrix might or might not act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

Improved auto-update experience [Technical Preview]

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 to not 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, a notification prompt appears.

You can register for the Technical Preview via the 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.

Enabling DPI matching

Starting with Citrix Workspace app 2206 for Windows, DPI matching is enabled by default. This means Citrix Workspace app attempts to match display resolution and DPI scale settings of the local Windows client to the Citrix session automatically. As part of this change, the High DPI option available under Advance Preferences in Citrix Workspace app is no longer available. For more information, see Knowledge Center article CTX460068.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 101.1.1.12, based on Chromium version 101. For features or bugs fixes in the Citrix Enterprise Browser, see What's new in the Citrix Enterprise Browser documentation.

Fixed issues

Install, Uninstall, Upgrade

• Citrix Workspace Updater service might fail to start resulting in installation failure. This issue occurs when the client is not connected to the internet. [CVADHELP-19613]

Session/Connection

- When using Citrix Workspace app 2204.1 or later, the session might disconnect. This issue occurs if there's a restriction to run unsigned binaries, for example, wfica.ocx. [CVADHELP-20053]
- When you start Citrix Workspace app for the first time after adding the store URL, the following error message appears:

"Your Citrix Workspace app encountered an error while initializing Microsoft Edge WebView2. Restart your app."

This issue occurs when you add the store URL through the GPO or command line and includes '/' after discovery, for example, https://sales.example.com/Citrix/Store/discovery/;On;Store.

[CVADHELP-20214]

• On Citrix Workspace app for Windows, when you add store URLs using Group Policy Object, the following error message might appear:

"Cannot connect to server."

This issue occurs if one of the stores is disabled and isn't reachable. [CVADHELP-19751]

- When you update the Citrix Workspace app from version 2006 or earlier, the gateway and beacon configurations of the existing stores might get deleted and the same configurations are added again even when the store configurations aren't changed in the Group Policy Object. [CVADHELP-19839]
- Attempts to launch applications or desktops from a tablet using Citrix Workspace app might fail.
 The issue occurs when the client IP address can't be retrieved. [CVADHELP-19703]
- While sharing the screen or app during the Microsoft Teams call, your peer might see visual
 artifacts. This issue occurs because of 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]

User Interface

- The **Desktop Viewer** toolbar might not be visible when you open the virtual desktop from custom portal stores. [CVADHELP-20253]
- When using Citrix Workspace app for Windows with Browser Content Redirection, resizing the browser window continues even when you release the mouse button. [HDX-38024]
- Battery status notification and automatic keyboard pop-up dialog might not appear during the session when the Automatic keyboard display policy is enabled on the DDC. [HDX-39558]
- When you plug-in aa USB device or access files, Citrix Workspace app might show legacy Citrix
 Workspace Security Warning dialog. [LCM-10369]

Service Continuity

• Citrix Workspace app launch might fail due to missing lease files resulting in 3002 error. This release includes the improvement where lease sync completes only when the client syncs all the lease files present on the server. [RFWIN-26540]

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What's new

Note:

From this release onward, ensure that the Microsoft Edge WebView2 Runtime version is 99 or later. For more information, see System requirements and compatibility.

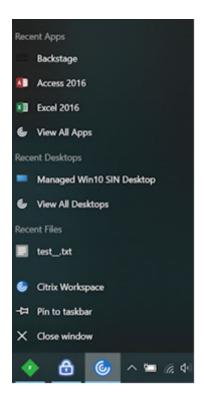
Change to Citrix Casting

Previously, Citrix Casting was enabled by default during the Citrix Workspace app installation. Starting from this release, Citrix Casting is enabled only if you run Citrix Workspace app installer with the /IncludeCitrixCasting command during installation.

When you update Citrix Workspace app, the Citrix Casting gets updated automatically. For more information on Citrix Casting, see Citrix Casting.

Quick access to resources

Starting from this release, you can get quick access to your recently used apps and desktops. Right-click on the Citrix Workspace app icon in the taskbar to view and open the recently used resources from the pop-up menu.



Sign out custom web store upon Citrix Workspace app exit

When the signoutCustomWebstoreOnExit attribute is set to True, closing the Citrix Workspace app signs you out of custom webstores. You can configure the signoutCustomWebstoreOnExit attribute in **Global App Configuration Service**.

For more information, see Global App Configuration Service documentation.

Support to open Workspace app in maximized mode

Starting from this release, you can choose to open the Citrix Workspace app in maximized mode. Instead of maximizing the Citrix Workspace app manually every time, you can set the maximise workspace window property in the Global App Configuration Service to enable the Workspace app to open in the maximized mode by default.

For more information about the Global App Configuration Service, see Getting Started.

Storebrowse support for Workspace

Citrix Workspace app for Windows now provides Storebrowse support to self-service that enables Storebrowse users to access Cloud and Workspace features.

Note:

- This feature provides Storebrowse support with Single sign-on only.
- The prerequisites mentioned in System requirements and compatibility must be available to use this feature.

For more information, see Storebrowse for Workspace.

Citrix Enterprise Browser

- This release includes Citrix Enterprise Browser version 99.1.1.8, based on Chromium version 99.
 For features or bugs fixes in the Citrix Enterprise Browser, see What's new in the Citrix Enterprise Browser documentation.
- Citrix Workspace app now alerts you about closing active browser windows, when you do any of the following in the Citrix Workspace app:
 - Sign out from a store
 - Switch to a different store
 - Add a new store
 - Delete the current store

Fixed issues

User interface

In Citrix Workspace app for Windows, non-admin users might not be able to disable the **Data** Collection setting through the **Advanced Preferences** dialog. [RFWIN-26795]

Session/Connection

- When you restart Microsoft Teams, the existing HdxRtcEngine.exe process might not close and might start a new process. [HDX-40006]
- During a peer-to-peer call with Microsoft Teams HDX optimization, app window sharing might
 fail to stop after a high number of start/stop sharing repetitions, and you might not be able to
 share desktop screen or app window, call, or receive an incoming call until you restart Citrix
 Workspace app. [HDX-39549]
- During Give Control session with Microsoft Teams HDX optimization, the remote cursor is drawn slightly offset from its actual position. [HDX-36376]
- When you access a VDA for the first-time using Citrix Workspace app for Windows version 2112 or later, the following security message might appear:

An Online Application is attempting to access information on a device attached to your computer HDX File Access.

In previous versions, this message was present only during the first access to each published resource in a Delivery Group and not every VDA.

[CVADHELP-19636]

Install, Uninstall, Upgrade

• When you upgrade Citrix Workspace app for Windows, the following extra registry key might be created:

HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\WOW6432Node\Citrix

The issue occurs when the auto-update command-line policy is configured.

The TransparentKeyPassthrough registry value in HKEY_LOCAL_MACHINE\SOFTWARE\
Citrix\ICA Client\Engine\Lockdown Profiles\All Regions\Lockdown\Virtual
Channels\Keyboard isn't preserved on a 32-bit machine.

[CVADHELP-19625]

2204.1

What's new

Audio redirection enhancement

Improved audio echo cancellation support for all audio codecs including Adaptive audio and all legacy audio codecs.

Citrix Enterprise Browser

This release includes Citrix Enterprise Browser version 98.1.2.20, 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.

Microsoft Teams optimization

• App Protection and Microsoft Teams enhancement: Microsoft Teams supports incoming video and screen sharing when Citrix Workspace app for Windows with App Protection enabled is on Desktop Viewer mode only. Published apps in seamless mode don't render incoming video and screen sharing.

Technical Preview

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

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

Fixed issues

Session/Connection

- Citrix ADC appliance might crash when certain conditions are triggered from Citrix Workspace app for Windows. [HDX-39683]
- 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]

- When you try to redirect to the preferred webcam as set in the Citrix Workspace app for Windows, the setting might not be executed as configured.
 - With this fix, the preferred webcam will be the only available webcam in the user session. This provides better control when multiple webcams are available in the user session.

[HDX-38214]

- If Citrix Workspace app is configured to show apps in **Desktop and Start** menu shortcut folder, then launching apps and desktop session from the **Desktop or Start** menu post Citrix Workspace app exit might result in failure. [RFWIN-26508]
- Attempts to add the Citrix Gateway URL might fail intermittently with the following error message:

Authentication Service cannot be contacted.

[CVADHELP-19415]

With this fix, you can set TWITaskbarGroupingMode to GroupNone either in HKEY_CURRENT_USER
or HKEY_LOCAL_MACHINE. The TWITaskbarGroupingMode key is available under, for
example, HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\Engine\Lockdown Profiles\All
Regions\Lockdown\Virtual Channels\Seamless Windows. [CVADHELP-19106]

Install, Uninstall, Upgrade

• When customers use the app personalization service, the Workspace installer might hang while validating the certificate. [RFWIN-21122]

2202

What's new

Storebrowse support for Workspace [Technical Preview]

Starting from this release, Citrix Workspace app for Windows provides Storebrowse support to Self-Service. This enables Storebrowse users to access Cloud and Workspace features.

Note:

- This feature provides Storebrowse support with Single sign-on only.
- The prerequisites mentioned in System requirements and compatibility must be available to use this feature.

For more information, see Storebrowse for Workspace.

Note:

Technical previews are available for customers to test in their non-production or limited production environments, and 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 not to deploy Beta builds in production environments.

Citrix Enterprise Browser

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

Note:

The system requirements for Citrix Workspace 2202 for Windows have changed as follows:

- Minimum .NET version required is 4.8.
- Minimum VCRedist version required is 14.30.30704.0.

Fixed issues

Install, Uninstall, Upgrade

• When you upgrade Citrix Workspace app for Windows from Version CU4 to CU5 without installing self-service, the following prompt might appear:

Upgrading from Unsupported Version

Citrix Workspace will automatically uninstall your old version and delete all your settings, which you can restore later. Otherwise you will have to delete everything manually. Click OK to continue.

[CVADHELP-18790]

• Attempt to refresh or launch an app results in the **cannot contact store** error message. This issue happens when the retrieval of shortcut description for specific subscribed apps fails.

Your apps are not available at this time. Please try again in a few minutes or contact your help desk with this information: cannot contact store.

[CVADHELP-18736]

Session/Connection

- The Print Screen key might not capture screenshots when Citrix Workspace app for Windows with App Protection enabled starts in the background. [RFWIN-25835]
- Starting a published application through a PNAgent site on StoreFront using Citrix Workspace app for Windows might fail with the following error message:

Cannot start app. Please contact your help desk.

[CVADHELP-19209]

• Launching sessions from Delivery Groups with an access policy rule specifying the client IP address might fail if the client has multiple NICs.

```
Rule: Set-BrokerAccessPolicyRule -Name <rulename> -includedClientIPs <
Client ip address>
```

[CVADHELP-18783]

- Shortcuts for published applications through Citrix Workspace app cannot be created without appropriate permissions. As a result, the icons might be downloaded in the user profile at every refresh, increasing the cache size on the endpoints and the CPU consumption in the StoreFront side. [CVADHELP-18609]
- After you configure a store through Group Policy Object or the command, refreshing the self-service UI opened from the notification area or the **Start** menu might fail. A **Cannot contact server** message appears. [CVADHELP-19242]
- Virtual Desktop prompts you to enter credentials although domain pass-through is configured.
 This issue occurs when you launch a virtual desktop from the Citrix Workspace app. [RFWIN-26111]
- In Citrix Workspace app 2112.1, you might experience high CPU utilization on endpoint when webcam is turned on in an optimized Microsoft Teams video call. [HDX-37168]

2112.1

What's new

Support for local app discovery within the Citrix Workspace app

Starting with this release, admins can configure the discovery and enumeration of locally installed applications within the Citrix Workspace app. You can configure this feature by using the Global App Configuration Service. For more information about configuring this feature, see Global App Configuration Service.

This feature is ideal for devices that runs in the kiosk mode and for those applications that can't be virtualized within the Citrix Workspace.

Service continuity

During an outage in the identity provider for workspace authentication, users might be unable to sign into Citrix Workspace through the Workspace app sign-in screen.

The message **Having trouble signing in? Use Workspace offline** appears at the top of the Citrix Workspace app sign-in screen.

Click **Use Workspace offline** to enumerate all the apps and desktops that have valid Connection Leases stored on the client device.

From this release, the message appears after 40-seconds time out. For more information, see Service continuity section in the Citrix Workspace documentation.

Improved virtual desktop experience

This release improves the experience when resizing virtual desktops.

Improved ICA file security

In earlier releases, the ICA file downloads to the local disk when you launch a virtual apps and desktops session.

With this release, we provide enhanced security in the way Citrix Workspace app handles ICA files during a virtual apps and desktops session launch.

Citrix Workspace app now lets you store the ICA file in the system memory instead of the local disk. This feature aims to eliminate surface attacks and any malware that might misuse the ICA file when stored locally. This feature is also applicable on virtual apps and desktops sessions that are launched on workspace for web.

For more information, see Improved ICA file security section.

Adaptive audio update

Adaptive audio now works when using UDP audio delivery. For more information, see Adaptive audio.

Microsoft Teams optimization

Note:

The following features are available only after the roll-out of a future update from Microsoft Teams. When the update is rolled-out by Microsoft, see Microsoft 365 roadmap, you can also check Knowledge Center article CTX253754 for the documentation update and the announcement.

Multi-window chat and meetings for Microsoft Teams

You can use multiple windows for chat and meetings in Microsoft Teams, when optimized by HDX in Citrix Virtual Apps and Desktops 2112 or higher. You can pop out the conversations or meetings in various ways. For details about 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 Virtual Delivery Agent (VDA), remember that Microsoft will deprecate the single-window code in the future. However, you'll have a minimum of nine months after this feature is GA to upgrade to a version of the VDA or Citrix Workspace app that supports multiple windows (2112 or higher).

· App sharing

Previously, you were not able to share an app using the **Screen sharing** feature in Microsoft Teams when you enable the HDX 3D Pro policy in Citrix Studio.

Starting with Citrix Workspace app 2112.1 for Windows and Citrix Virtual Apps and Desktops 2112, you can share an app using the **Screen sharing** feature in Microsoft Teams, when this policy is enabled.

Give control

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.

Take control

During screen sharing sessions, any participants 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.

Limitation:

The **Request Control** option is not available during the peer-to-peer call 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 provides the capability to:

- configure and route emergency calls
- notify security personnel

The notification is provided based on the current location of the Citrix Workspace app that runs 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.

Citrix Enterprise Browser

This release of the Enterprise Browser is based on Chromium version 95.

Fixed issues

Install, Uninstall, Upgrade

If you've installed the Workspace app with a version earlier than 2109 as a user and the admin installs version 2109, an **Entry point not found** error message appears if you sign in to the device again as a user. When you click **OK**, the message disappears, and the Workspace app is updated to version 21.0.9. [RFWIN-25008]

Sign in/Authentication

- Citrix Workspace app authentication might fail after initialization when attempted using a smart card through Citrix Gateway. If you refresh the authentication process after 15 minutes, a 404error message might appear in an embedded browser within Citrix Workspace. This results in the app being stuck in an authentication loop until you close and reopen the app. [RFWIN-25006]
- Adding a store with smartcard authentication might fail with this error message:

This store doesn't exist. Please retry or contact support. [CVADHELP-18647]

• Performing enumeration of the application through **Storebrowse** adds null character between each character in the enumeration file. [CVADHELP-18773]

Session/Connection

- Using the **Storebrowse** utility to enumerate resources for the Citrix Gateway URL might fail when at least one of the configured Delivery Controllers is not reachable. [CVADHELP-15416]
- When attempting to open an application if the vPrefer option is enabled and one instance per user app limit is configured, a connection failure error might appear on the Citrix Director. [CVADHELP-17372]
- Citrix Workspace app might poll external beacons for internal only stores. With this fix, external beacons are not polled for internal only stores or stores which do not have gateway associated with it. [CVADHELP-18275]
- On Citrix Workspace app for Windows 2109 and higher, desktop session might disconnect when legacy graphics mode is enabled. [CVADHELP-18718]
- When using App Protection with Citrix Workspace app for Windows 2109 or higher, performance of the graphics card might be poor. [CVADHELP-18831]
- After Microsoft Edge WebView2 Runtime auto-upgrade, Citrix Workspace app for Windows shows a blank screen. [RFWIN-25295]
- Citrix Workspace app stops working. [RFWIN-25301]
- Handle leaks in App Protection components causes few processes to fail. [RFWIN-25358]
- Citrix Workspace app Desktop Lock might fail when the GPO stores for the Desktop Lock setup are not configured. [RFWIN-25392]
- In Microsoft Teams, screen sharing stops when you resize the session. [HDX-31858]
- In multi-monitor mode, a blank screen appears when you disconnect the display while sharing the screen in Microsoft Teams. [HDX-34733]
- During the screen sharing session, the red border indicating the shared screen spans across
 the screens, when Microsoft Teams is running in the seamless mode and multi-monitor setup.
 [HDX-34978]
- You might experience call failures during a P2P call between Citrix Workspace app for Mac 2109 and Citrix Workspace app for Windows 2109. [HDX-35223]
- During the Microsoft Teams video call, the camera might flash. [HDX-36345]
- Attempts to launch a session might fail when you customize the StoreFront by setting the field value to **ClientName** in the default.ica file. For more information, see Knowledge Center article CTX335725. [CVADHELP-19033]

To know the existing issues within the product, see Known issues.

2109.1

What's new

Support for Windows 11

Citrix Workspace app for Windows is now supported on the Windows 11 operating system.

Fixed issues

If your admin has installed external extensions in Google Chrome, the Citrix Enterprise Browser crashes when you open it. [CTXBR-2135]

To know the existing issues within the product, see Known issues.

2109

What's new

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 deprecated audio compression formats to provide an excellent user experience.

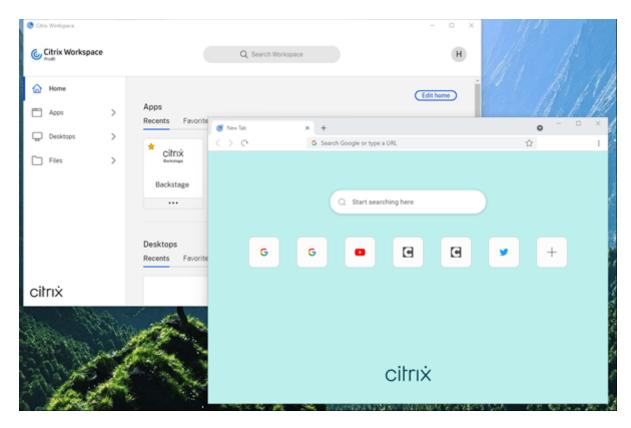
Note:

If UDP audio delivery is required for the real-time audio application, Adaptive audio must be disabled on the VDA to allow fallback to UDP audio delivery.

For more information, see Adaptive audio.

Citrix Enterprise Browser

The Citrix Enterprise Browser is a native browser running on the client machine. It lets users open web and SaaS applications from within the Citrix Workspace app in a secure manner.



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

- VPN-less access to internal webpages
- Microphone and webcam support
- Tabbed browsing experience
- Multi-window views
- Editable omnibox
- Bookmarks
- Shortcuts on the new tab page
- Customizable settings
- Proxy authentication support
- Analytics

Admins can enable Secure Private Access (formerly Secure Workspace Access) or App Protection policies in varying combinations on a per-URL basis. The functionalities include such as, anti-keylogging, anti-screen capture, download, printing, clipboard restrictions, and watermarking.

For more information, see Citrix Enterprise Browser.

StoreFront to Workspace URL migration

As your organization move from on-prem StoreFront to Workspace, end users must manually add the

new Workspace URL to the Workspace app on their end points. This feature enables the administrators 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.

Support for custom web stores

With this release, you can access your organization's custom web store from the Citrix Workspace app for Windows.

To use this feature, the administrator must add the domain or the custom web store to the allowed URLs list in the Global App Configuration Service. When you add, you can provide the custom web store URL in the **Add Account** screen in the Citrix Workspace app. The custom web store opens in the native Workspace app window.

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

Support for Windows Hello and FIDO2 Security Keys based authentication

With this release, you can authenticate to Citrix Workspace using Windows Hello and FIDO2 security keys.

For more information, see Other Ways to authenticate to Citrix Workspace.

Single Sign-On (SSO) to Citrix Workspace app from Microsoft Azure Active Directory (AAD) joined machines with AAD as identity provider

With this release, you can single sign-on to Citrix Workspace app from Azure Active Directory (AAD) joined machines with AAD as the identity provider.

For more information, see Other Ways to authenticate to Citrix Workspace.

Support for Conditional Access with Azure Active Directory

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

For more information, see Support for Conditional access with Azure AD.

Support for Service continuity

This release supports service continuity with Citrix Workspace Web Extensions. You can use Workspace Web Extensions for Google Chrome or Microsoft Edge with Workspace app for Windows 2109. These extensions are available at Google Chrome web store and the Microsoft Edge Add-on

website.

The Workspace app communicates with the Citrix Workspace Web extension using the native messaging host protocol for browser extensions. Together, the Workspace app and the Workspace Web extension use Workspace connection leases to give browser users access to their apps and desktops during outages.

See Service continuity for more information.

Microsoft Teams enhancements

The following features are available only after the roll-out of a future update from Microsoft Teams.

When the update is rolled-out by Microsoft, you can check CTX253754 for the documentation update and the announcement.

- **Support for WebRTC**: This release supports WebRTC 1.0 for a better video conferencing experience along with Gallery View.
- **Screen sharing enhancement**: You can 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.
- **App Protection compatibility**: When App Protection is enabled, you can now share content through Microsoft Teams with HDX optimization.

With this feature, you can share an application window running in the virtual desktop. Citrix Virtual Delivery Agent 2109 is a prerequisite for this feature.

Note:

Full monitor or desktop sharing is disabled when App Protection is enabled for the delivery group.

• **Live captions**: This release supports real-time transcription of what the speaker is saying when Live Captions is enabled in Microsoft Teams.

Microsoft Teams optimization

Citrix Workspace 2109 for Windows release supports peer-to-peer audio and video call, conference call, and screen sharing in optimized Microsoft Teams on VM hosted apps.

Support for Bloomberg keyboard 5

This release includes support for Bloomberg keyboard 5. To use Bloomberg keyboard 5, you must configure Registry editor. For more information about configuring the keyboard, see Configure Bloomberg keyboard 5 section in Bloomberg keyboards.

Fixed issues

Seamless Windows

Some third-party applications might remain in the foreground, keeping other launched applications in the background. [CVADHELP-16897]

User Interface

When using Citrix Workspace app for Windows, the Start menu shortcuts might not refresh automatically. The issue occurs when a new application is added, or a change is made on the back end. [CVADHELP-17122]

Client Device Issues

When using Citrix Workspace app, the devices connected with COM ports greater than 9 might fail to map within the session. [CVADHELP-17734]

Session/Connection

- When you upgrade Citrix Workspace app for Windows to version 2106, application or desktop launch using a proxy server might fail with this error message:
 - Unable to connect to the server. Contact your system administrator with the following error: There is no Citrix XenApp server configured on the specified address. (Socket Error 10060) [CVADHELP-18137]
- When you try to redirect a webcam using Citrix Workspace app for Windows that is installed on a VDA, the webcam might fail. [HDX-28691]
- If you're sharing your screen in Microsoft Teams with HDX optimization on a multi-monitor setup, the screen sharing picker fails to capture individual monitors. This issue occurs when the virtual desktop isn't using the Desktop Viewer toolbar or it is using Desktop Lock. Instead of individual monitor, all the monitors are condensed into a single composite image. You might see this issue on the Citrix Workspace app for Windows 2106 or later.
 - With this release, multi-monitor screen sharing functionality is disabled:
- if the Desktop Viewer is disabled in StoreFront or in the ICA file, or
- if the Desktop Lock is in use. Only the primary monitor can be shared. [HDX-34200]

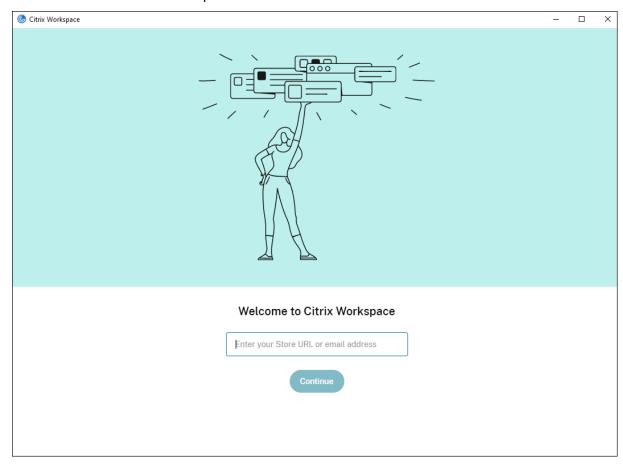
To know the existing issues within the product, see Known issues.

2108

What's new

Revamped Add Account Screen

This release introduces a revamped Add Account screen.



Inactivity Timeout for Citrix Workspace sessions

Admins can configure the inactivity timeout value. The inactivity timeout value specifies the amount of idle time that is allowed before the user automatically signs out of the Citrix Workspace session. If there is no activity from the mouse, keyboard, or touch for the specified interval of time, Citrix Workspace app automatically sign-out. The inactivity timeout does not affect the already running virtual apps and desktops sessions or the Citrix StoreFront stores.

For more information see Inactivity Timeout for Workspace Sessions

Note:

Admins can configure the inactivity timeout only for Workspace (cloud) sessions.

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 Windows. To use this feature, the admin must add the domain or the custom web store to the allowed URLs list in the Global App Configuration Service. When you add, you can provide the custom web store URL in the **Add Account** screen in Citrix Workspace app. The custom web store opens in the native Workspace app window.

For information about configuring custom web stores, see Custom web stores

Note:

Technical previews are available for customers to test in their non-production or limited production environments, and 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 not to deploy Beta builds in production environments.

StoreFront to Workspace URL Migration [Technical Preview]

When your organization move from an on-premises StoreFront to Workspace, end users must manually add the new Workspace URL to the Workspace app on their end points. This feature enables administrators 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 [Technical preview]

Note:

Technical previews are available for customers to test in their non-production or limited production environments, and 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 not to deploy Beta builds in production environments.

Fixed issues

Logon/Authentication

If a Citrix Gateway session times out, Citrix Workspace might not prompt for authentication when launching an application. [RFWIN-23829]

To know the existing issues within the product, see Known issues.

2107

What's new

EPA enhancement

Starting with this release, Citrix Workspace app can download and install the EPA plug-in in Workspace deployments. After the installation completes, the Advanced Endpoint Analysis (EPA) scans the device for endpoint security requirements configured on the Citrix Gateway. When the scan completes, the Citrix Workspace app login window appears.

Note:

This feature works only if you have configured nFactor authentication in your environment.

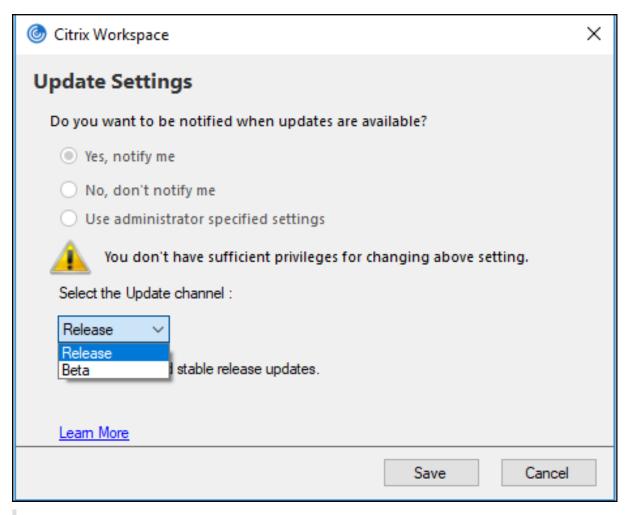
For more information on the EPA scan, see Advanced Endpoint Analysis scans.

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 update to beta builds select the **Beta channel** from the drop-down menu in the **Update Settings** window:

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



Note:

Beta builds are available for customers to test in their non-production or limited production environments, and 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 not to deploy Beta builds in production environments.

For more information about installing auto-update channels, see Installing Citrix Workspace app Beta program.

Support for the following authentication mechanisms [Technical Preview]

Starting with this release, you can authenticate to the Citrix Workspace app using the following mechanisms:

- Windows Hello and FIDO2 Security Keys based authentication
- Single Sign-On (SSO) to Citrix Workspace app from Microsoft Azure Active Directory (AAD) joined machines with AAD as identity provider

System requirements

Microsoft Edge WebView2 Runtime version 92 or later.

Note:

Starting with Version 2107, Microsoft Edge WebView2 Runtime installer is packaged with the Citrix Workspace app installer. During Workspace app installation, the installer checks whether the Microsoft Edge WebView2 Runtime is present on the system and installs it if not found.

If you are trying to install Citrix Workspace app as a non-administrator and Microsoft Edge Web-View2 Runtime isn't present, the installation stops with the following message:

```
You must be logged on as an administrator to install the following prerequisite package(s):
```

Edge Webview2 Runtime

This feature is supported only on Workspace (Cloud) deployments.

Enabling the authentication mechanisms

To enable the authentication mechanisms, admins must perform the following steps:

- 1. Launch the registry editor.
- 2. Navigate to the following registry path:
 - · As an administrator:
 - For 64-bit operating systems: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\
 WOW6432Node\Citrix\Dazzle
 - For 32-bit operating systems: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\
 Citrix\Dazzle
 - As a non-administrator:
 - For 64-bit or 32-bit operating systems: \HKEY_CURRENT_USER\SOFTWARE\Citrix
 \Dazzle
- 3. Create a registry value with the following attributes:

Registry key name: EdgeChromiumEnabled

Type: String Value

Value: True

4. Restart the Citrix Workspace app for the changes to take effect.

Note:

Technical previews are available for customers to use in their non-production or limited production environments, and 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.

Support for Conditional access with Azure AD [Technical Preview]

With this release, you can authenticate using conditional access if your admin configures the policies.

System requirements

Microsoft Edge WebView2 Runtime version 92 or later.

Note:

Starting with Version 2107, Microsoft Edge WebView2 Runtime installer is packaged with the Citrix Workspace app installer. During Workspace app installation, the installer checks whether the Microsoft Edge WebView2 Runtime is present on the system and installs it if not found.

Enabling authentication using conditional access

To enable authentication using conditional access with Azure AD, admins must perform the following steps:

- 1. Launch the registry editor.
- 2. Navigate to the following registry path:
 - For 64-bit operating systems: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\ WOW6432Node\Citrix\Dazzle
 - For 32-bit operating systems: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\
 Dazzle
- 3. Create a registry value with the following attributes:

Registry key name: EdgeChromiumEnabled

Type: String Value

Value: True

4. Restart the Citrix Workspace app for the changes to take effect.

Support for Local App Discovery within the Workspace App [Technical Preview]

Starting with Version 2107, admins can configure the discovery and enumeration of locally installed applications within the Citrix Workspace app. You can configure this feature by using the Global App Configuration Service. For more information about configuring this feature, see Global App Configuration Service.

This feature is ideal for devices that runs in the kiosk mode and for the applications that can't be virtualized within the Citrix Workspace.

Note:

Technical previews are available for customers to use in their non-production or limited production environments, and 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.

Fixed issues

Keyboard

With App Protection installed, keyboard inputs might not be compatible with some HP G5 series laptops. [RFWIN-24103]

Session/Connection

- With the drag and drop featured enabled, attempts to resize a published application might fail. [CVADHELP-17089]
- When configuring the client and VDA with network proxy settings, the browser content redirection might fail on the Chrome browser. [CVADHELP-17430]
- With single sign-on, when you sign in with a UPN credential and then change the password on the endpoint, the following error message might appear after you attempt to launch a session:

The user name or password is incorrect. Try again. [CVADHELP-17620]

 When you initiate a video call during a Microsoft Teams meeting, the Desktop Viewer might become unresponsive. [HDX-32435]

To know the existing issues within the product, see Known issues.

2106

What's new

Global App Config Service

The new 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.

Option to disable storing of authentication tokens through Global App Config Service

Citrix Workspace app now provides an extra option to disable the storing of authentication tokens on the local disk. Along with the existing Group Policy Object (GPO) configuration, you can also disable the storing of authentication tokens on the local disk using the Global App Configuration Service.

In the Global App Configuration Service, set the Store Authentication Tokens attribute to False.

For more information, see the Global App Configuration Service documentation.

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.

Microsoft Teams enhancements

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

Bi-directional URL support with Chromium-based browsers

Bidirectional content redirection allows you to configure URLs to redirect from client to server and from server to client. You can configure this using policies on the server and the client.

Using the Group Policy Object (GPO) administrative template, you can set server policies on the Delivery Controller and client policies on Citrix Workspace app.

With this release, bidirectional URL redirection support has been added for Google Chrome and Microsoft Edge.

Prerequisites:

- Citrix Virtual Apps and Desktops Version 2106 or later.
- Browser redirection extension version 5.0.

To register Google Chrome browser to bidirectional URL redirection, run the following command from the Citrix Workspace app installation folder:

```
1 %ProgramFiles(x86)%\Citrix\ICA Client\redirector.exe /regChrome /
    verbose
```

To unregister Google Chrome browser from bidirectional URL redirection, run the following command from the Citrix Workspace app installation folder:

```
1 %ProgramFiles(x86)%\Citrix\ICA Client\redirector.exe /unregChrome /
    verbose
```

For information on configuring URL redirection on Citrix Workspace app, see Bidirectional content redirection.

For more information about browser content redirection, see Browser content redirection in the Citrix Virtual Apps and Desktops documentation.

Improved ICA file security [Technical Preview]

In earlier releases, the ICA file downloads to the local disk when you launch a virtual apps and desktops session.

With this release, we provide enhanced security in the way Citrix Workspace app handles ICA files during a virtual apps and desktops session launch.

Citrix Workspace app now lets you store the ICA file in the system memory instead of the local disk. This feature aims to eliminate surface attacks and any malware that might misuse the ICA file when stored locally. This feature is also applicable on virtual apps and desktops sessions that are launched on workspace for Web.

For more information, see Improved ICA file security section.

To provide feedback on this feature, use the Podio form.

Fixed issues

Session/Connection

- Attempting to print a file using the Citrix PDF printer might fail when using Google Chrome,
 Mozilla Firefox, or Microsoft Internet Explorer as the default PDF viewer. [CVADHELP-16662]
- After upgrading Citrix Workspace app for Windows to version 1912 LTSR CU1 or CU2, session reliability might fail. The issue occurs when the Enlightened Data Transport (EDT) protocol is set, and the connection is through Citrix Gateway. [CVADHELP-16694]

- Attempts to launch applications using Citrix Workspace app for Windows might fail when the VPN is connected or disconnected. [CVADHELP-16714]
- In double-hop scenarios, endpoint client names might not pass through to the Delivery Controller or Director. The issue occurs with VDA Version 2003 and later. [CVADHELP-16783]
- Setting the CurrentAccount value to AllAccount under the registry HKEY_LOCAL_MACHINE \Software\Citrix\Dazzle might not take effect. The issue occurs when one or more store accounts are present. [CVADHELP-17229]
- Attempts to log on to Citrix Workspace app for Windows might fail when the user name contains umlaut characters. [CVADHELP-17267]
- Attempts to download a file hosted on an on-premises network, might fail. [CVADHELP-17337]
- During a conference call, when using Microsoft Teams in HDX optimized mode, the video portion of incoming calls might flicker. [CVADHELP-17398]

User Interface

- When you use the Chinese or Japanese Input Method Editor (IME) to input text in a text box, the text might appear outside of the text box in the top-left corner of the screen. [CVADHELP-15614]
- When you try to launch an application from a shortcut, the shortcut icon might flash on some desktops. This issue occurs after you upgrade Citrix Receiver version 4.9.6 for Windows to Citrix Workspace app. [CVADHELP-16967]
- Attempts to run the Beacon Checker test on ping.citrix.com might fail. [RFWIN-22672]
- Service continuity might not support all users who have Unicode user names on their Windows
 devices but ASCII user names for their Citrix Workspace account. If the Unicode user name contains Cyrillic or eastern Asian characters, Workspace connection leases fail to launch for these
 users. [RFWIN-23040, RFWIN-23046]

To know the existing issues within the product, see Known issues.

2105

What's new

Support for customized URLs through 301 redirects

Citrix Workspace app now allows you to 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.

Microsoft Teams enhancement

• You can now configure a preferred network interface for media traffic.

Navigate to \HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream and create a key called NetworkPreference(REG_DWORD).

Select one of the following values as required:

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

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

 You can now disable the audio device module 2 (ADM2) so that the legacy audio device module (ADM) is used for quad-channel microphones. Disabling the ADM2 helps to resolve issues related to microphones in a call.

To disable ADM2, navigate to \HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream and create a key named DisableADM2 (REG_DWORD) and set the value to 1.

To know the existing issues within the product, see Known issues.

Fixed issues

Session/Connection

- When using Citrix Workspace app for Windows, app protected resources might fail to launch and remain stuck on the connecting screen. The issue occurs with Citrix Workspace app installed on server operating systems, such as Windows Server 2019. [RFWIN-22120]
- Attempts to run commands on Git bash might fail. The issue occurs with Citrix Workspace app that has the App Protection feature enabled. [RFWIN-22187]
- After installing the latest version of Citrix Workspace app, you might get a prompt to upgrade when you log on StoreFront. [RFWIN-22419]
- Attempts to exit Citrix Workspace app might fail. The issue occurs when the user credentials prompt appears repeatedly. [RFWIN-22491]
- After creating a desktop shortcut for an app and restarting the client device, the first attempt to launch the app from the shortcut might fail. The issue occurs when you do not specify the

storedescription when installing Citrix Workspace app using the command-line interface. [RFWIN-22510]

- With hardware-enforced stack protection enabled and the HSP or CET features supported, applications might exit unexpectedly on 11 Generation Intel Core processors and AMD Ryzen 5000 series processors. [RFWIN-22592]
- If the HDX Adaptive Transport policy is set to Preferred and EDT MTU Discovery is enabled, when
 you try to launch applications or desktops, a gray or a black screen might appear with a warning
 message. [RFWIN-22697]
- Citrix Workspace app for Windows might fail to enumerate applications and remain stuck on a gray screen. The issue is specific to the Intel Iris Xe Graphics card. [RFWIN-22952]
- During Microsoft Teams peer-to-peer video calls, the HdxRtcEngine.exe process might become unresponsive. The issue occurs in multi-monitor setups with different screen resolutions. [HDX-28616]
- When you join a Microsoft Teams meeting from Outlook, the incoming video might not work. The issue occurs when you join the meeting without launching Microsoft Teams. [HDX-29558]
- During Microsoft Teams meetings, when you hover the mouse pointer over the video, the video might flicker. [HDX-29668]

System Exceptions

• The Wfica32.exe process might exit unexpectedly because of the faulting module, gfxrender.dll. [RFWIN-22446]

Security issues

 On an admin-installed instance of Citrix Workspace app, users with non-admin privileges might be able to escalate privileges level. For more information, see Knowledge Center article CTX307794.

To know the existing issues within the product, see Known issues.

2103.1

What's new

Enhancement to keyboard layout configuration

The keyboard layout configuration now includes a **Don't sync** option. The option is available for both the Group Policy Object (GPO) policy and the GUI configurations.

When you select the **Don't sync** option, the server keyboard layout is used in the session and the client keyboard layout is not synced to the server keyboard layout.

For more information, see Keyboard layout and language bar.

Option to disable storing of authentication tokens

Authentication tokens are encrypted and stored on the local disk so that you don't need to reenter your credentials when your system or session restarts.

Citrix Workspace app introduces an option to disable the storing of authentication tokens on the local disk. For enhanced security, we now provide a Group Policy Object (GPO) policy to configure the authentication token storage.

Note:

This configuration is applicable only in cloud deployments.

For more information, see Authentication tokens.

Microsoft Teams enhancements

- The VP9 video codec is now disabled by default.
- Enhancement to echo cancellation, auto gain control, noise suppression configurations: If Microsoft Teams configures these options, Citrix-redirected Microsoft Teams honors the values as configured. Otherwise, these options are set to **True** by default.
- DirectWShow is now the default renderer.

To change the default renderer, do the following:

- Launch the Registry editor.
- Navigate to the following key location: HKEY_CURRENT_USER\SOFTWARE\Citrix\ HDXMediaStream.
- Update the following value: "UseDirectShowRendererAsPrimary"=dword :00000000

Other possible values:

- * 0: Media Foundation
- * 1: DirectShow (Default)
- Relaunch the Citrix Workspace app.

Fixed issues

Logon/Authentication

• Even after you enable the keep me signed in and don't ask again for 60 days policies, Microsoft Azure Multi-Factor Authentication might still prompt for authentication.

Note:

We recommend that users exit their stores rather than log off from their stores. If users log off from stores using webview authentication, they might be prompted for authentication again because Internet Explorer cookies are cleared in such scenarios. By default, the fix is enabled (cookies are stored). You can disable the fix by using the GPO option. If you disable the fix, the cookies are not stored and are cleared during logoff.

[CVADHELP-14814]

• On Azure Active Directory (AD) joined devices, when Citrix Workspace app attempts to access a store and then passes through endpoint login credentials, you might not be able to authorize to log in. Also, there is no option to log on with a different user account. [CVADHELP-14844]

Security issues

• This fix improves security in an underlying component. [RFWIN-20912]

Session/Connection

- When you launch a published desktop through a native Citrix Workspace app for Windows, the native Citrix Workspace app automatically runs in the foreground within the desktop. The issue occurs when the Local App Access feature enabled. [CVADHELP-15654]
- In scenarios where proxy servers do not use port 8080, Citrix Workspace app might fail to connect to published applications and desktops. The issue occurs when Citrix Workspace app for Windows fails to use the proxy port and use the default port 8080 instead. [CVADHELP-15977]
- Citrix Workspace app for Windows might ignore proxy type settings. The issue occurs with non-English versions of the Microsoft Windows operating system. [CVADHELP-16017]
- When you press ALT + Tab key in a user session, a new, blank window of Citrix Workspace app for Windows might open. [CVADHELP-16379]
- The Print Screen key might not capture screenshots even if/when the protected windows are minimized. [RFWIN-16777]
- If you are using a webcam or a video in a Microsoft Teams call, the HDXrtcengine.exe might turn unresponsive. For a workaround, see Knowledge Center article CTX296639. [HDX-29122]
- When you attempt to compose DBCS text using IME, underlines might be missing. The issue occurs with Windows 10 2004 operating systems. [RFWIN-20006]
- Incorrectly set permissions on the C:\ProgramData\Citrix folder might cause Citrix Workspace app to exit unexpectedly. [RFWIN-22753]
- During a Microsoft Teams video call, the LED on camera might flash and the preview video might stop. [CVADHELP-16383]

User Interface

• Citrix Workspace app for Windows might not close when you click the Exit option once. As a workaround, select the Exit option twice for the Workspace app to close. [RFWIN-21518]

To know the existing issues within the product, see Known issues.

2102

What's new

Proxy authentication support

Previously, on client machines configured with proxy authentication, if the proxy credentials don't exist in the **Windows Credential Manager**, you aren't allowed to authenticate to Citrix Workspace app.

Now, on client machines configured for proxy authentication, if the proxy credentials aren't stored in the **Windows Credential Manager**, an authentication prompt appears, asking you to enter the proxy credentials. Citrix Workspace app then saves the proxy server credentials in **Windows Credential Manager**. This results in a seamless login experience because you don't need to manually save your credentials in Windows Credential Manager before accessing Citrix Workspace app.

Microsoft Teams enhancements

- · Improved video rendering.
- · Performance and reliability improvements.

Fixed issues

Session/Connection

- When you attempt to open an application from **Favorites** on a published desktop using Citrix Workspace app with the vPrefer option enabled, the application might open with a spinning circle. If the spinning circle remains, you cannot open the application again. [CVADHELP-13237]
- With the vPrefer option enabled, App-V applications might start on a remote server rather than on a local server. [CVADHELP-15356]
- The StoreBrowse.exe command might fail to display the complete list of published applications when the application names are provided in the Chinese traditional or Japanese languages. [CVADHELP-15952]
- When the EnableFactoryReset registry setting is set to False, attempts to uninstall Citrix Workspace app might fail with this error message:

This feature has been disabled.

[CVADHELP-16114]

• The log collection feature might fail to collect the CDF trace. [CVADHELP-16587]

System Exceptions

• The Receiver.exe process might exit unexpectedly. [CVADHELP-15669]

User Interface

• When you use the Chinese or Japanese Input Method Editor (IME) to input text in a text box, the text might appear outside of the text box in the top-left corner of the screen. [CVADHELP-15614]

To know the existing issues within the product, see Known issues.

2012.1

What's new

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

Fixed issues

• Automatic update of Citrix Workspace app from Version 2012 to a later version fails with the following error message:

"Could not load file or assemble Newtonsoft.Json"

The issue occurs only when automatic update is enabled on an admin-installed instance of the Citrix Workspace app.

As a workaround, download Citrix Workspace app Version 2012.1 or later from the Citrix Downloads page and install it manually.

[RFWIN-21715]

To know the existing issues within the product, see Known issues.

2012

What's new

Support for Italian language

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

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.

You can now collect logs using the GUI.

For more information, see Log collection.

Support for the domain pass-through authentication on Citrix Workspace

This release introduces support for the domain pass-through authentication on Citrix Workspace, along with the existing support for StoreFront.

Silent authentication for Citrix Workspace

Citrix Workspace app introduces a Group Policy Object (GPO) policy to enable silent authentication for Citrix Workspace. This policy enables Citrix Workspace app to log in to Citrix Workspace automatically at system startup. Use this policy only when domain pass-through (single sign-on) is configured for Citrix Workspace on domain-joined devices.

For more information, see Silent Authentication.

Enhancement to App Protection configuration

Previously, the authentication manager and the **Self-Service plug-in** dialogs were protected by default.

This release introduces a Group Policy Object (GPO) policy that lets you configure the anti-keylogging and anti-screen-capturing functionalities separately for both the authentication manager and Self-Service plug-in interfaces.

Note:

This GPO policy is not applicable for ICA and SaaS sessions. ICA and SaaS sessions continue to be controlled using the Delivery Controller and Citrix Secure Private Access.

For more information, see Enhancement to App Protection configuration.

Microsoft Teams enhancements

- Peers can now see the presenter's mouse pointer in a screen sharing session.
- The WebRTC media engine now honors the proxy server configured on the client device.

Fixed issues

Installing, Uninstalling, Upgrading

 When you attempt to refresh Citrix Workspace app by using its shortcut that is created manually, the shortcut might get deleted and then recreated. [CVADHELP-15397]

Session/Connection

- In a multi-monitor environment, attempts to maximize a user session might fail. The issue occurs when you redock your laptop. [CVADHELP-13614]
- A security warning dialog might appear when you do one of the following:
 - Retrieve an ICA file from StoreFront by using the **Storebrowse** command.
 - Launch an application by using an ICA file rather than from a browser.

[CVADHELP-15221]

- In a double-hop scenario, attempts to launch an application using the shortcut in the Start menu might fail. The issue occurs if you enable the one-instance-per-user application limit. [CVADHELP-15576]
- You configure Citrix Workspace app for Windows to connect to all store accounts when establishing a session. If you log off from Citrix Workspace app and log back on, the store account setting changes to one store account rather than defaulting to all accounts. [CVADHELP-15728]
- Attempts to share your screen in a Microsoft Teams call might result in a black screen. [HDX-27041]
- In Microsoft Teams calls, the audio might be choppy. The issue occurs when the UDP traffic port is disabled. [HDX-27914]

User Experience

 Attempts to launch a session might fail after you do a fresh installation of Citrix Workspace app for Windows or upgrade an existing installation to the latest. The session launch is stuck on the Preparing your desktop screen. The issue occurs when you configure Desktop Lock by using a Citrix Gateway URL.

Note:

A black screen appears for some time before Desktop Lock appears the first time you configure Citrix Workspace app for Windows by using a Citrix Gateway URL and Desktop Lock. If the black screen remains for a long time, sign out by using Ctrl+Alt+Delete for physical machines and Ctrl+Alt+End for virtual machines.

[CVADHELP-15334]

- With High DPI set to Yes or No, when you launch a desktop session, some elements in the CD Viewer toolbar might not scale up to match the current DPI setting of the device. The issue occurs when the DPI setting of the user device is greater than 100%. [CVADHELP-15418]
- After you upgrade Citrix Workspace app to Version 1912 CU1 from Version 1912, application enumeration might be slow, taking about 10 minutes to complete. [CVADHELP-15766]

To know the existing issues within the product, see Known issues.

Known issues

Known issues in 2305.1

- You might be prompted to enter proxy credentials each time when you start Citrix Workspace app. [RFWIN-26399]
- When you switch from external monitors to a single monitor (for example laptop), the size of Citrix Workspace app menu options, UI text, and dialog boxes might appear smaller than the normal display size. [HDX-47575]
- You might notice a gray screen for a few seconds before the sessions are opened successfully.
 This issue occurs for cloud stores. It also occurs for on-premises stores when the improved virtual apps desktops launch experience for StoreFront feature, which is in technical preview, is enabled. [RFWIN-30327]
- When connecting through Citrix Gateway, if there is high latency, sessions might fail to connect
 using EDT and fallback to TCP. If HDX Adaptive Transport policy is set to Diagnostic mode, the
 sessions might fail to start. [HDX-49878]

Known issues in 2303

• The Citrix Workspace app might stop responding if you have any mouse interaction (mouse action or movements) on the **Restore session** dialog box. This issue occurs when you start a session after upgrading from the Citrix Workspace app version 2302 to 2303 and if there are disconnected sessions previously. [RFWIN-29663]

Known issues in 2302

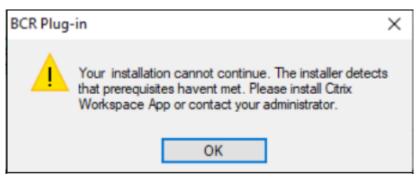
- You might not be able to use the Bloomberg Terminal application with the Bloomberg Keyboard 5 or Bloomberg Keyboard 2013. This issue occurs when Citrix Workspace app version 2302 is installed on your system with the App Protection feature enabled. As a workaround, upgrade to Citrix Workspace app version 2303 or create the following registry key and reboot the machine:
 - Key: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\epusbfilter
 - Value: [DWORD]

DisableUSBFiltering= 1

[CVADHELP-22221]

Known issues in 2212

• When the BCRClient.msi cannot be repaired, the following error appears during the Citrix Workspace app installation:



[HDX-46964]

 Some SaaS apps which have enhanced security OFF fail to open in Citrix Enterprise Browser if Citrix Enterprise Browser is the default browser. [CTXBR-4106]

Known issues in 2210.5

- When you open a published app in seamless mode, other local or seamless apps might appear in the foreground and cover the published app. [CVADHELP-20742]
- With certain older AMD GPU series, purple video content or flashing screens might be seen with Citrix Workspace app 2206 or newer.

As a workaround, modify the following registry:

- Key: HKLM\SOFTWARE\WOW6432Node\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\Gf
- Value: [DWORD]
- ForceVP=1

[HDX-46264]

Known issues in 2210

- Desktop Viewer toolbar might cover the screen when the desktop is in normal resolution and DPI. [HDX-45206]
- **Desktop Viewer** toolbar might not appear correctly in the full-screen mode and displays the options in an incorrect order. [HDX-45189]

• The position of the window and size might not be persistent when you reconnect the desktop. [HDX-44997]

Known issues in 2209

No new issues have been observed in this release.

Known issues in 2207

No new issues have been observed in this release.

Known issues in 2206

No new issues have been observed in this release.

Known issues in 2205

- In Citrix Workspace app for Windows, the Advanced Audio Coding (AAC) supports only a maximum of 6 channels. [CTXBR-2941]
- When you plug-in an USB device or access files, Citrix Workspace app might show legacy Citrix
 Workspace Security Warning dialog. [LCM-10369]
- Battery status notification and automatic keyboard pop-up dialog might not appear during the session when **Automatic keyboard display** policy is enabled on the DDC. [HDX-39558]

Known issues in 2204.1

• Citrix Workspace app for Windows installation in offline mode might fail when installer can't find Microsoft Edge WebView2 on your system.

As a workaround, install **MicrosoftEdgeWebView2RuntimeInstallerX86.exe** as an administrator and then try to install Citrix Workspace app for Windows.

[RFWIN-26329]

Known issues in 2202

• Fresh install or update operation of Citrix Workspace app might result in delay for about 10–30 mins. For more information, see Knowledge Center article CTX335639. [RFWIN-25752]

Known issues in 2112.1

- The Print Screen key might not capture screenshots when Citrix Workspace app for Windows with App Protection enabled starts in the background. [RFWIN-25835]
- Fresh install or update operation of Citrix Workspace app might result in delay for about 10–30 mins. For more information, see Knowledge Center article CTX335639. [RFWIN-25752]
- Sign out from Citrix Workspace app for Windows might not succeed when proxy authentication is enabled. [RFWIN-24813]
- If you are using Citrix Workspace app on Microsoft Windows 11 machines, Activity Feed and Actions tabs might be missing. [WSP-13311]
- While using the Citrix Enterprise Browser, you can't take screenshots of unprotected URL windows even when protected windows are minimized. [CTXBR-1925]
- If you have enabled Browser Content Redirection, you cannot sign into Google Meet. [HDX-34649]

As a workaround:

- 1. Ensure that https://www.youtube.com/* is available in the Access Control List.
- 2. Ensure that https://accounts.google.com/* is in the authentication sites list.
- 3. Sign in to your Google account on any intermediary Google site, for example, YouTube.
- 4. From the same instance of Google Chrome, launch Google Meet.
- In Citrix Workspace app 2112.1, you might experience high CPU utilization on endpoint when webcam is turned on in an optimized Microsoft Teams video call.

As a workaround, create the following registry value on your endpoint:

Computer\HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream

Name: UseDefaultCameraConfig

Type: REG_DWORD

Value: 0

[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.

As a workaround, try to re-establish the Microsoft Teams call.

[HDX-38819]

Known issues in 2109.1

No new issues have been observed in this release.

Known issues in 2109

If you've installed the Workspace app with a version earlier than 2109 as a user and the admin installs version 21.0.9, the **Entry point not found** error message appears if you log back into the device as a user. When you click **OK**, the message disappears and the Workspace app is updated to version 21.0.9. [RFWIN-25008]

If your admin has installed external extensions in Google Chrome, the Citrix Enterprise Browser crashes when you open it. [CTXBR-2135]

Known issues in 2108

Sessions fail to launch in the offline mode (Service continuity) on client machines, when the user name has Cyrillic or in east Asian characters. [RFWIN-23906]

Known issues in 2107

No new issues have been observed in this release.

Known issues in 2106

- On stores where the Service Continuity feature is enabled, you might not be able to launch resources. The issue occurs with Unicode users. [RFWIN-23439]
- Attempt to redirect a webcam using Citrix Workspace app for Windows that is installed on a VDA, the webcam might fail. [HDX-28691]

Known issues in 2105

 During a session, when you click Check for Updates and updates are downloaded successfully, current sessions are not listed in the Download successful dialog. [RFWIN-23152]

Known issues in 2103.1

- The Self-Service plug-in window is blank and no apps are displayed at session launch. The issue occurs when using the Intel Xe Graphics card and due to limitation from the third-party. [CVADHELP-17005]
- Attempts to compose characters in Japanese, Chinese, or Korean IME might not work properly.
 The composition window appears misplaced and is not seamless. This issue doesn't occur when using virtual apps and desktops sessions and SaaS apps. [RFWIN-21158]
- Attempts to exit Citrix Workspace app might fail. The issue occurs when the user credentials prompt appears repeatedly. [RFWIN-22491]

- After creating a desktop shortcut for an app and restarting the client device, the first attempt
 to launch the app from the shortcut might fail. The issue occurs when you do not specify the
 storedescription when installing Citrix Workspace app using the command-line interface.
 [RFWIN-22510]
- When you try a peer-to-peer call with Microsoft Teams HDX optimization, calls might fail. This
 issue occurs if the VDA version is 2103 or lower and the Workspace app for Windows is 2103 or
 higher. This issue is fixed in Virtual Delivery Agent (VDA) 2106.

Known issues in 2102

- Attempts to launch an ICA session might fail. The issue occurs when the proxy server uses port 8080 instead of a custom port. [CVADHELP-15977]
- In an application session, when you open an image to scan in Microsoft Paint, both the Microsoft Paint application and the scanning process might become unresponsive. The issue occurs when you launch the session in windowed mode. [RFWIN-21413]
- On machines configured for Azure Active Directory Multifactor Authentication (MFA), the login prompt appears even when the **Keep me signed in** and **Don't ask again for 60 days** options are selected. [RFWIN-21623]
- Attempts to log in to Citrix Workspace app on Azure Active Directory-joined machines might fail.
 The issue occurs when the authentication prompt doesn't appear. [RFWIN-21624]
- When you launch a published desktop session, the Self-Service plug-in dialog appears in the foreground. The issue occurs when the Local App Access policy is enabled on the Delivery Controller. [RFWIN-21629]
- Attempts to switch windows using the **ALT** + **Tab** keys might result in a blank Citrix Workspace app screen. The issue occurs when you launch the session in windowed mode. [RFWIN-21828]
- If you're using a webcam or a video in a Microsoft Teams call, the HDXrtcengine.exe might turn unresponsive. For a workaround, see Knowledge Center article CTX296639. [HDX-29122]

Known issues in 2012.1

No new issues have been observed in this release.

Known issues in 2012

- If you try to add a protected app to your **Favorites**, this message might appear, "Your apps aren't available at this time" When you then click **OK**, this message appears, "Cannot add app." After you switch to the **Favorites** screen, the protected app is listed there, but you can't remove it from **Favorites**. [WSP-5497]
- In the Chrome browser with browser content redirection, when you click a link that opens a new tab, the tab might not open. As a workaround, select **Always allow pop-ups and redirects** in

the Pop-ups blocked message. [HDX-23950]

 Automatic update of Citrix Workspace app from version 2012 to a later version fails with the following error message:

Could not load file or assemble Newtonsoft. Json

The issue occurs only when automatic update is enabled on an admin-installed instance of the Citrix Workspace app.

As a workaround, download Citrix Workspace app Version 2012.1 or later from the Citrix Downloads page and install it manually.

[RFWIN-21715]

- If you launch the app bar and then open the **Connection Center** menu in Citrix Workspace app for Windows, the app bar doesn't appear under the server that hosts it. [HDX-27504]
- If you use Citrix Workspace app for Windows and launch the app bar in a vertical position, the bar covers the Start menu or the system tray clock. [HDX-27505]

Legacy documentation

For product releases that have reached End of Life (EOL), see Legacy documentation.

Third-party notices

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

Citrix Workspace app for Windows Third-Party Notices (PDF download)

Features in Technical Preview

September 8, 2023

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.

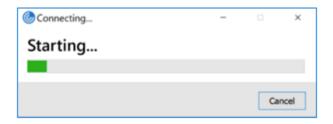
Improved virtual apps and desktops launch experience

This feature is in technical preview from 2305.1 release for on-premises stores.

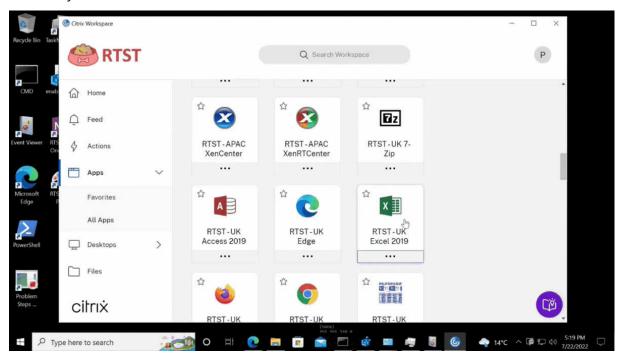
Note:

From Citrix Workspace app version 2305.1 onwards, this feature is generally available for cloud stores.

Previously, the launch progress dialog box wasn't intuitive to the users. It made the users assume that the launch process is not responding and they closed the dialog box, as the notification messages were static.



The improved app and desktop launch experience is more informative, modern, and provides a user-friendly experience on Citrix Workspace app for Windows. This helps to keep the users engaged with timely and relevant information about the launch status. The notification appears in the bottom-right corner of your screen.



Users can view meaningful notifications about the launch progress, instead of just a spinner. If a launch is in progress and the user attempts to close the browser, a warning message is shown.

Starting with Citrix Workspace app for Windows 2305.1, this feature is enabled by default in cloud stores.

You can enable this feature using the registry in StoreFront (on-premises) session. To enable this fea-

ture:

- 1. Open the registry editor.
- 2. Navigate to HKLM\SOFTWARE\WOW6432Node\Citrix\Dazzle.
- 3. Create and add a registry string with the name as EnableNewLaunchExperienceForSF and set its value as **True**.
- 4. Restart Citrix Workspace app for the changes to take effect.

You can provide feedback on this feature via the Podio.

Sustainability initiative from Citrix Workspace app

This feature is in technical preview from 2305.1 release.

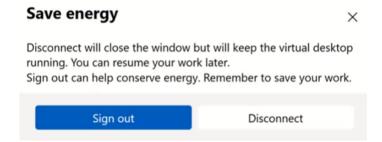
When this feature is enabled, a prompt is displayed to sign out from the desktop session when a user closes a virtual desktop. This feature might help conserve energy that was possibly utilized by the unused running sessions.

Note:

For statically assigned desktop groups, the LogoffOnClose and PromptMessage keywords are applicable only for the first time assignments of the desktop delivery group.

To enable this feature, do the following:

- 1. Navigate to Citrix Studio.
- 2. Click **Delivery Groups** from the left navigation pane.
- 3. Select the required VDA from the **Delivery Group** section.
- 4. Click the **Edit** icon. The **Edit Delivery Group** page appears.
- 5. Click **Desktops** from the left navigation pane.
- 6. Select the required VDA where you must add the keywords.
- 7. Click **Edit**. The **Edit Desktop** page appears.
- 8. Set the LogoffOnClose keyword to **true** in the **Description** field.
- 9. Click **OK**. The following dialog box appears when you close the virtual desktop:



Customizing the text in the Save energy screen

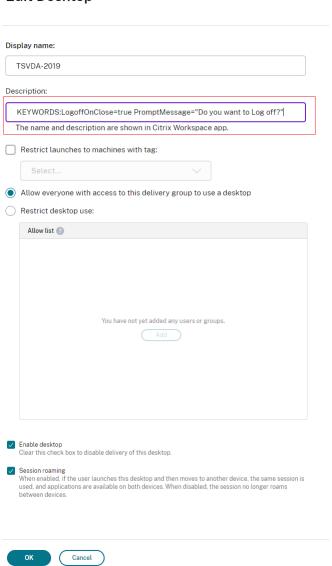
You can also customize the text in the **Save energy** screen.

- 1. Follow steps 1–8 in the preceding section.
- 2. Set the PromptMessage keyword to the required text in the **Description** field.

Example:



Edit Desktop



3. Click **OK**. The following dialog box appears when you close the virtual desktop.



You can provide feedback on this feature via the Podio form.

Client App Management for WebEx plug-in

This feature is in technical preview from 2303 release.

Starting with the 2303 version, download, install, and auto-update of the WebEx plug-in is supported and handled the same way as the Zoom plug-ins. The following Global App Configuration setting needs to be onboarded for the store/account to use this feature:

```
1
   {
2
3
       "serviceURL":
4
5
            "url": "https://storefront.acme.com:443"
6
7
         }
8
9
       "settings":
10
11
12
            "description": "Install and update plugins",
            "name": "Install and update plugins",
13
            "useForAppConfig": true,
14
15
            "appSettings":
            {
16
17
                "windows":
18
                Γ
19
                     {
20
21
                         "assignedTo":
22
23
                         "AllUsersNoAuthentication"
24
25
                         ],
                         "category": "AutoUpdate",
26
                         "settings":
27
28
                         29
```

```
"name": "Auto Update plugins settings",
31
32
                                  "value":
33
                                  Γ
34
                                      {
35
                                           "pluginId": "C03BAE37-F3AC-4D63-8
                                              BC1-3C9CD2BC9E8D",
                                           "pluginName": "WebEx VDI
37
                                              AutoUpgrade Plugin",
38
                                           "pluginSettings":
39
40
41
                                               "delayGroup": "Fast",
                                               "deploymentMode": "
42
                                                  InstallAndUpdate",
                                               "detectRule": "UpgradeCode:{
43
44
    AA2AACDC-D30B-433F-A602-3E25975010A6 }
45
                                               "isBlocking": false,
46
                                               "isFTU": false,
47
                                               "maximumAllowedVersion": "
48
                                                  3.1.0.24263",
49
                                               "minimumAllowedVersion": "0.0.0
                                               "stream": "Current",
50
                                               "upgradeToLatest": true
51
52
                                           }
53
54
                                       }
55
                                  ]
                              }
57
58
59
                         ],
                         "userOverride": false
                      }
61
62
63
                ]
64
             }
         }
67
68
    }
```

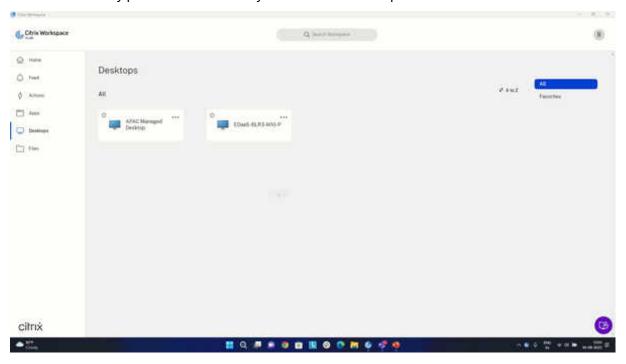
```
70
71 <!--NeedCopy-->
```

You can provide feedback on this feature via the Podio form.

Quick Launch of Disconnected Desktops

This feature is in technical preview from 2209 release.

By enabling this feature, you can open your previously disconnected desktops instantly. Once this feature is enabled, Citrix Workspace app launches the disconnected sessions in hidden mode. The session is instantly presented as soon as you launch the desktop.



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

Local App Protection

This feature is in technical preview from 2210 release.

App Protection offers enhanced security to defend our customers against Keyloggers, accidental and malicious screen capture at endpoints. Currently, App Protection capabilities are only offered for Workspace resources. With Local App Protection, App Protection capabilities are extended to local apps on endpoints. Starting with Citrix Workspace app 2210 for Windows, App Protection can be applied to local apps on Windows devices.

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

Support for an enhanced Single sign-on (SSO) experience for web and SaaS apps This feature is in technical preview from 2204.1 release.

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 Workspace app and the particular web or SaaS app being launched.

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

System requirements and compatibility

September 26, 2023

Requirements

Hardware requirements

- · Minimum 1 GB RAM.
- The following table provides details on the required disk space to install the Citrix Workspace app.

Installation type	Required disk space
Fresh installation	572 MB
Upgrade	350 MB

Note:

- The installer does the check on the disk space only after extracting the installation package.
- When the system is low on disk space during a silent installation, the dialog does not appear but the error message is recorded in the CTXInstall_TrolleyExpress -*.log.

Software requirements

• Microsoft Edge WebView2 Runtime version 112 or later

- .NET 4.8
- Latest version of Microsoft Visual C++ Redistributable

Microsoft Edge WebView2 requirements

- Citrix Workspace app is packaged with the Evergreen Bootstrapper version of Microsoft Edge WebView2 Runtime.
- Citrix Workspace app installer can install Microsoft Edge WebView2 Runtime during the Citrix Workspace app installation. However, for this installation, you must be connected to internet. Alternatively, you can install the suitable offline Microsoft Edge WebView2 Runtime Evergreen Standalone Installer package before installing Citrix Workspace app.
- The device must have access to the following URLs:
 - https://*.dl.delivery.mp.microsoft.com to download Microsoft Edge WebView2
 Runtime during the Citrix Workspace app installation. For more information, see Allow list for Microsoft Edge endpoints.
 - https://msedge.api.cdp.microsoft.com to check for Microsoft Edge WebView2
 Runtime update
- To manage Microsoft Edge WebView2 Runtime auto-update, see Update policies in the Microsoft documentation. For example, auto-update is useful in non-persistent virtual desktops where the desktops are reverted to their original state when a user signs out.

Note:

When you try to install or upgrade Citrix Workspace app with non-administrator privileges and Microsoft Edge WebView2 Runtime isn't present, the installation stops with the following message:

'You must be logged on as an administrator to install the following prerequisite packages:

Edge Webview 2 Runtime'

.Net requirements

Citrix Workspace app requires .NET 4.8. It allows you to subscribe to and launch the apps and desktops from the Workspace app user interface or command line.

When you try to install or upgrade to Citrix Workspace app 1904 or later and the requisite .NET Framework version isn't available on your Windows system, the Citrix Workspace app installer downloads and installs the required .NET Framework version.

Note:

- The installation fails when you try to install or upgrade Citrix Workspace app with non-administrator privileges and .NET Framework 4.8 or greater isn't present on the system.
- You must be connected to the internet to download and install .NET Framework. If not, the administrator can install these requirements using a deployment method, for example, SCCM.

Microsoft Visual C++ Redistributable requirements

Citrix Workspace app requires the latest version of Microsoft Visual C++ Redistributable.

Note:

Citrix recommends that you use the latest version of Microsoft Visual C++ Redistributable. Otherwise, a restart prompt might appear during an upgrade.

Starting with Version 1904, Microsoft Visual C++ Redistributable installer is packaged with the Citrix Workspace app installer. During Workspace app installation, the installer checks whether the Microsoft Visual C++ Redistributable package is present on the system and installs it if necessary.

Note:

If Microsoft Visual C++ Redistributable package doesn't exist on your system, Citrix Workspace app installation with non-administrator privileges might fail.

Only an administrator can install the Microsoft Visual C++ Redistributable package.

For troubleshooting issues with the .NET Framework or the Microsoft Visual C++ Redistributable installation, see Citrix Knowledge Center article CTX250044.

Connectivity requirements

Feature flag management

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

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 to the following URLs:

- events.launchdarkly.com
- stream.launchdarkly.com

- clientstream.launchdarkly.com
- Firehose.launchdarkly.com
- mobile.launchdarkly.com

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 know that your firewall configurations are updated automatically in keeping with the infrastructure updates. For details about the status of the infrastructure changes, see the LaunchDarkly Status page.

LaunchDarkly system requirements

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

- LaunchDarkly service
- APNs listener service

Disabling LaunchDarkly service

You can disable the LaunchDarkly service by using a Group Policy Object (GPO) policy.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Compliance.
- 3. Select **Disable sending data to 3rd party** policy and set it to Enabled.
- 4. Click Apply and OK.

Ports

For information on the required ports, see Common Citrix Communication Ports.

Compatibility matrix

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

Note:

• The Citrix Gateway End-Point Analysis Plug-in (EPA) is supported on Citrix Workspace. On the native Citrix Workspace app, it's supported only when using nFactor authentication. For more information, see Configure pre-auth and post-auth EPA scan as a factor in nFactor authentication in the Citrix ADC documentation.

- Citrix Workspace app installation on Windows is supported only when the customers have mainstream or extended support from Microsoft.
- Citrix Workspace app for Windows is supported only in emulator mode on the Windows ARM64 operating system.
- Once a Windows 10 version reaches End of Service that version is no longer serviced or supported by the Microsoft. Citrix supports running its software only on an operating system that its manufacturer supports. For information about Windows 10 End of Service, see Microsoft's Windows Lifecycle Fact Sheet.

Citrix Workspace app for Windows is compatible with the following Windows Operating Systems:

Operating system

Windows 11

Windows 10 Enterprise (32-bit and 64-bit Editions). For more information about compatible Windows 10 versions, see Windows 10 Compatibility with Citrix Workspace app for Windows.

Windows 10 Enterprise (2016 LTSB 1607, LTSC 2019)

Windows 10 (Home edition*, Pro)

Windows Server 2022

Windows Server 2019

Windows Server 2016

Windows 10 or 11 Compatibility with Citrix Workspace app for Windows

The following table lists the Windows 10 version number and the corresponding compatible Citrix Workspace app for Windows release/s.

Windows 10 Version number	Build number	Citrix Workspace app Version
22H2	19045	2206 and later
21H2	19044	2112.1 and later
21H1	19043.928	2106 and later
20H2	19042.508	2012 and later
2004	19041.113	2006.1 and later

^{*}No support for domain pass-through authentication, Desktop Lock, FastConnect API, and configurations that require domain-joined Windows machine.

Windows 10 Version number	Build number	Citrix Workspace app Version
1909	18363.418	1911 and later
1903	18362.116	1909 and later
1809	17763.107	1812 and later
1803	17134.376	1808 and later

Note:

Windows 10 versions are compatible with mentioned Citrix Workspace app versions only. For example, Windows 10 Version 21H1 isn't compatible with the version earlier than 2106.

The following table lists the Windows 11 version number and the corresponding compatible Citrix Workspace app for Windows releases.

Windows 11 Version number	Build number	Citrix Workspace app Version
22H2	22621	2209 and later
21H2	22000	2109.1 and later

Install and uninstall

September 26, 2023

You can download Citrix Workspace app from the Download page of Citrix or from your company's download page (if available).

You can install the package by:

• Running an interactive Windows-based installation wizard.

Or

 Typing the installer file name, installation commands, and installation properties using the command-line interface. For information about installing Citrix Workspace app using command-line interface, see Using command-line parameters.

Note:

Verify that you have installed all the required system requirements, as mentioned at System requirements section.

Installation with administrator and non-administrator privileges:

Both users and administrators can install Citrix Workspace app. Administrator privileges are required only when using pass-through authentication, single sign-on, App Protection, and Citrix Ready workspace hub with Citrix Workspace app for Windows..

The following table describes the differences when Citrix Workspace app is installed as an administrator or a user:

	Installation folder	Installation type	
Administrator	For 64-bit: C:\Program Files (x86)\Citrix\ICA Client and for 32-bit: C:\Program Files\Citrix\ICA Client	Per-system installation	
User	%USERPROFILE%\AppData\Lo	%USERPROFILE%\AppData\Loca lNetitrise\ri torse\ritorse	

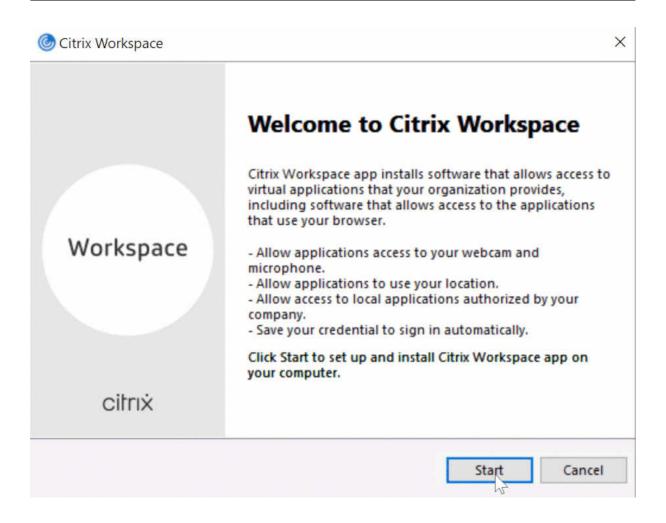
Note:

Administrators can override the user-installed instance of Citrix Workspace app and continue with the installation successfully.

User interface based installation

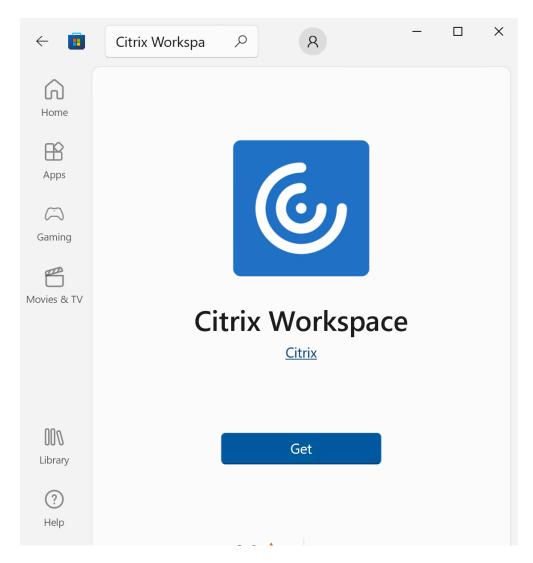
You can install Citrix Workspace app for Windows by manually running the CitrixWorkspaceApp. exe installer package.

- 1. Launch the CitrixWorkspaceApp.exe file and click **Start**.
- 2. Read and accept the EULA and continue with the installation.
- 3. When installing on a domain-joined machine with administrator privileges, a single sign-on dialog appears. For more information, see Domain pass-through authentication.
- 4. When installing with administrator privileges, if required to enable the App Protection feature immediately after the installation, select the **Start App Protection after installation** check box.
- 5. Follow the Windows-based installer to complete the installation.



Using Windows Store

- 1. Navigate to Microsoft Store.
- 2. Search for Citrix Workspace.



1. Click **Get**. Citrix Workspace app is installed.

Command-line based installation

You can customize the Citrix Workspace app installer by specifying different command-line options. The installer package self-extracts to the system temp directory before launching the setup program. The space requirement includes program files, user data, and temp directories after launching several applications.

To install the Citrix Workspace app using the Windows command line, launch the command prompt and type the following on a single line:

- · installer file name,
- · installation commands, and
- installation properties

The available installation commands and properties are as follows:

CitrixWorkspaceApp.exe [commands] [properties]

List of command-line parameters

The parameters are broadly classified as follows:

- Common parameters
- Update parameters
- Install parameters
- HDX features parameters
- Preferences and user interface parameters
- Authentication parameters

Common parameters

Command	Description
? Or help	Lists all the installation commands and properties.
/silent	Disables installation dialogs and prompts during installation.
noreboot	Suppresses the prompts to reboot during installation. When you suppress the reboot prompt, USB devices that are in a suspended state aren't recognized. The USB devices are activated only after the device is restarted.
forceinstall	This switch is effective when cleaning up any existing configuration or entries of Citrix Workspace app in the system. Use this switch when upgrading from an unsupported version of Citrix Workspace app version and when the installation or upgrade is unsuccessful.

Note:

The forceinstall switch is the replacement for the rcu switch. The rcu switch is deprecated as of Version 1909. For more information, see Deprecation.

Auto-update parameters

Detect available update

- Command: AutoUpdateCheck
- Description: This command indicates that Citrix Workspace app detects when an update is available.

The possible values are the following:

AutoUpdateCheck command values	Description	Example
Auto (default)	You're notified when an update is available.	CitrixWorkspaceApp.exe AutoUpdateCheck=auto.
Manual	You aren't notified when an update is available. Check for updates manually.	CitrixWorkspaceApp.exe AutoUpdateCheck= manual
Disabled	Disables auto-updates.	CitrixWorkspaceApp.exe AutoUpdateCheck= disabled.

Note:

The AutoUpdateCheck is a mandatory parameter that you must set to configure other parameters like AutoUpdateStream, DeferUpdateCount, AURolloutPriority.

Select the version for update

- CommandAutoUpdateStream
- Description If you have enabled auto-update, you can choose the version you want to update. See Lifecycle Milestones for more information.

The possible values are the following:

AutoUpdateStream command		
value	Description	Example
LTSR	Auto-updates to Long Term	CitrixWorkspaceApp.exe
	Service Release cumulative	AutoUpdateStream=LTSR.
	updates only.	

AutoUpdateStream command		
value	Description	Example
Current	Auto-updates to the latest version of Citrix Workspace app.	CitrixWorkspaceApp.exe AutoUpdateStream= Current

Defer notifications for update

- Command: DeferUpdateCount
- Description: Indicates the number of times that you can defer notifications when an update is available. For more information, see Citrix Workspace Updates.

The possible values are the following:

DeferUpdateCount command		
value	Description	Example
-1(default)	Allows deferring notifications any number of times	CitrixWorkspaceApp.exe DeferUpdateCount=-1
0	Indicates that you receive one notification (only) for every available update. Doesn't remind you again about the update.	CitrixWorkspaceApp.exe DeferUpdateCount=0
Any other number 'n'	- Allows deferring notification 'n' number of times. The Remind me later option is displayed in the 'n' count.	CitrixWorkspaceApp.exe DeferUpdateCount= <n></n>

Note:

Starting with Citrix Workspace app for Windows version 2207, the auto-update feature is improved and the DeferUpdatCount parameter in not applicable.

Set rollout priority

- Command: AURolloutPriority
- Description: When a new version of the app is available, Citrix rolls out the update for a specific delivery period. With this parameter, you can control at what time during the delivery period you can receive the update.

The possible values are the following:

AURolloutPriority command		
value	Description	Example
Auto (default)	You receive the updates during the delivery period as configured by Citrix.	<pre>CitrixWorkspaceApp.exe AURolloutPriority= Auto</pre>
Fast	You receive the updates at the beginning of the delivery period.	<pre>CitrixWorkspaceApp.exe AURolloutPriority= Fast</pre>
Medium	You receive the updates at the mid-delivery period.	CitrixWorkspaceApp.exe AURolloutPriority= Medium
Slow	You receive the updates at the end of the delivery period.	CitrixWorkspaceApp.exe AURolloutPriority= Slow

Store configuration parameters

Configure store

- Command: ALLOWADDSTORE
- Description: Allows you to configure the stores (HTTP or https) based on the specified parameter.

The possible values are the following:

ALLOWADDSTORE command value	Description	Example
S(default)	Allows you to add or remove secure stores only (configured with HTTPS).	CitrixWorkspaceApp.exe ALLOWADDSTORE=S
A	Allows you to add or remove both secure stores (HTTPS) and non-secure stores (HTTP). Not applicable if Citrix Workspace app is per-user installed.	CitrixWorkspaceApp.exe ALLOWADDSTORE=A

ALLOWADDSTORE command		
value	Description	Example
N	Never allow users to add or	CitrixWorkspaceApp.exe
	remove their own store.	ALLOWADDSTORE=N

Save the store credentials locally

- Command: ALLOWSAVEPWD
- Description: Allows you to save the store credentials locally. This parameter applies only to stores using the Citrix Workspace app protocol.

The possible values are the following:

ALLOWSAVEPWD command value	Description	Example
- S(default)	Allows saving the password for secure stores only (configured with HTTPS).	CitrixWorkspaceApp.exe ALLOWSAVEPWD=S
N	Does not allow saving the password.	CitrixWorkspaceApp.exe ALLOWSAVEPWD=N
A	Allows saving the password for both secure stores (HTTPS) and non-secure stores (HTTP).	CitrixWorkspaceApp.exe ALLOWSAVEPWD=A

Examples of store configuration using command-line installation

To specify the StoreFront store URL:

```
1 CitrixWorkspaceApp.exe /silent
2 STOREO="AppStore;https://testserver.net/Citrix/MyStore/discovery;on;HR
         App Store
3
4 <!--NeedCopy-->
```

To specify the Citrix Gateway store URL:

```
1 CitrixWorkspaceApp.exe STORE0= HRStore;https://ag.mycompany.com#
    Storename;On;Store
2 <!--NeedCopy-->
```

Where, **Storename** indicates the name of the store that needs to be configured.

Note:

- In a multi-store setup, only one Citrix Gateway store URL configuration is allowed and that must be first in the list (parameter STORE0).
- The Citrix Gateway store URL configured using this method does not support the PNA Services Sites that are using Citrix Gateway.
- The "Discovery" parameter is not required when specifying a Citrix Gateway store URL.

To configure multiple stores:

3 <!--NeedCopy-->

Note:

- It's mandatory to include discovery in the store URL for successful pass-through authentication.
- The Citrix Gateway store URL must be the first entry in the list of configured store URLs.

Install parameters

Start App Protection

- Command: startAppProtection
- Description: Start App Protection component and provides enhanced security by restricting the ability of clients to be compromised by keylogging and screen-capturing malware.
- Example: CitrixWorkspaceApp.exe startAppProtection

For more information, see App Protection.

Note:

The startAppProtection switch is the replacement for the includeAppProtection switch. The includeAppProtection switch is deprecated as of Version 2212. For more information, see Deprecation.

Exclude Citrix Embedded Browser binaries

- Command: InstallEmbeddedBrowser
- Description: Excludes the Citrix Embedded Browser binaries.

• Example: Run the InstallEmbeddedBrowser=N switch to exclude the embedded browser feature.

You can exclude the Citrix Embedded Browser binaries only in the following cases:

- Fresh install
- Upgrade from a version that doesn't include the Citrix Embedded Browser binaries.

If your version of Citrix Workspace app includes the Citrix Embedded Browser binaries and you are upgrading to Version 2002, the embedded browser binaries are automatically updated during the upgrade.

Specify custom installation directory

- Command: INSTALLDIR
- Description: Specifies the custom installation directory for Citrix Workspace app installation. The default path is C:\Program Files\Citrix.
- Example: CitrixWorkspaceApp.exe INSTALLDIR=C:\custom path\Citrix.

Note:

The **Program Files** folder is protected by the operating system. If you want to use a custom folder other than Program Files, ensure that the folder has the right permission and it is protected.

Install one or more of the specific components

- Command: ADDLOCAL
- Description: Use the ADDLOCAL key to install one or more of the specific components of the Citrix Workspace app. Using this key, if you install any specific components, the Citrix Workspace app installs all the mandatory components by default.

Note:

We recommended you to use the ADDLOCAL key only if you want to install any of the specific components of Citrix Workspace app. By default, if no ADDLOCAL parameter is specified, all the supported components are installed while installing the Citrix Workspace app.

The following table lists the components that the ADDLOCAL key supports:

ADDLOCAL key	Component Name	Description
ReceiverInside	Receiver	Provides workspace SDK services to the Self-service plug-in.

ADDLOCAL key	Component Name	Description
ICA_Client	HDX Engine	This component handles the ICA file or session launch process.
BCR_Client	BCR client	Plug-in to handle browse content redirection.
USB	USB Client	Plug-in to take care of the USB redirection.
DesktopViewer	Desktop Viewer Client	UI framework for virtual desktop.
AM	AuthManager	Authentication Manager - Authorizes user to Citrix Workspace app.
SSON	SSON	Single sign-on component – Supports single sign-on.
SELFSERVICE	Self-service	Plug-in for the Citrix Workspace for native launch.
WebHelper	Web Helper	Helper to connect browser with native workspace app.
WorkspaceHub	Win Docker	Provides a way to expand a user's workspace, making mirroring or extending local display wirelessly.
CitrixEnterpriseBrowser	Browser	Native browser that enables users to open web or SaaS apps from Citrix Workspace app in a secure manner.

For example, using the following command, you can install the components mentioned in the command:

^{2 &}lt;!--NeedCopy-->

Note:

Starting with version 2212, the App Protection feature is installed by default. As a result, AppProtection is no longer a valid option for ADDLOCAL.

Install Citrix Casting

- Command: IncludeCitrixCasting
- Description: Installs Citrix Casting during installation.

For more information on Citrix Casting, see Citrix Casting.

HDX features parameters

Set bidirectional content redirection

- Command: ALLOW_BIDIRCONTENTREDIRECTION
- Description: Indicates if bidirectional content redirection between the client and the host is enabled. For more information, see the Bidirectional content redirection policy settings section in the Citrix Virtual Apps and Desktops documentation.

The possible values are the following:

ALLOW_BIDIRCONTENTREDIRECTION		
command value	Description	Example
0 (default)	Indicates that the bidirectional content	CitrixWorkspaceApp.exe
	redirection is disabled.	ALLOW_BIDIRCONTENTREDIRE =0
1	Indicates that the bidirectional content	CitrixWorkspaceApp.exe
	redirection is enabled.	ALLOW_BIDIRCONTENTREDIRE =1

Set local app access

- Command: FORCE_LAA
- Description: Indicates that Citrix Workspace app is installed with the client-side Local App Access component. Install the workspace app with administrator privileges for this component to work. For more information, see the Local App Access section in the Citrix Virtual Apps and Desktops documentation.

The possible values are the following:

FORCE_LAA command value	Description	Example
0 (default)	Indicates that the Local App Access component isn't installed.	CitrixWorkspaceApp.exe FORCE_LAA =0
1	Indicates that the client-end Local App Access component is installed.	CitrixWorkspaceApp.exe FORCE_LAA =1

Set URL redirection feature on the user device

- Command: ALLOW_CLIENTHOSTEDAPPSURL
- Description: Enables the URL redirection feature on the user device. For more information, see the Local App Access section in the Citrix Virtual Apps and Desktops documentation.

The possible values are the following:

ALLOW_CLIENTHOSTEDAPPSURL		
command value	Description	Example
0 (default)	Disables the URL redirection feature on the user device.	CitrixWorkspaceApp.exe
		ALLOW_CLIENTHOSTEDAPPSUR
1	Enables the URL redirection feature on the user devices.	CitrixWorkspaceApp.exe
		ALLOW_CLIENTHOSTEDAPPSURI
		=1

Display icons for documents or files

- Command: LEGACYFTAICONS
- Description: Specifies if you want to display icons for documents or files that have file type association with subscribed applications.

The possible values are the following:

LEGACYFTAICONS command value	Description	Example
False (default)	Display icons for documents or files that have file type associations with subscribed applications. When set to false, the operation system generates an icon for the document that doesn't have a specific icon assigned to it. The icon generated by the operation system is a generic icon overlaid with a smaller version of the application icon.	CitrixWorkspaceApp.exe LEGACYFTAICONS=False
True	Doesn't display icons for documents or files that have file type associations with subscribed applications.	CitrixWorkspaceApp.exe LEGACYFTAICONS=True

Preference and user interface parameters

Specify the directory for the shortcuts on the Start menu and desktop

command value	Description	Directory name	Example
CitrixWorkspaceApp .exe STARTMENUDIR	Specifies the directory for the shortcuts in the Start menu.	By default, applications appear under Start > All Programs . You can specify the relative path of the shortcuts in the Programs folder.	To place shortcuts under Start > All Programs > Workspace , specify STARTMENUDIR= Workspace.

command value	Description	Directory name	Example
CitrixWorkspaceApp .exe DESKTOPDIR	directory for	You can specify the relative path of the	To place shortcuts under Start > All
	shortcuts on the Desktop.	shortcuts.	Programs > Workspace, specify
			DESKTOPDIR= Workspace.

Note:

When using the DESKTOPDIR option, set the PutShortcutsOnDesktop key to True.

Control access to the self-service

• Command: SELFSERVICEMODE

• Description: Controls access to the self-service Workspace app user interface.

The possible values are the following:

SELFSERVICEMODE command value	Description	Example
True	Indicates that the user has access to the self-service user interface.	CitrixWorkspaceApp.exe SELFSERVICEMODE=True
False	Indicates that the user does not have access to the self-service user interface.	CitrixWorkspaceApp.exe SELFSERVICEMODE=False

Control session pre-launch

• Command: ENABLEPRELAUNCH

• Description: Controls session pre-launch. For more information, see Application launch time.

The possible values are the following:

ENABLEPRELAUNCH command value	Description	Example
True	Indicates that session pre-launch is enabled.	CitrixWorkspaceApp.exe ENABLEPRELAUNCH=True
False	Indicates that session pre-launch is disabled.	CitrixWorkspaceApp.exe ENABLEPRELAUNCH=False

Hide Shortcuts and Reconnect option

- Command: DisableSetting
- Description: Hides the Shortcuts and Reconnect option from being displayed in the Advanced
 Preferences sheet. For more information, see Hiding specific settings from the Advanced Preferences sheet.

The possible values are the following:

DisableSetting command		
value	Description	Example
0 (default)	Displays both Shortcuts and Reconnect options in the Advanced Preferences sheet.	CitrixWorkspaceApp.exe DisableSetting=0
1	Displays only the Reconnect option in the Advanced Preferences sheet.	CitrixWorkspaceApp.exe DisableSetting=1
2	Displays only the Shortcuts option in the Advanced Preferences sheet.	CitrixWorkspaceApp.exe DisableSetting=2
3	Both Shortcuts and Reconnect options are hidden from the Advanced Preferences sheet.	CitrixWorkspaceApp.exe DisableSetting=3

Enable Customer Experience Improvement Program

- Command: EnableCEIP
- Description: Indicates your participation in the Customer Experience Improvement Program (CEIP). For more information, see CEIP.

The possible values are the following:

EnableCEIPcommand value	Description	Example
True (default)	Opt in to the Citrix Customer Improvement Program (CEIP)	CitrixWorkspaceApp.exe EnableCEIP=True
False	Opt out of the Citrix Customer Improvement Program	CitrixWorkspaceApp.exe EnableCEIP=False

Enable always-on tracing

• Command: EnableTracing

• Description: Controls the **Always-on tracing** feature.

The possible values are the following:

EnableTracing command value	Description	Example
True (default)	Enables the Always-on tracing feature.	CitrixWorkspaceApp.exe EnableTracing= true
False	Disables the Always-on tracing feature.	CitrixWorkspaceApp.exe EnableTracing= false

Specify the name to identify the user device

- Command: CLIENT_NAME
- Description: Specifies the name used to identify the user device to the server.
- <ClientName> Specifies the name used identify the user device on the server. The default name is %COMPUTERNAME%.
- Example: CitrixReceiver.exe CLIENT_NAME=%COMPUTERNAME%.

Set client name same as the computer name

- Command: ENABLE_DYNAMIC_CLIENT_NAME
- Description: Allows the client name to be the same as the computer name. When you change the computer name, the client name changes too.

The possible values are the following:

command value	Description	Example
Yes (default)	Allows the client name to be the same as the computer	CitrixWorkspaceApp.exe
	name.	<pre>ENABLE_DYNAMIC_CLIENT_NAM =Yes</pre>
No	Does not allow the client name to be the same as the	CitrixWorkspaceApp.exe
	computer name. Specify a	ENABLE_DYNAMIC_CLIENT_NAM
	value for the CLIENT_NAME	=No
	property.	

Authentication parameters

Include single sign-on

- Command: /includeSSON
- Description: Requires you to install as an administrator. Indicates that the Citrix Workspace app is installed with the single sign-on component. See Domain pass-through authentication for more information.
- Example: CitrixWorkspaceApp.exe /includeSSON

Note:

The includeSSON command supports only fresh installation of Citrix Workspace app.

Enable single sign-on

- Command: ENABLE_SSON
- Description: Enables single sign-on when the Workspace app is installed with the / includeSSON command. For more information, see Domain pass-through authentication.

The possible values are the following:

ENABLE_SSON command		
value	Description	Example
Yes (default)	Indicates that single sign-on is enabled.	CitrixWorkspaceApp.exe ENABLE_SSON=Yes
No	Indicates that a single sign-on is disabled.	CitrixWorkspaceApp.exe ENABLE_SSON=No

Uninstall Citrix Workspace app

Uninstall using Windows-based uninstaller

You can uninstall Citrix Workspace app for Windows from the **Control Panel**. For more information, see the Uninstall Citrix Workspace app for Windows section.

Note:

During Citrix Workspace app installation, you get a prompt to uninstall the Citrix HDX RTME package. Click **OK** to continue the uninstallation.

Uninstall using the command-line interface

You can uninstall Citrix Workspace app, from a command line by typing the following command:

```
1 CitrixWorkspaceApp.exe uninstall
2 <!--NeedCopy-->
```

For silent uninstallation of Citrix Workspace app, run the following switch:

```
1 CitrixWorkspaceApp.exe /silent uninstall
2 <!--NeedCopy-->
```

Note:

Citrix Workspace app installer doesn't control GPO related registry keys, so they are kept after uninstallation. If you find any entries, update them using gpedit or delete them manually.

Troubleshooting

Error codes

- For installer related error codes, see MsiExec.exe and InstMsi.exe error messages.
- For system related error codes, see System error codes.

Installer log location

By default, the installer logs are located at the following location:

	Installation log folder	Installation type
Administrator	For 64-bit: C:\Program Files (x86)\Citrix\Logs and for 32-bit: C:\Program Files\Citrix\ICA Client	Per-system installation
User	%USERPROFILE%\AppData\Le	ocaPkeriturise\rLiongstallation

Troubleshooting

Error codes

- For installer related error codes, see MsiExec.exe and InstMsi.exe error messages.
- For system related error codes, see System error codes.

Installer log location

By default, the installer logs are located at the following location:

	Installation log folder	Installation type
Administrator	For 64-bit: C:\Program Files (x86)\Citrix\Logs and for 32-bit: C:\Program Files\Citrix\ICA Client	Per-system installation
User	%USERPROFILE%\AppData\Le	ocalPeriturise\Liongstallation

Reset Citrix Workspace app

Resetting Citrix Workspace app restores the default settings.

The following items are reset when you reset Citrix Workspace app:

- All the configured accounts and stores.
- Apps delivered by the self-service plug-in, their icons, and registry keys.
- File type associations created by the self-service plug-in.
- · Cached files and saved passwords.
- · Per-user registry settings.
- Per-machine installations, and their registry settings.
- Citrix Gateway registry settings for Citrix Workspace app.

Run the following command from the command line interface to reset the Citrix Workspace app:

For silent reset, use the following command:

Note:

Use uppercase U in the parameter.

Resetting Citrix Workspace app does not impact the following:

- Citrix Workspace app or plug-in installation.
- Per-machine ICA lockdown settings.
- Group policy object (GPO) administrative template configurations for Citrix Workspace app.

Deploy

September 26, 2023

You can deploy the Citrix Workspace app in the following methods:

- Use Active Directory and sample startup scripts to deploy the Citrix Workspace app for Windows. For information about Active Directory, see Using Active Directory and sample scripts.
- Before launching workspace for web, install the Workspace app for Windows. For more information, see Using workspace for web.
- Use an Electronic Software Distribution (ESD) tool like the Microsoft System Center Configuration Manager 2012 R2. For more information, see Using System Center Configuration Manager 2012 R2.
- Use Microsoft Endpoint Manager (Intune). For more information, see Deploy Citrix Workspace app in Microsoft Endpoint Manager (Intune).

Using Active Directory and sample scripts

You can use Active Directory Group Policy scripts to deploy Citrix Workspace app based on your organizational structure. Citrix recommends using the scripts rather than extracting the .msi files. For general information about startup scripts, see the Microsoft documentation.

To use the scripts with Active Directory:

- 1. Create the Organizational Unit (OU) for each script.
- 2. Create a Group Policy Object (GPO) for the newly created OU.

For information on creating OU in an Azure Active Directory, see Create an Organizational Unit (OU) in an Azure Active Directory Domain Services managed domain.

Edit scripts

Edit the scripts with the following parameters in the header section of each file:

- **Current Version of package** The specified version number is validated and if it isn't presented, the deployment proceeds. For example, set DesiredVersion= 3.3.0.XXXX to exactly match the version specified. If you specify a partial version, for example, 3.3.0, it matches any version with that prefix (3.3.0.1111, 3.3.0.7777, and so on).
- **Package Location/Deployment directory** This specifies the network share containing the Citrix Workspace app installer packages and is not authenticated by the script. The shared folder must have Read permission set to EVERYONE.
- Script Logging Directory The network share where the install logs are copied and the ones
 that script didn't authenticate. The shared folder must have Read and Write permissions for
 EVERYONE.
- **Package Installer Command Line Options** These command-line options are passed to the installer. For the command-line syntax, see Using command-line parameters.

Scripts

Citrix Workspace app installer includes the sample of both per-computer and per-user scripts to install and uninstall Citrix Workspace app. The scripts are present in the Citrix Workspace app for Windows Downloads page.

Deployment type	To deploy	To remove
Per-computer	CheckAndDeployWorks .bat	<pre>spaceF CheckAndRemoveWorkspace .bat</pre>
Per-user	CheckAndDeployWorks .bat	spacePe ClUsekAlogRenSovelWo rkspace .bat

To add the startup scripts:

- 1. Open the Group Policy Management Console.
- 2. Select Computer Configuration or User Configuration > Policies > Windows Settings >

Scripts.

- 3. In the right-hand pane of the Group Policy Management Console, select **Logon**.
- 4. Select **Show Files**, copy the appropriate script to the folder displayed, and close the dialog.
- 5. In the **Properties** menu, click **Add** and **Browse** to find and add the newly created script.

To deploy Citrix Workspace app for Windows:

- 1. Move the user devices assigned to receive this deployment to the OU that you created.
- 2. Reboot the user device and log on.
- 3. Verify that the newly installed package is listed in the **Program and Features**.

To remove Citrix Workspace app for Windows:

- 1. Move the user devices chosen for removal to the OU you created.
- 2. Reboot the user device and log on.
- 3. Verify that the newly installed package isn't listed in the **Program and Features**.

Using workspace for web

The workspace for a web enables you to access StoreFront stores through a browser using a webpage.

Before connecting to an app from a browser, do the following:

- 1. Install the Citrix Workspace app for Windows.
- 2. Deploy the Citrix Workspace app from workspace for web

If workspace for web detects that a compatible version of Citrix Workspace app isn't present, a prompt appears. The prompt shows that you must download and install Citrix Workspace app for Windows.

Note:

The workspace for the web does not support email-based account discovery.

Use the following configuration to prompt for the server address only.

- 1. Download CitrixWorkspaceApp.exe to your local computer.
- 2. Rename CitrixWorkspaceApp.exeto CitrixWorkspaceAppWeb.exe.
- 3. Deploy the renamed executable using your regular deployment method. If you use StoreFront, see Configure StoreFront using the configuration files in the StoreFront documentation.

Using System Center Configuration Manager 2012 R2

You can use Microsoft System Center Configuration Manager (SCCM) to deploy Citrix Workspace app.

You can deploy the Citrix Workspace app using the SCCM using the following four parts:

- 1. Adding Citrix Workspace app to the SCCM deployment
- 2. Adding distribution points

- 3. Deploying the Citrix Workspace app to the software center
- 4. Creating Device Collections

Adding Citrix Workspace app to the SCCM deployment

- 1. Copy the downloaded Citrix Workspace app installation folder to a folder on the Configuration Manager server and launch the Configuration Manager console.
- 2. Select **Software Library > Application Management**. Right-click **Application** and click **Create Application**.

The Create Application wizard appears.

- 3. In the General pane, select Manually specify the application information and click Next.
- 4. In the **General Information** pane, specify the application information, such as **Name**, **Manufacturer**, **Software version**.
- 5. In the **Application Catalog** wizard, specify additional information such as Language, Application name, User category and so on and click **Next**.

Note:

Users can see the information that you specify here.

6. In the **Deployment Type** pane, click **Add** to configure the deployment type for Citrix Workspace app setup.

The Create Deployment Type wizard appears.

- 7. In the **General** pane: Set the deployment type to Windows Installer (*.msi file), select **Manually** specify the deployment type information, and click **Next**.
- 8. In the **General Information** pane: Specify deployment type details (For example: Workspace Deployment) and click **Next**.
- 9. In the **Content** pane:
 - a) Provide the path where the Citrix Workspace app setup file is present. For example: Tools on SCCM server.
 - b) Specify **Installation program** as one of the following:
 - CitrixWorkspaceApp.exe /silent for default silent installation.
 - CitrixWorkspaceApp.exe /silent /includeSSON to enable domain passthrough.
 - CitrixWorkspaceApp.exe /silent SELFSERVICEMODE=false to install Citrix Workspace app in non-Self Service Mode.
 - c) Specify **Uninstall program** as CitrixWorkspaceApp.exe /silent /uninstall (to enable uninstallation through SCCM).

10. In the **Detection Method** pane: Select **Configure rules to detect the presence of this deploy- ment type** and click **Add Clause**.

The Detection Rule dialog appears.

- Set **Setting Type** to File System.
- Under **Specify the file or folder to detect the application**, set the following:
 - Type From the drop-down menu, select File.
 - Path %ProgramFiles(x86)%\Citrix\ICA Client\Receiver\
 - File or folder name receiver.exe
 - **Property** From the drop-down menu, select **Version**
 - Operator From the drop-down menu, select Greater than or equal to
 - Value Type version number of the current Citrix Workspace app

Note:

This rule combination applies to Citrix Workspace app for Windows upgrades as well.

- 11. In the **User Experience** pane, set:
 - Installation behavior Install for system
 - Logon requirement Whether a user is logged on
 - Installation program visibility Normal Click Next.

Note:

Do not specify any requirements and dependencies for this deployment type.

12. In the **Summary pane**, verify the settings for this deployment type. Click **Next**.

A success message appears.

- 13. In the **Completion pane**, a new deployment type (Workspace Deployment) is listed under the **Deployment types**.
- 14. Click Next and click Close.

Add distribution points

 Right-click Citrix Workspace app in the Configuration Manager console and select Distribute Content.

The Distribute Content wizard appears.

2. In the Content Distribution pane, click **Add > Distribution Points**.

The Add Distribution Points dialog appears.

3. Browse to the SCCM server where the content is available and clicks **OK**.

In the Completion pane, a success message appears

4. Click Close.

Deploy Citrix Workspace app to the software center

- Right-click Citrix Workspace app in the Configuration Manager console select **Deploy**.
 The Deploy Software wizard appears.
- 2. Select **Browse** against Collection (can be Device Collection or User Collection) where the application is to be deployed and click **Next**.
- 3. In the **Deployment Settings** pane, set **Action** to Install and **Purpose** to Required (enables unattended installation). Click **Next**.
- 4. In the **Scheduling** pane, specify the schedule to deploy the software on target devices.
- 5. In the User Experience pane, set the User notifications behavior; select Commit changes at deadline or during a maintenance window (requires restart) and click Next to complete the Deploy Software wizard.

In the **Completion** pane, a success message appears.

Reboot the target endpoint devices (required only to start installation immediately).

On endpoint devices, Citrix Workspace app is visible in the Software Center under **Available Software**. Installation is triggered automatically based on the configured schedule. You can also schedule or install on demand. The installation status is displayed in the **Software Center** after the installation starts.

Creating device collections

- Launch the Configuration Manager console and click Assets and Compliance > Overview >
 Devices.
- 2. Right-click **Device Collections** and select **Create Device Collection**.

The **Create Device Collection** wizard appears.

3. In the **General** pane, type the **Name** for the device and click **Browse** to select the limiting collection.

This determines the scope of devices, which can be one the default **Device Collections** created by SCCM.

Click Next.

4. In the Membership Rules pane, click Add Rule for filtering the devices.

The **Create Direct Membership Rule** wizard appears.

- In the **Search for Resources** pane, select the **Attribute name** based on the devices you want to filter and provide the Value for Attribute name to select the devices.
- 5. Click **Next**. In the Select Resources pane, select the devices that are required to be part of the device collection.

In the Completion pane, a success message appears.

- 6. Click Close.
- 7. In the Membership rules pane, a new rule is listed under Click Next.
- 8. In the Completion pane, a success message appears. Click **Close** to complete the **Create Device Collection** wizard.

The new device collection is listed in **Device Collections**. The new device collection is a part of the Device Collections while browsing in the **Deploy Software** wizard.

Note:

Configuring Citrix Workspace app using SCCM might fail when the **MSIRESTARTMANAGERCON-TROL** attribute is set to **False**.

As per our analysis, Citrix Workspace app for Windows is not the cause of this failure. Also, retrying might yield successful deployment.

Deploy Citrix Workspace app in Microsoft Endpoint Manager (Intune)

To deploy Citrix Workspace app – native Win 32 app in Microsoft Endpoint Manager (Intune), do the following:

- 1. Create the following folders:
 - A folder to store all the source files required for the installation, for example, C:\CitrixWorkspace_Executable.
 - A folder for the output file. Output files are in .intunewin file, for example, C:\
 Intune_CitrixWorkspaceApp.
 - A folder for the Microsoft Win32 Content Prep Tool, for example, C:\Intune_WinAppTool
 This tool helps to convert the installation files into the .intunewin format. You can download the packaging tool from Microsoft-Win32-Content-Prep-Tool.
- 2. Convert all the source files that are needed for the installation to a .intunewin file:
 - a) Launch the command prompt and go to the folder, where the Microsoft Win32 Content Prep Tool exists, for example, C:\Intune_WinAppTool.
 - b) Run the IntuneWinAppUtil.exe command.
 - c) On the prompt, enter the following information:

- Source folder: C:\CitrixWorkspace_Executable
- **Setup file**: CitrixWorkspaceApp.exe
- Output folder: C:\Intune_CitrixWorkspaceApp
 The .intunewin file is created.
- 3. Add the package to Microsoft Endpoint Manager (Intune):
 - a) Open the Microsoft Endpoint Manager (Intune) console: https://endpoint. microsoft.com/##home.

Note:

The following instruction can be performed only on https://endpoint.microsoft.com/##home. You can also add the package through https://portal.azure.com.

- b) Click Apps > Windows app and then click +Add.
- c) Select Windows app (Win 32) from the App type drop-down list.
- d) Click **App package file**, locate the CitrixWorkspaceApp.intunewin file, and then click **OK**.
- e) Click **App information** and fill in the mandatory information, Name, Description, and Publisher and then click **OK**.
- f) Click **Program**, enter the following information, and click **OK**:
 - Install command: CitrixWorkspaceApp.exe /silent
 - Uninstall command: CitrixWorkspaceApp.exe /uninstall
 - Install behavior: System
- g) Click **Requirement**, enter the required information, and then click **OK**.

Note:

Select both x64 and x32 from the Operating System Architecture list. Operating System version can be anything with Win 1607 and later.

- h) Click **Detection rules**, select **Manually configure detection rules** as the **Rules format**, and then click **OK**.
- i) Click **Add**, select the required **Rule type**, and then click **OK**.
 - If **Rule type** is **File** then the path can be, for example, C:\Program Files (x86)\Citrix\ICA Client\wfica32.exe.
 - If Rule type is Registry, then enter HKEY_CURRENT_USER\Software\Citrix as Path and Key exists as the Detection method.
- j) Click **Return codes**, check if the default return codes are valid and then click **OK**.
- k) Click **Add** to add the app to Intune.

- 4. Verify if the deployment is successful:
 - a) Click **Home > Apps > Windows**.
 - b) Click **Device install status**.

Device status displays the number of devices where Citrix Workspace app is installed.

Store configuration

September 26, 2023

Store

This article is a reference document to help you set up your environment after you install Citrix Workspace app.

A **store** aggregates available applications and desktops for a user into a single place. A user can have multiple stores and switch across stores as needed. An admin delivers the store url that has pre-configured resources and settings. You can access these stores through the Citrix Workspace app.

Types of stores

You can add the following store types in the Citrix Workspace app: Workspace, StoreFront, Citrix Gateway Store, and Custom web store.

Workspace

Citrix Workspace is a cloud-based enterprise app store that provides secure and unified access to apps, desktops, and content (resources) from anywhere, on any device. These resources can be Citrix DaaS, content apps, local and mobile apps, SaaS and Web apps, and browser apps. For more information, see Citrix Workspace Overview.

StoreFront

StoreFront is an on-premises enterprise app store that aggregates applications and desktops from Citrix Virtual Apps and Desktops sites into a single easy-to-use store for users.

For more information, see StoreFront documentation.

Citrix Gateway Store

Configure Citrix Gateway to enable users to connect from outside the internal network. For example, users who connect from the Internet or from remote locations.

Custom web stores

This feature provides access to your organization's custom web store from the Citrix Workspace app for Windows. To use this feature, the admin must add the domain or custom web store to the Global App Configuration Service allowed URLs.

For more information about configuring web store URLs for end-users, see Global App Configuration Service.

You can provide the custom web store URL in the **Add Account** screen in Citrix Workspace app. The custom web store opens in the native Workspace app window.

To remove the custom web store, go to **Accounts > Add or Remove accounts**, select the custom web store URL, and click **Remove**.

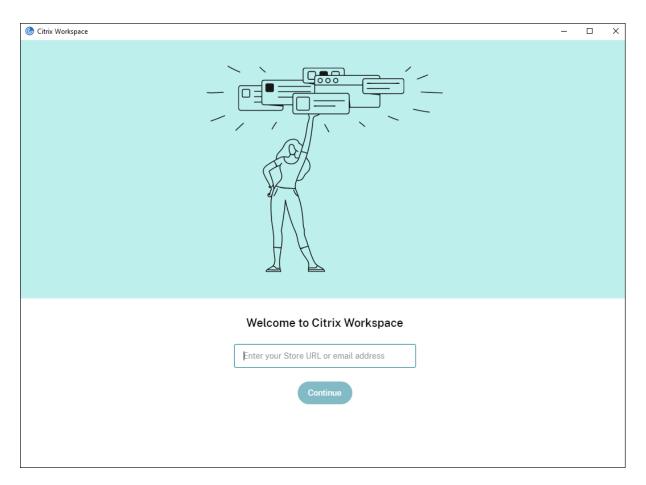
Adding store URL to Citrix Workspace app

You can provide users with the account information that they need to access virtual desktops and applications using the following:

- Providing users with account information to enter manually
- Configuring email-based account discovery
- Adding store through CLI
- · Provisioning file
- Using the Group Policy Object administrative template

Provide users with account information to enter manually

Upon successful installation of Citrix Workspace app, the following screen appears. Users are required to enter an email or server address to access the apps and desktops. When a user enters the details for a new account, Citrix Workspace app tries to verify the connection. If successful, Citrix Workspace app prompts the user to log on to the account.



To enable users to set up accounts manually, be sure to distribute the information required to connect to their virtual desktops and applications.

- To connect to a Workspace store, provide the Workspace URL.
- To connect to a StoreFront store, provide the URL for that server. For example:https://servername.company.com.
- To connect through Citrix Gateway, first determine whether a user must see all configured stores or just the store with remote access enabled for a particular Citrix Gateway.
 - To present all configured stores: Provide users with the Citrix Gateway fully qualified domain name.
 - To limit access to a particular store: Provide users with the Citrix Gateway fully qualified domain name and the store name in the form:

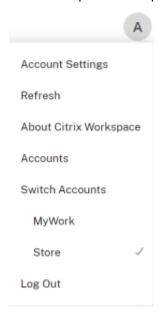
CitrixGatewayFQDN?MyStoreName:

For example, if a store named "SalesApps" has remote access enabled for server1.com and a store named **HRApps** has remote access enabled for server2.com, a user must enter:

- * server1.com?SalesApps to access SalesApps or
- * server2.com?HRApps to access **HRApps**.

CitrixGatewayFQDN?MyStoreName feature requires a new user to create an account by entering a URL and isn't available for email-based discovery.

Once the Workspace app is configured with the Store URL, the account can be managed from the **Accounts** option in the profile menu.



On client machines configured for proxy authentication, if the proxy credentials aren't stored in the **Windows Credential Manager**, an authentication prompt appears, asking you to enter the proxy credentials. Citrix Workspace app then saves the proxy server credentials in **Windows Credential Manager**. This results in a seamless login experience because you don't need to manually save your credentials in **Windows Credential Manager** before accessing Citrix Workspace app.

Configure email-based account discovery

When you configure Citrix Workspace app for email-based account discovery, users enter their email address rather than a server URL during initial Citrix Workspace app installation and configuration. Citrix Workspace app determines the Citrix Gateway or StoreFront Server associated with the email address based on Domain Name System (DNS) Service (SRV) records. The app then prompts the user to log on to access virtual desktops and applications.

To configure email-based account discovery for Citrix Workspace stores, see Getting started in the Global App Configuration Service documentation.

To configure email-based account discovery for Citrix StoreFront or Citrix Gateway stores, see Configuring email-based account discovery.

Adding store through CLI

Install Citrix Workspace app for Windows as an administrator using the command-line interface.

For more information, see List of command-line parameters.

Provide users with provisioning files

StoreFront provides provisioning files that users can open to connect to stores.

You can use StoreFront to create provisioning files that include connection details for accounts. Make these files available to your users to enable them to configure Citrix Workspace app automatically. After installing Citrix Workspace app, users simply open the file to configure Citrix Workspace app. If you configure workspace for web, users can also get Citrix Workspace app provisioning files from those sites.

For more information, see To export store provisioning files for users in the StoreFront documentation.

Using the Group Policy Object Administrative Template

To add or specify a Citrix StoreFront or Gateway using the Group Policy Object administrative template:

- Open the Citrix Workspace app Group Policy Object administrative template by running gpedit
 .msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Classic Administrative Templates (ADM) > Citrix Components > Citrix Workspace > StoreFront.
- 3. Select Citrix Gateway URL/StoreFront Accounts List.
- 4. Select **Enabled** option and click **Show**. If you enable this policy setting, you can enter a list of StoreFront Accounts and NetScaler Gateway URL.
- 5. Enter the URL in the Value field.
- 6. Specify the store URL that is used with the Workspace app:

```
STOREx="storename;http[s]://servername.domain/IISLocation/discovery;[On
, Off]; [storedescription]"
```

Values:

- x Integers 0 through 9 used to identify a store.
- storename Name of the store. This value must match the name configured on the Store-Front server.
- servername.domain The fully qualified domain name of the server hosting the store.
- IISLocation the path to the store within IIS. The store URL must match the URL in the StoreFront provision file. The store URL is in the following format /Citrix/store/discovery. To get the URL, export a provisioning file from StoreFront, launch it in Notepad and copy the URL from the Address element.

- [On, Off] The Off option lets you deliver disabled stores, giving users the choice of whether they access them. When the store status isn't specified, the default setting is On.
- storedescription Description of the store, such as HR App Store.
- 7. Add or specify the Citrix Gateway URL. Enter the name of the URL, delimited by a semi-colon:

Example: STORE0= HRStore; https://ag.mycompany.com##Storename;On;Store Where #Store name is the name of the store behind Citrix Gateway.

Note:

- The Citrix Gateway store URL must be first in the list (parameter STORE0).
- In a multi-store setup, only one Citrix Gateway store URL configuration is allowed.
- The Citrix Gateway store URL configured using this method does not support the PNA Services Sites that are using Citrix Gateway.
- The /Discovery parameter is not required when specifying a Citrix Gateway store URL.

Starting with Version 1808, changes made to the Citrix Gateway URL/StoreFront Account List policy are applied in a session after app restart. A reset isn't required.

Note:

Citrix Workspace app Version 1808 and later doesn't require resetting on a fresh installation. If there's an upgrade to 1808 or later, you must reset the Citrix Workspace app for the changes to take effect.

Limitations:

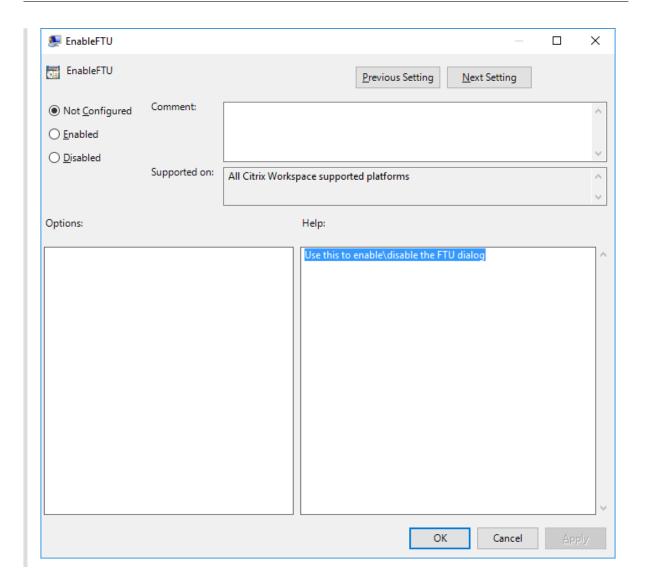
- Citrix Gateway URL must be listed first followed by StoreFront URLs.
- No support for Multiple Citrix Gateway URLs.

Note:

Users can also access the store via a web browser. Users can log in to the Citrix Store from a web browser and launch a virtual app or desktop from the web. The virtual app or desktop launch leverages the capabilities of the natively installed Citrix workspace app.

In this case, it may be desirable to hide the **Add Account** prompt from users. This can be achieved via the following setting:

- Renaming Citrix execution file: Rename the CitrixWorkspaceApp.exe to Citrix-WorkspaceAppWeb.exe to alter the behavior of Add Account dialog. When you rename the file, the Add Account dialog is not displayed from the Start menu.
- **Group Policy Object administrative template**: To hide the **Add Account** option from the Citrix Workspace app installation wizard, disable **EnableFTUpolicy** under Self-Service node in Local Group Policy Object administrative template as shown below. This is a per-machine setting, hence the behavior is applicable for all users.



Domain Name Service name resolution

You can configure Citrix Workspace app for Windows that uses the Citrix XML Service to request a Domain Name Service (DNS) name for a server instead of an IP address.

Important:

Unless your DNS environment is configured specifically to use this feature, Citrix recommends that you do not enable DNS name resolution on the server.

By default, DNS name resolution is disabled on the server and enabled on the Citrix Workspace app. When DNS name resolution is disabled on the server, any Citrix Workspace app request for a DNS name returns an IP address. There's no need to disable DNS name resolution on Citrix Workspace app.

To disable DNS name resolution for specific user devices:

If your server deployment uses DNS name resolution and you experience issues with specific user

devices, you can disable DNS name resolution for those devices.

Caution:

Using the Registry Editor incorrectly might cause serious problems that require you to reinstall the operating system. We do not guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Back up the registry before you edit it.

- Add a string registry key xmlAddressResolutionType to HKEY_LOCAL_MACHINE\
 Software\Wow6432Node\Citrix\ICA Client\Engine\Lockdown Profiles\All
 Regions\Lockdown\Application Browsing.
- 2. Set the value to IPv4-Port.
- 3. Repeat for each user of the user devices.

Connect

Citrix Workspace app provides users with secure, self-service access to virtual desktops and applications, and on-demand access to Windows, web, and Software as a Service (SaaS) applications. Citrix StoreFront or legacy webpages created with Web Interface manage the user access.

To connect to resources using the Citrix Workspace UI

The Citrix Workspace app home page displays virtual desktops and applications that are available to the users based on their account settings (that is, the server they connect to) and settings configured by Citrix Virtual Apps and Desktops or Citrix DaaS administrators. Using the **Preferences** > **Accounts** page, you can configure the URL of a StoreFront server or, if email-based account discovery is configured, by entering the email address.

After connecting to a store, the self-service shows the tabs: **Favorites**, **Desktops**, and **Apps**. To launch a session, click the appropriate icon. To add an icon to **Favorites**, click the ... icon and select **Add to favorites**.

StoreFront to Workspace URL 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 Workspace app. Users can always switch back to the StoreFront store storefront.com using the **Switch Accounts** option in the Workspace app. Admins can control the removal of the StoreFront store storefront.com from the 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:

```
{
1
2
3
   "serviceURL": {
4
5 "url": "https://storefront.acme.com:443",
6 "migrationUrl": [
7
     {
8
       "url": "https://sampleworkspace.cloud.com:443",
9
       "storeFrontValidUntil": "2023-05-01"
10
11
12
13
    ]
14
    }
15
16 "settings": {
17
18 "name": "Productivity Apps",
19 "description": "Provides access StoreFront to Workspace Migration"
  "useForAppConfig": true,
20
21
   "appSettings": {
22
23
     "windows": [
24
       {
25
         "category": "root",
26
         "userOverride": false,
```

```
"assignmentPriority": 0,
28
          "assignedTo": [
29
             "AllUsersNoAuthentication"
30
31
         ],
          "settings": [
32
34
           "name": "Hide advanced preferences",
            "value": false
           }
38
39
         ]
40
         }
41
       1
42
       }
43
44
45
      }
46
47
     }
48
49
   <!--NeedCopy-->
```

Note:

If you're configuring the payload for the first time, use POST.

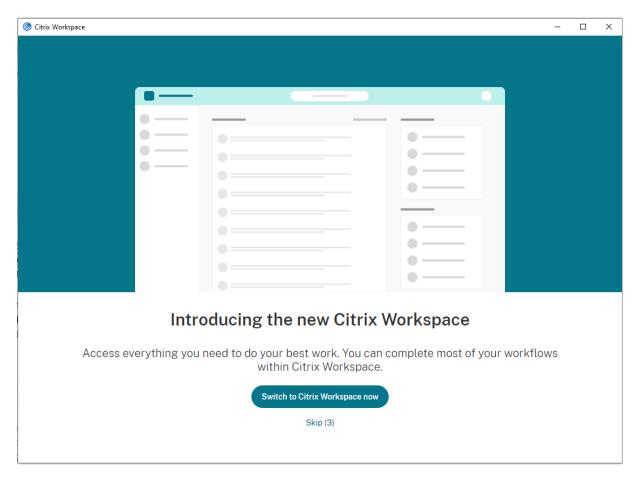
If you're editing the existing payload configuration, use PUT and check that you have the payload that consists of all the supported settings.

- 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 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:



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.

Updates and plugins management

September 26, 2023

This section describes the following:

- Updates
- Plugins management

Update

September 26, 2023

Manual update

If you have already installed Citrix Workspace app for Windows, download and install the latest version of the app from the Citrix Downloads page. For information on the installation, see Install and Uninstall.

Automatic update

When a new version of the Citrix Workspace app is available, Citrix pushes the update on the system that has the Citrix Workspace app installed.

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 verisons prior to Citrix Workspace app 2104 and Citrix Workspace app 1912 LTSR CU4.
- Your system must have an internet connection to receive updates.
- By default, Citrix Workspace updates are disabled on the VDA. This includes RDS multi-user server machines, VDI, and Remote PC Access machines.
- Citrix Workspace updates are disabled on machines where Desktop Lock is installed.
- Workspace for web users can't download the StoreFront policy automatically.
- Citrix Workspace updates can be limited to LTSR updates only.
- Citrix HDX RTME for Windows is included in Citrix Workspace Updates. A notification appears when updates to the HDX RTME on both LTSR and current release of the Citrix Workspace app are available.
- Starting with Version 2105, Citrix Workspace Updates log paths are modified. The Workspace Updates logs are present at C:\Program Files (x86)\Citrix\Logs. For information on logging, see Log collection section.
- A non-administrator can update Citrix Workspace app on an admin-installed instance. You
 can do that by right-clicking the Citrix Workspace app icon in the notification area and selecting Check for Updates. The Check for Updates option is available on both the userinstalled and the admin-installed instances of Citrix Workspace app.
- You can also perform auto-update when Proxy auto-configuration (PAC) and Web Proxy Auto-Discovery Protocol (WPAD) detection is enabled. This is not supported when proxy require credentials for authentication.

• If Non-EDCHE cipher suite is added, Citrix Workspace can't reach Citrix auto-update server and the following error appears during the auto-update:

Unable to connect to server

Restart the Citrix Workspace app for Windows after a manual or automatic update.

You can check the current version of Citrix Workspace app installed on your device either through **Advanced Preferences** or query the **DisplayVersion** registry from the HKEY_LOCAL_MACHINE\
SOFTWARE\WOW6432Node\Microsoft\Windows\CurrentVersion\Uninstall\CitrixOnlinePluginPacklocation.

To view the version in the **Advanced Preferences**:

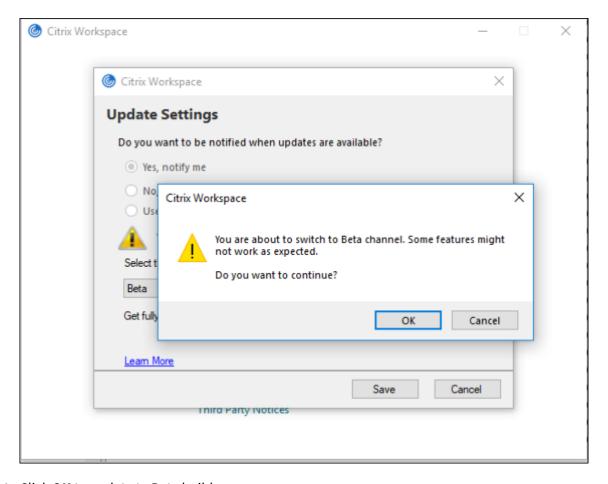
- 1. Right-click Citrix Workspace app icon from the notification area.
- 2. Select Advanced Preferences.

Citrix Workspace app version is displayed in the **About** 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, do the following steps:

- 1. Open Citrix Workspace app from the system tray.
- 2. Navigate to Advanced Preferences > Citrix Workspace updates.
- 3. Select **Beta** from the drop-down list, when the Beta build is available, and click **Save**. A notification window appears.



4. Click **OK** to update to Beta build.

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

- 1. Open Citrix Workspace app from the system tray.
- 2. Navigate to Advanced Preferences > Citrix Workspace updates.
- 3. In the **Update Settings** screen, select **Release** from the Update channel drop-down list and click **Save**.

Note:

- If any new updates are available, an auto-update notification appears.
- 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's advised that Beta builds aren't deployed in the production environments.

Supporting auto-update of Citrix Workspace app on VDA

Starting with Citrix Workspace app for Windows version 2209, you can enable auto-update feature on VDA by creating the following registry value:

On 32-bit machine:

- Registry Key: HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\AutoUpdate
- Registry Value: AllowAutoUpdateOnVDA
- Registry Type: REG_SZ
- · Registry Data: True

On 64-bit machine:

- Registry Key: HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\ICA Client\AutoUpdate
- Registry Value: AllowAutoUpdateOnVDA
- Registry Type: REG_SZ
- · Registry Data: True

Auto-update version control

Administrators can now manage the auto-update version for the devices in the organization.

Administrators can control the version by setting the version in the maximum Allowed Version property in the Global App Config Service.

Example JSON file in Global App Config Service:

```
1 {
2
   "category": "AutoUpdate",
3
4 "userOverride": false,
5
     "assignedTo": [
       "AllUsersNoAuthentication"
6
7
     "settings": [
8
       {
9
10
         "name": "Auto Update plugins settings",
11
         "value": [
12
13
           {
14
             "pluginSettings": {
15
16
               "upgradeToLatest": false,
17
18
               "deploymentMode": "InstallAndUpdate",
19
                "stream": "Current",
```

```
20
                "maximumAllowedVersion": "23.03.0.49",
                "minimumAllowedVersion": "0.0.0.0",
21
                "delayGroup": "Fast"
23
24
              "pluginName": "WorkspaceApp",
25
              "pluginId": "1CDF566D-B2C7-47CA-802F-6283C862E1D6"
26
27
28
29
         ]
        }
30
31
     ]
    }
34
   <!--NeedCopy-->
```

When the version is set, Citrix Workspace app on the user's device is automatically updated to the version specified in the maximumAllowedVersion property.

Notes:

- Currently all the parameters mentioned in the preceding JSON file are mandatory. You must provide values for upgradeToLatest setting and the maximumAllowedVersion setting based on the requirement of your organization. However, for the remaining parameters, you can use values similar to the example JSON file.
- To achieve auto-update version control, upgradeToLatest setting in the Global App Config Service must be set to false. If this is true, maximumAllowedVersion 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.

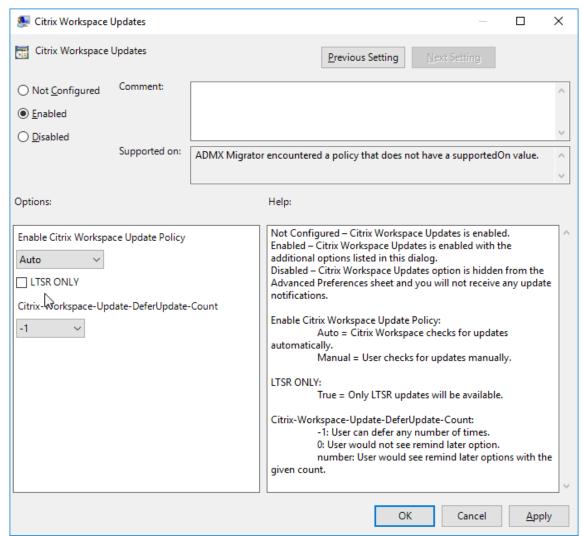
Advanced configuration for automatic updates (Citrix Workspace Updates)

You can configure Citrix Workspace Updates using the following methods:

- 1. Group Policy Object (GPO) administrative template
- 2. Command-line interface
- 3. GUI
- 4. StoreFront

Configure Citrix Workspace Updates using the Group Policy Object administrative template

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc and navigate to the Computer Configuration node.
- 2. Go to Administrative Templates > Citrix Components > Citrix Workspace > Workspace Updates.



Enable or disable updates – Select Enabled or Disabled to enable or disable Workspace Updates.

Note:

When you select **Disabled**, you aren't notified of new updates. **Disabled** option also hides the Workspace Updates option from the Advanced Preferences sheet.

4. **Update notification** – When an update is available, you can choose to be automatically notified or check for them manually. After you have enabled Workspace updates, select one of the following options from the **Enable Citrix Workspace Update Policy** drop-down list:

- Auto You're notified when an update is available (default). This is applicable only for versions prior to Citrix Workspace app 2207. In 2207 or later versions, Citrix Workspace app update is automatic and you aren't notified when an update is available.
- Manual You aren't notified when an update is available. Check for updates manually.
- 5. Select LTSR ONLY to get updates for LTSR only.
- 6. From the **Citrix-Workspace-Update-DeferUpdate-Count** drop-down list, select a value between -1 and 30:
 - If the value is 0, the **Remind Me Later** option doesn't appear. **Update available** prompt is shown on every periodic automatic check for update.
 - If the value is -1, the **Remind Me Later** option appears with the **Update available** prompt. You can defer the update notification any number of times.
 - A value between 1-30 defines the number of times the **Remind Me Later** option with the **Update available** prompt must appear. You can defer the update notification based on the value defined in this field. However, the **Update available** prompt continues to appear but without the **Remind Me Later** option.

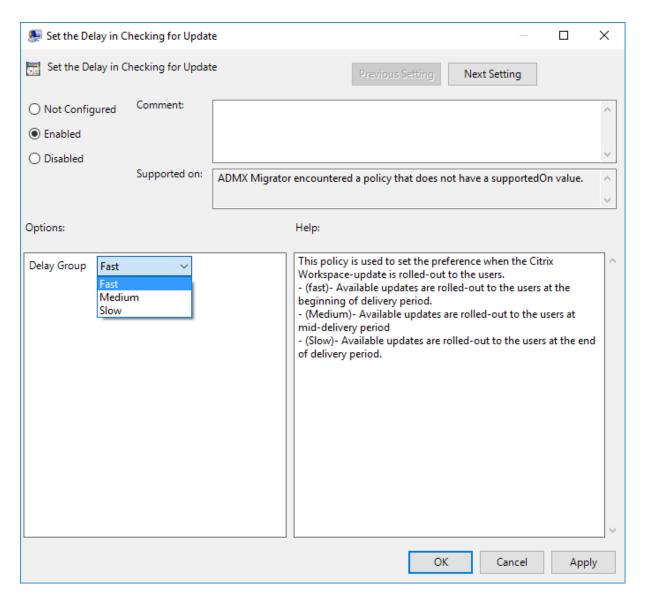
Note:

Starting with Citrix Workspace app for Windows version 2207, the auto-update feature is improved and the **Citrix-Workspace-Update-DeferUpdate-Count** field is not required.

Configure the delay in checking for updates

When a new version of the Workspace app is available, Citrix rolls out the update during a specific delivery period. With this property, you can control at what stage during the delivery period you can receive the update.

To configure the delivery period, run gpedit.msc to launch the Group Policy Object administrative template. Under Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Set the Delay in Checking for Update.



Select **Enabled**, and from the **Delay Group** drop-down list, select one of the following:

- Fast Update rollout happens at the beginning of the delivery period.
- Medium Update rollout happens at the mid-delivery period.
- Slow Update rollout happens at the end of the delivery period.

Note:

When you select **Disabled**, you aren't notified of available updates. **Disabled** also hides the Workspace Updates option from the Advanced Preferences sheet.

Configure Citrix Workspace Updates using the command-line interface

By specifying command-line parameters while installing Workspace app:

You can configure Workspace updates by specifying command-line parameters during the Citrix Workspace app installation. See Install parameters for more information.

By using command-line parameters after Citrix Workspace app has been installed:

Citrix Workspace Updates can also be configured after installing the Citrix Workspace app for Windows. Navigate to the location of CitrixReceiverUpdater.exe using the Windows command line.

Typically, CitrixReceiverUpdater.exe is at CitrixWorkspaceInstallLocation\Citrix\Ica Client\Receiver. You might run the CitrixReceiverUpdater.exe binary along with the command-line parameters listed in the Install parameters section.

For example,

CitrixReceiverUpdater.exe /AutoUpdateCheck=auto /AutoUpdateStream=Current /
DeferUpdateCount=-1 /AURolloutPriority=fast

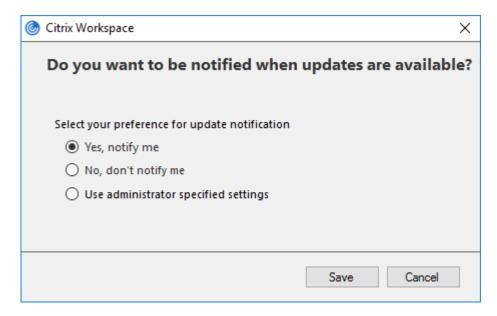
Note:

The /AutoUpdateCheck is a mandatory parameter that you must set to configure other parameters like /AutoUpdateStream, /DeferUpdateCount, /AURolloutPriority.

Configure Citrix Workspace Updates using the graphical user interface

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

- 1. Right-click Citrix Workspace app icon from the notification area.
- 2. Select Advanced Preferences > Citrix Workspace Updates.
- 3. Select one of the following notification preference options:
 - Yes, notify me You're notified when an update is available for Citrix Workspace app.
 - No, don't notify me You aren't notified when an update is available for Citrix Workspace app. Check for updates manually.
 - Use administrator specified settings Uses the settings configured on StoreFront server.



4. Click Save.

Note:

- The Yes, notify me and the No, don't notify me options are applicable only for versions prior to Citrix Workspace app 2207. In 2207 or later versions, the Citrix Workspace app update is automatic and you aren't notified when an update is available. If you select the No, don't notify me option, check for updates manually.
- You can hide all or part of the Advanced Preferences sheet available from the Citrix Workspace app icon. For more information, see the Advanced Preferences sheet section.

Configure Citrix Workspace Updates using StoreFront

- 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">
```

Before the </account> tag, navigate to the properties of that user account:

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

```
1 <account>
2
```

```
<clear />
4
       <account id="d1197d2c-ac82-4f13-9346-2ee14d4b0202" name="</pre>
           F84Store"
6
          description="" published="true" updaterType="Citrix"
             remoteAccessType="None">
9
          <annotatedServices>
10
            <clear />
11
12
13
            <annotatedServiceRecord serviceRef="1__Citrix_F84Store">
14
15
              <metadata>
16
                <plugins>
17
18
19
                  <clear />
21
                </plugins>
22
23
                <trustSettings>
24
25
                  <clear />
26
27
                </trustSettings>
28
29
                properties>
30
31
                  cproperty name="Auto-Update-Check" value="auto" />
32
                  cproperty name="Auto-Update-DeferUpdate-Count" value
                      ="1" />
34
                           cproperty name="Auto-Update-LTSR-Only" value
                              ="FALSE" />
36
                  cproperty name="Auto-Update-Rollout-Priority" value=
37
                      "fast" />
                         </properties>
40
41
              </metadata>
42
```

```
43
            </annotatedServiceRecord>
44
45
          </annotatedServices>
46
          <metadata>
47
48
49
            <plugins>
51
               <clear />
52
53
            </plugins>
54
55
            <trustSettings>
56
               <clear />
            </trustSettings>
60
            properties>
62
               <clear />
63
64
            </properties>
66
          </metadata>
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-LTSR-Only: Indicates that the update is for LTSR only.
 - True the updater ignores any updates that are not marked as LTSR valid. Only LTSR updates are considered.
 - False (default) Updater considers only current stream updates.

- 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.

Note:

This configuration is applicable only for interactive updates and not when the silent autoupdate 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.

Plugins management

September 26, 2023

Citrix Workspace app for Windows offers Plugins management capability that makes the Citrix Workspace app a single client app required on the end point to install and manage agents such as Secure Access Agent and End Point Analysis (EPA) plug-in.

With this capability, administrators can easily deploy and manage required agents from a single management console.

Plugins management includes the following steps:

- Administrators must specify the agents required on end users' devices in the Global App Configuration Service. Administrators can specify Secure Access Agent and 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.)

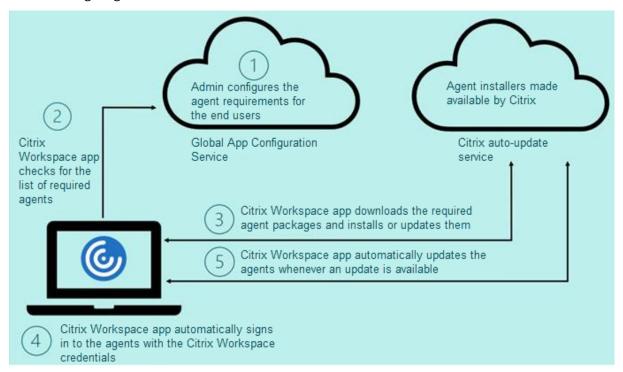
Citrix Workspace app ensures to automatically update the agents whenever an update is available in the future.

Citrix Workspace app automatically signs in to the agents with the Citrix Workspace credentials.

Notes:

- If the EPA and ZTNA plugins doesn't exists, the plugins are downloaded and installed while adding the store or account for the first time.
- If the store or account and plug-ins already exists and the installer contains a higher version, plug-ins are updated during the auto-update cycle.

The following diagram illustrates the workflow:



Important:

Global App configuration service is required to enable the Plugins management feature.

- For the cloud stores, Global app configuration service UI can be accessed in the Workspace
 Configuration section on the Citrix Cloud admin portal. For more information, see Configure Citrix Workspace app.
- To onboard on-premises stores or for customers need to setup Email based discovery for cloud stores, see Global App Configuration service documentation.

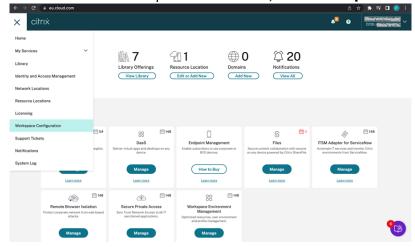
You can enable the Plugins management feature using the following methods:

- Using Global App Configuration service UI Use this method to deploy the latest version of the client.
- Using Global App Configuration service API Use this method to customize installation with parameters to control version, deployment modes, auto update intervals etc.

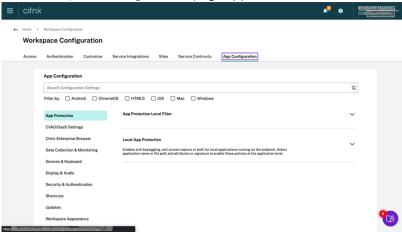
Enable Plugins management using Global App Configuration service UI

This method is applicable for cloud stores only, agents (EPA / Secure Access, Zoom plug-in, or WebEx plug-in) can be deployed by the admins using the UI.

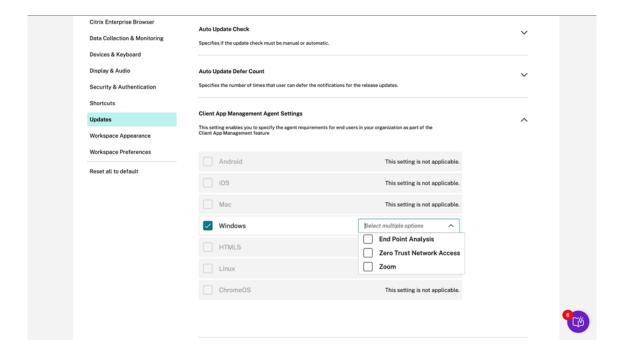
- 1. Sign in to Citrix Cloud.
- 2. From the menu in the top-left of the screen, select **Workspace Configuration**.



The Workspace Configuration page appears.



- 3. Click **App Configuration** tab.
- 4. Click Updates.
- 5. Ensure **Windows** check box is selected.
- 6. Select the required agents next to **Windows** from the **Client App Management Agent Settings** drop-down list.



Enable Plugins management using Gobal App Configuration service API

- 1. Configure and onboard settings in the Global app config service using API. For more information, see Map service URLs and configure settings.
- 2. Following Global App Configuration setting need to be onboarded for the store/account to on-board EPA and ZTNA/Secure Access Client:

```
1
   {
2
       "serviceURL":
4
       {
5
            "url": "https://storefront.acme.com:443"
6
7
         }
8
       "settings":
9
10
        {
11
            "description": "Install and update plugins",
12
            "name": "Install and update plugins",
13
            "useForAppConfig": true,
14
            "appSettings":
15
16
17
                "windows":
18
19
```

```
20
                     {
21
                         "assignedTo":
22
23
                         "AllUsersNoAuthentication"
24
25
                         ],
                         "category": "AutoUpdate",
26
                         "settings":
27
28
                         Γ
29
                             {
                                 "name": "Auto Update plugins settings",
31
                                 "value":
32
33
                                 34
                                      {
                                          "pluginId": "8A8AF6C0-11F6-4343-
                                              BA2D-A85A766170D4",
37
                                          "pluginName": "Citrix EPA Client",
                                          "pluginSettings":
38
39
                                          {
40
                                              "delayGroup": "Fast",
41
42
                                              "deploymentMode": "
                                                  InstallAndUpdate",
                                              "detectRule": "UpgradeCode:{
43
44
    37A181F7-870E-4BDF-B0EA-E3B4766119FE }
45
                                              "isBlocking": true,
46
47
                                              "isFTU": true,
                                              "maximumAllowedVersion": "
48
                                                  23.8.1.24",
                                              "minimumAllowedVersion": "
49
                                                  0.0.0.0",
                                              "stream": "Current",
50
                                              "upgradeToLatest": true
51
52
                                           }
53
                                       }
54
55
                                      {
56
57
58
                                          "pluginId": "9A8AF6C0-11F6-4343-
                                              BA2D-A85A766170D5",
59
                                          "pluginName": "Citrix Secure Access
```

```
Client",
                                          "pluginSettings":
                                          {
61
                                              "delayGroup": "Fast",
63
                                              "deploymentMode": "
64
                                                 InstallAndUpdate",
                                              "detectRule": "UpgradeCode:{
    F0ED53AB-11BE-4E9C-87E5-CD4A81DA2A4D }
67
68
                                              "isBlocking": false,
                                              "isFTU": true,
                                              "maximumAllowedVersion": "
70
                                                 21.8.0.0",
                                              "minimumAllowedVersion": "
71
                                                 0.0.0.0",
72
                                              "stream": "Current",
73
                                              "upgradeToLatest": true
74
                                           }
75
76
                                      }
77
                                     {
78
79
                                          "pluginId": "C03BAE37-F3AC-4D63-8
                                             BC1-3C9CD2BC9E8D",
                                          "pluginName": "WebEx VDI
81
                                             AutoUpgrade Plugin",
                                          "pluginSettings":
82
83
                                          {
84
                                              "delayGroup": "Fast",
85
                                              "deploymentMode": "
                                                 InstallAndUpdate",
                                              "detectRule": "UpgradeCode:{
87
88
    AA2AACDC-D30B-433F-A602-3E25975010A6 }
89
                                              "isBlocking": false,
90
                                              "isFTU": false,
91
92
                                              "maximumAllowedVersion": "
                                                 3.1.0.24263",
93
                                              "minimumAllowedVersion": "0.0.0
                                              "stream": "Current",
94
                                              "upgradeToLatest": true
```

```
96
                                                  }
97
                                            }
98
99
                                      ]
                                   }
102
                             ],
                             "userOverride": false
104
                         }
105
106
107
                   ]
108
               }
109
110
          }
111
      }
112
113
114
115 <!--NeedCopy-->
```

The following table lists the Plugins management settings schema, values, and description.

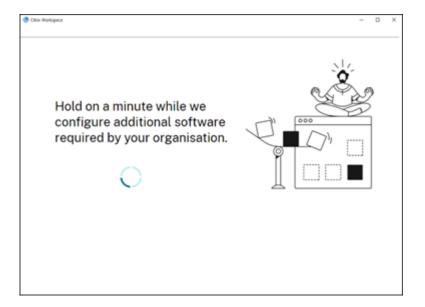
Schema setting	Value	Description
isBlocking	True or False	When the isBlocking parameter is set to true, the plug-in is considered mandatory, and the sign-in page appears only when the required plug-in is installed. Citrix recommends you set EPA as the mandatory plug-in.
pluginName		Friendly name for the plug-in. The pluginName can be modified.
pluginId		ID of the plug-in and must not be modified.
delayGroup	Fast, Medium, Slow	
Auto-update interval at which the plug-ins must be updated.		

Schema setting	Value	Description
deploymentMode	InstallAndUpdate/Update	InstallAndUpdate: Plugin car be freshly installed and updated with the new version.Update: Only update should be allowed, no fresh install.
None		No action is needed for this plug-in.
detectRule	Value must not be modified.	Checks if plug-in is already installed or not.
maximumAllowedVersion		Maximum allowed version of the plug-in.
minimumAllowedVersion		Minimum allowed version of the plug-in.
upgradeToLatest	True or False	
Must be set to false to support maximumAllowedVersion and minimumAllowedVersion. True: Latest version of the plug-in is considered during the update.		
Stream	Current	Must be set to Current to receive install or auto-update the plug-ins

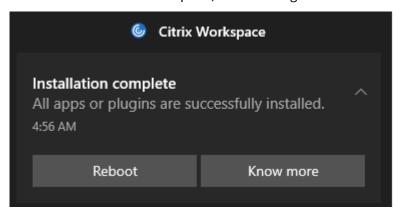
User workflow

- 1. Download and install the Citrix Workspace app for Windows version 2212.
- 2. Click **Add Account** at the end of the installation.
- 3. Add the store/account where the app config settings are onboarded.

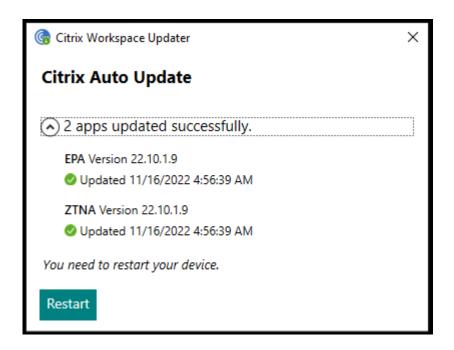
The following message appears while installing the mandatory plug-ins:



4. When the installation is complete, the following toast notification appears:



5. Click **Know more** to know the plug-ins installed.



Plugins management for Zoom plug-in

Download, install, and auto-update of Zoom plug-in is also supported and handled same way as EPA and ZTNA plug-ins.

The following Global App Configuration setting needs to be onboarded for the store/account to leverage this feature:

```
1 {
2
       "serviceURL":
3
4
5
            "url": "https://storefront.acme.com:443"
6
7
        }
8
       "settings":
9
10
11
            "description": "Install and update plugins",
            "name": "Install and update plugins",
13
            "useForAppConfig": true,
14
15
            "appSettings":
16
17
                "windows":
18
19
```

```
20
                     {
21
                         "assignedTo":
22
23
                         "AllUsersNoAuthentication"
24
25
                         ],
                         "category": "AutoUpdate",
26
                         "settings":
27
28
                         Γ
29
                             {
31
                                  "name": "Auto Update plugins settings",
                                  "value":
32
33
                                  34
                                      {
                                          "pluginId": "1A4BB471-022C-4C87-
                                              BDCD-0B64FB42869C",
37
                                           "pluginName": "Zoom VDI AutoUpgrade
                                               Plugin",
                                           "pluginSettings":
38
                                          {
39
40
41
                                               "delayGroup": "Fast",
                                               "deploymentMode": "
42
                                                  InstallAndUpdate",
                                               "detectRule": "UpgradeCode:{
43
44
    34225638-14F3-4059-BE34-175AC9B35435 }
45
46
                                               "isBlocking": false,
                                               "isFTU": false,
47
                                               "maximumAllowedVersion": "
48
                                                  5.11.2872",
                                               "minimumAllowedVersion": "0.0.0
49
                                               "stream": "Current",
50
                                               "upgradeToLatest": true
51
                                           }
52
53
54
                                       }
55
56
                                  ]
                              }
57
58
                         ],
59
```

App experience

September 27, 2023

This section describes the following:

- Application delivery
- Improved virtual apps and desktops launch experience
- App preferences
- SaaS apps
- Data collection and monitoring

Application delivery

September 26, 2023

When delivering applications with Citrix Virtual Apps and Desktops and Citrix DaaS, consider the following options to enhance the user experience:

- Web Access Mode Without any configuration, Citrix Workspace app provides browser-based access to applications and desktops. You can open a browser to a workspace for web to select and use the applications you want. In this mode, no shortcuts are placed on the user's desktop.
- Self-Service Mode By adding a StoreFront account to Citrix Workspace app or configuring Citrix Workspace app to point to a StoreFront website, you can configure *self-service mode*. Self-Service mode allows you to subscribe to applications from the Citrix Workspace app user interface. The enhanced user experience is similar to that of a mobile app store. In a self-service

mode, you can configure mandatory, auto-provisioned, and featured app keyword settings as required.

Note:

By default, Citrix Workspaces app allows you to select the applications to display in the Start menu.

App shortcut-only mode - Administrators can configure Citrix Workspace app to automatically
place application and desktop shortcuts directly in the Start menu or on the desktop. The placement is similar to Citrix Workspace app Enterprise. The new shortcut only mode allows you to
find all the published apps within the familiar Windows navigation schema where you would
expect to find them.

For more information, see the Create Delivery Groups section in the Citrix Virtual Apps and Desktops documentation.

Configure self-service mode

By simply adding a StoreFront account to Citrix Workspace app or configuring Citrix Workspace app to point to a StoreFront site, you can configure self-service mode. The configuration allows users to subscribe to applications from the Citrix Workspace user interface. The enhanced user experience is similar to that of a mobile app store.

Note:

By default, Citrix Workspace app allows users to select the applications they want to display in their Start menu.

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

Append keywords to the descriptions you provide for delivery group applications:

- To make an individual app mandatory, so that it cannot be removed from Citrix Workspace app, append the string KEYWORDS: Mandatory to the application description. There is no Remove option for users to unsubscribe to mandatory apps.
- To automatically subscribe all users of a store to an application, append the string KEYWORDS: Auto to the description. When users log on to the store, the application is automatically provisioned without users needing to manually subscribe to the application.
- To advertise applications to users or to make commonly used applications easier to find by listing them in the Citrix Workspace Featured list, append the string KEYWORDS: Featured to the application description.

Customize the app shortcut location using the Group Policy Object template

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Self Service.
- 3. Select Manage SelfServiceMode policy.
 - a) Select **Enabled** to view the Self-service user interface.
 - b) Select **Disabled** to subscribe to the apps manually. This option hides the Self-service user interface.
- 4. Select Manage App Shortcut policy.
- 5. Select the options as required.
- 6. Click Apply and OK.
- 7. Restart Citrix Workspace app for the changes to take effect.

Using StoreFront account settings to customize app shortcut locations

You can set up shortcuts in the Start menu and on the desktop from the StoreFront site. The following settings can be added in the web.config file in C:\inetpub\wwwroot\Citrix\Roamingin the <annotatedServices> section:

- To put shortcuts on the desktop, use PutShortcutsOnDesktop. Settings: "true" or "false" (default is false).
- To put shortcuts in the Start menu, use PutShortcutsInStartMenu. Settings: "true" or "false" (default is true).
- To use the category path in the Start menu, use UseCategoryAsStartMenuPath. Settings: "true" or "false" (default is true).

Note:

Windows 8, 8.1 and Windows 10 do not allow the creation of nested folders within the Start menu. Instead, display the applications individually or under the root folder. Applications are not within the Category sub folders defined with Citrix Virtual Apps and Desktops and Citrix DaaS.

- To set a single directory for all shortcuts in the Start menu, use StartMenuDir. Setting: String value, being the name of the folder into which shortcuts are written.
- To reinstall modified apps, use AutoReinstallModifiedApps. Settings: "true" or "false" (default is true).
- To show a single directory for all shortcuts on the desktop, use DesktopDir. Setting: String value, being the name of the folder into which shortcuts are written.
- To not create an entry on the clients 'add/remove programs', use DontCreateAddRemoveEntry . Settings: "true" or "false" (default is false).

• To remove shortcuts and Citrix Workspace icon for an application that was previously available from the Store but now is not available, use SilentlyUninstallRemovedResources. Settings: "true" or "false" (default is false).

In the web.config file, add the changes in the **XML** section for the account. Find this section by locating the opening tab:

```
<account id=... name="Store"</pre>
```

The section ends with the </account> tag.

Before the end of the account section, in the first properties section:

```
cproperties> <clear> clear> properties>
```

Properties can be added into this section after the <clear /> tag, one per line, giving the name and value. For example:

```
cproperty name="PutShortcutsOnDesktop"value="True"/>
```

Note:

Property elements added before the <clear /> tag might invalidate them. Removing the <clear /> tag when adding a property name and value is optional.

An extended example for this section is:

```
<properties <pre>cproperty name="PutShortcutsOnDesktop"value="True"cproperty name="DesktopDir"value="Citrix Applications">
```

Important

In multiple server deployments, use only one server at a time to change the configuration of the server group. Ensure that the Citrix StoreFront management console is not running on any of the other servers in the deployment. Once complete, propagate your configuration changes to the server group, so that the other servers in the deployment are updated. For more information, see StoreFront documentation.

Using per-app settings in Citrix Virtual Apps and Desktops 7.x to customize app shortcut locations

Citrix Workspace app can be configured to automatically place application and desktop shortcuts directly in the Start menu or on the desktop. However, this configuration is similar to the previous Workspace for Windows versions. However, release 4.2.100 introduced the ability to control the placement of the app shortcut using Citrix Virtual Apps per app settings. The functionality is useful in environments with a handful of applications that need to be displayed in consistent locations.

Using per app settings in XenApp 7.6 to customize app shortcut locations

To configure a per app publishing shortcut in XenApp 7.6:

- 1. In Citrix Studio, locate the **Application Settings** screen.
- 2. In the **Application Settings** screen, select **Delivery**. Using this screen, you can specify how applications are delivered to users.
- 3. Select the appropriate icon for the application. Click **Change** to browse to the location of the required icon.
- 4. In the **Application category** field, optionally specify the category in Citrix Workspace app where the application appears. For example, if you are adding shortcuts to Microsoft Office applications, enter Microsoft Office.
- 5. Select the Add shortcut to user's desktop check box.
- 6. Click OK.



Reducing enumeration delays or digitally signing application stubs

Citrix Workspace app provides functionality to copy the .EXE stubs from a network share, if:

- there is a delay in app enumeration at each sign-in, or
- there is a need to sign application stubs digitally.

This functionality involves several steps:

- 1. Create the application stubs on the client machine.
- 2. Copy the application stubs to a common location accessible from a network share.
- 3. If necessary, prepare an allow list (or, sign the stubs with an Enterprise certificate.
- 4. Add a registry key to enable Workspace for Windows to create the stubs by copying them from the network share.

If **RemoveappsOnLogoff** and **RemoveAppsonExit** are enabled, and users are experiencing delays in app enumeration at every logon, use the following workaround to reduce the delays:

 Use regedit to add HKEY_CURRENT_USER\Software\Citrix\Dazzle /v ReuseStubs /t REG_SZ/d "true". 2. Use regedit to add HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle /v ReuseStubs /t REG_SZ /d "true". HKEY_CURRENT_USER has preference over HKEY_LOCAL_MACHINE.

Caution

Editing the registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix cannot guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Be sure to back up the registry before you edit it.

Enable a machine to use pre-created stub executables that are stored on a network share:

- 1. On a client machine, create stub executables for all apps. To accomplish create stub executables, add all the applications to the machine using Citrix Workspace app. Citrix Workspace app generates the executables.
- 2. Harvest the stub executables from %APPDATA%\Citrix\SelfService. You only need the .exe files.
- 3. Copy the executables to a network share.
- 4. For each client machine that is locked down, set the following registry keys:
 - a) Reg add HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle /v CommonStubDirectory /t REG_SZ /d "\ShareOne\WorkspaceStubs"
 - b) Reg add HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle/v
 - c) CopyStubsFromCommonStubDirectory /t REG_SZ /d "true". It's also possible to configure these settings on HKEY_CURRENT_USER if you prefer. HKEY_CURRENT_USER has preference over HKEY_LOCAL_MACHINE.
 - d) Exit and restart Citrix Workspace app for the changes to take effect.

Example use cases:

This topic provides use cases for app shortcuts.

Allowing users to choose what they want in the Start menu (Self-Service)

If you have dozens or even hundreds of apps, allow users to select the applications to add to **Favorite** and **Start** menu:

If you want the user to choose the applications, they want in their Start menu.

configure Citrix Workspace app in self-service mode. In this mode, you also configure *auto-provisioned* and *mandatory* app keyword settings as needed.

If you want the user to choose the applications, they want in their Start menu but also want specific app shortcuts on the desktop.

configure Citrix Workspace app without any options and then use per app settings for the few apps that you want on the desktop. Use *auto provisioned* and *mandatory* apps as needed.

No app shortcuts in the Start menu

If a user has a family computer, you might not need or want app shortcuts at all. In such scenarios, the simplest approach is browser access; install Citrix Workspace app without any configuration and browse to workspace for web. You can also configure Citrix Workspace app for self-service access without putting shortcuts anywhere.

If you want to prevent Citrix Workspace app from putting application shortcuts in the Start menu automatically.

configure Citrix Workspace app with
PutShortcutsInStartMenu=False. Citrix
Workspace app doesn't put apps in the Start
menu even in self-service mode unless you put
them using per app settings.

All app shortcuts in the Start menu or on the Desktop

If the user has only a few apps, put them all in the Start menu or on the desktop, or in a folder on the desktop.

If you want Citrix Workspace app to put all application shortcuts in the start menu automatically.

If you want all application shortcuts to put on the desktop.

configure Citrix Workspace app with SelfServiceMode =False. All available apps appear in the Start menu.

configure Citrix Workspace app with PutShortcutsOnDesktop = true. All available apps appear in the desktop.

If you want all shortcuts to be, put on the	configure Citrix Workspace app with
desktop in a folder.	DesktopDir=Name of the desktop folder where
	you want applications.

Per app settings in XenApp 6.5 or 7.x

If you want to set the location of shortcuts so every user finds them in the same place use XenApp per App Settings:

If you want per-app settings to determine
where applications are placed independently
of whether in self-service mode or Start menu
mode

configure Citrix Workspace app with PutShortcutsInStartMenu=false and enable per app settings.

Apps in category folders or in specific folders

If you want applications displayed in specific folders use the following options:

If you want the application shortcuts Citrix Workspace app places in the start menu to be shown in their associated category (folder).	configure Citrix Workspace app with UseCategoryAsStartMenuPath=True.
If you want the applications that Citrix Workspace app puts in the Start menu to be in a specific folder.	configure Citrix Workspace app with StartMenuDir=the name of the Start menu folder name.

Remove apps on logoff or exit

If you don't want users to see apps while another user share the end point, you can remove the apps when the user logs off and exits.

If you want Citrix Workspace app to remove all apps on logoff.	configure Citrix Workspace app with RemoveAppsOnLogoff=True.
If you want Citrix Workspace app to remove apps on exit.	configure Citrix Workspace app with RemoveAppsOnExit=True.

Configuring Local App Access applications

When configuring Local App Access applications:

To specify that a locally installed application must be used instead of an application available
in Citrix Workspace app, append the text string KEYWORDS:prefer="pattern." This feature is referred to as Local App Access.

Before you install an application on a user's computer, Citrix Workspace app searches for the specified patterns to determine if the application is installed locally. If it is, Citrix Workspace app subscribes the application and does not create a shortcut. When the user starts the application from the Citrix Workspace app window, Citrix Workspace app starts the locally installed (preferred) application.

If a user uninstalls a preferred application outside of Citrix Workspace app, the application is unsubscribed during the next Citrix Workspace app refresh. If a user uninstalls a preferred application from the Citrix Workspace app dialog, Citrix Workspace app unsubscribes the application but does not uninstall it.

Note:

The keyword prefer is applied when Citrix Workspace app subscribes an application. Adding the keyword after the application is subscribed has no effect.

You can specify the prefer keyword multiple times for an application. Only one match is needed to apply the keyword to an application. The following patterns can be used in any combination:

• To specify that a locally installed application must be used instead of an application available in Citrix Workspace app, append the text string KEYWORDS:prefer="pattern". This feature is referred to as Local App Access.

Before you install an application on a user's computer, Citrix Workspace app searches for the specified patterns to determine if the application is installed locally. If it is, Citrix Workspace app subscribes the application and does not create a shortcut. When the user starts the application from the Citrix Workspace app dialog, Citrix Workspace app starts the locally installed (preferred) application.

If a user uninstalls a preferred application outside of Citrix Workspace app, the application is unsubscribed during the next Citrix Workspace app refresh. If a user uninstalls a preferred application from the Citrix Workspace app, Citrix Workspace app unsubscribes the application but does not uninstall it.

Note:

The keyword prefer is applied when Citrix Workspace app subscribes an application. Adding the keyword after the application is subscribed has no effect.

You can specify the prefer keyword multiple times for an application. Only one match is needed to apply the keyword to an application. The following patterns can be used in any combination:

• prefer="ApplicationName"

The application name pattern matches any application with the specified application name in the shortcut file name. The application name can be a word or a phrase. Quotation marks are required for phrases. Matching is not allowed on partial words or file paths and is case-insensitive. The application name matching pattern is useful for overrides performed manually by an administrator.

KEYWORDS:prefer=	Shortcut under Programs	Matches?
Word	\Microsoft Office\Microsoft Word 2010	Yes
Microsoft Word	\Microsoft Office\Microsoft Word 2010	Yes
Console	McAfee\VirusScan Console	Yes
Virus	McAfee\VirusScan Console	No
Console	McAfee\VirusScan Console	Yes

prefer="\\Folder1\Folder2\...\ApplicationName"

The absolute path pattern matches the entire shortcut file path plus the entire application name under the Start menu. The Programs folder is a sub folder of the Start menu directory, so you must include it in the absolute path to target an application in that folder. Quotation marks are required if the path contains spaces. The matching is case-sensitive. The absolute path matching pattern is useful for overrides implemented programmatically in Citrix Virtual Apps and Desktops and Citrix DaaS.

KEYWORDS:prefer=	Shortcut under Programs	Matches?
\Programs\Microsoft Office\Microsoft Word 2010	\Programs\Microsoft Office\Microsoft Word 2010	Yes
\Microsoft Office	\Programs\Microsoft Office\Microsoft Word 2010	No
\Microsoft Word 2010	\Programs\Microsoft Office\Microsoft Word 2010	No
\Programs\Microsoft Word 2010	\Programs\Microsoft Word 2010	Yes

prefer="\Folder1\Folder2\...\ApplicationName"

The relative path pattern matches the relative shortcut file path under the Start menu. The relative path provided must contain the application name and can optionally include the folders where the shortcut resides. Matching is successful if the shortcut file path ends with the relative path provided. Quotation marks are required if the path contains spaces. The matching is case-sensitive. The relative path matching pattern is useful for overrides implemented programmatically.

KEYWORDS:prefer=	Shortcut under Programs	Matches?
\Microsoft Office\Microsoft Word 2010	\Microsoft Office\Microsoft Word 2010	Yes
\Microsoft Office	\Microsoft Office\Microsoft Word 2010	No
\Microsoft Word 2010	\Microsoft Office\Microsoft Word 2010	Yes
\Microsoft Word	\Microsoft Word 2010	No

For information about other keywords, see "Additional recommendations" in Optimize the user experience section in the StoreFront documentation.

vPrefer launch

In earlier releases, you can specify that the instance of an app installed on the VDA (referred to as local instance in this document) must be launched in preference to the published application by setting the KEYWORDS:prefer="application" attribute in **Citrix Studio**.

Starting with Version 4.11, in a double-hop scenario (where Citrix Workspace app is running on the VDA that hosts your session), you can now control whether Citrix Workspace app launches:

- the local instance of an application installed on the VDA (if available as a local app) or
- a hosted instance of the application.

vPrefer is available on StoreFront Version 3.14 and Citrix Virtual Desktops 7.17 and later.

When you launch the application, Citrix Workspace app reads the resource data present on the Store-Front server and applies the settings based on the **vprefer** flag at the time of enumeration. Citrix Workspace app searches for the application's installation path in the Windows registry of the VDA. If present, launches the local instance of the application. Otherwise, a hosted instance of the application is launched.

If you launch an application that is not on the VDA, Citrix Workspace app launches the hosted application. For more information on how StoreFront handled the local launch, see Control of local application launch on published desktops in the Citrix Virtual Apps and Desktops documentation.

If you do not want the local instance of the application to be launched on the VDA, set the **LocalLaunchDisabled** to **True** using the PowerShell on the Delivery Controller. For more information, see the Citrix Virtual Apps and Desktops documentation.

This feature helps to launch applications faster, thereby providing a better user experience. You can configure it by using the Group Policy Object (GPO) administrative template. By default, vPrefer is enabled only in a double-hop scenario.

Note:

When you upgrade or install Citrix Workspace app for the first time, add the latest template files to the local GPO. For more information on adding template files to the local GPO, see Group Policy Object administrative template. For an upgrade, the existing settings are retained while importing the latest files.

- 1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Template > Citrix Component > Citrix Workspace > SelfService.
- 3. Select the **vPrefer** policy.
- 4. Select Enabled.
- 5. From the **Allow apps** drop-down list, select one of the following options:
 - **Allow all apps**: This option launches the local instance of all apps on the VDA. Citrix Workspace app searches for the installed application, including the native Windows apps such as Notepad, Calculator, WordPad, Command prompt. It then launches the application on the VDA instead of the hosted app.
 - Allow installed apps: This option launches the local instance of the installed app on the VDA. If the app is not installed on the VDA, it launches the hosted app. By default, Allow

installed apps is selected when the **vPrefer** policy is set to **Enabled**. This option excludes the native Windows operating system applications like Notepad, Calculator, and so on.

- **Allow network apps**: This option launches the instance of an app that is published on a shared network.
- 6. Click Apply and OK.
- 7. Restart the session for the changes to take effect.

Limitation:

• Workspace for web does not support this feature.

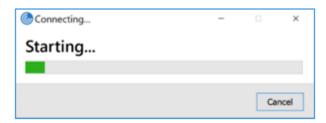
Improved virtual apps and desktops launch experience

September 26, 2023

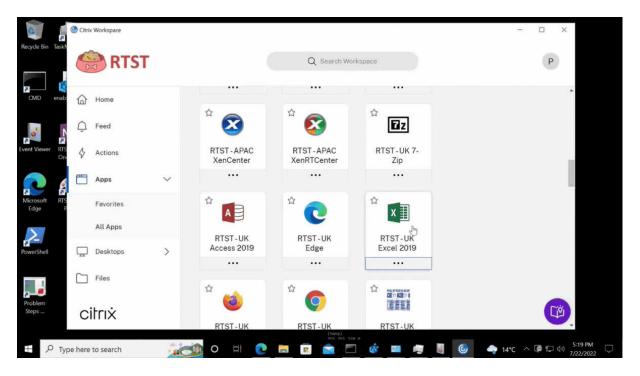
Note:

From Citrix Workspace app version 2305.1 onwards, this feature is generally available for cloud stores and is in technical preview for on-premises stores.

Previously, the launch progress dialog box wasn't intuitive to the users. It made the users assume that the launch process is not responding and they closed the dialog box, as the notification messages were static.



The improved app and desktop launch experience is more informative, modern, and provides a user-friendly experience on Citrix Workspace app for Windows. This helps to keep the users engaged with timely and relevant information about the launch status. The notification appears in the bottom-right corner of your screen.



Users can view meaningful notifications about the launch progress, instead of just a spinner. If a launch is in progress and the user attempts to close the browser, a warning message is shown.

Starting with Citrix Workspace app for Windows 2305.1, this feature is enabled by default in cloud stores.

You can enable this feature using the registry in StoreFront (on-premises) session. To enable this feature:

- 1. Open the registry editor.
- 2. Navigate to HKLM\SOFTWARE\WOW6432Node\Citrix\Dazzle.
- 3. Create and add a registry string with the name as EnableNewLaunchExperienceForSF and set its value as **True**.
- 4. Restart Citrix Workspace app for the changes to take effect.

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.

You can provide feedback on this feature via the Podio.

App preferences

September 26, 2023

Advanced Preferences sheet

You can customize **Advanced Preferences** sheet's availability and contents present in the right-click menu of the Citrix Workspace app icon in the notification area. Doing so ensures that users can apply only administrator-specified settings on their systems. Specifically, you can:

- Hide the Advanced Preferences sheet altogether
- Hide the following, specific settings from the sheet:
 - Data collection
 - Connection Center
 - Configuration checker
 - Keyboard and Language bar
 - High DPI
 - Support information
 - Shortcuts and Reconnect
 - Citrix Casting

Hiding Advanced Preferences option from the right-click menu

You can hide the Advanced Preferences sheet by using the Citrix Workspace app Group Policy Object (GPO) administrative template:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > Self Service > Advanced Preferences Options.
- 3. Select the **Disable Advance Preferences** policy.
- 4. Select **Enabled** to hide the Advanced Preferences option from the right-click menu of the Citrix Workspace app icon in the notification area.

Note:

By default, the **Not Configured** option is selected.

Hiding specific settings from the Advanced Preferences sheet

You can hide specific user-configurable settings from the **Advanced Preferences** sheet by using the Citrix Workspace app Group Policy Object administrative template. To hide the settings:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > Self Service > Advanced Preferences Options.
- 3. Select the policy for the setting you want to hide.

The following table lists the options that you can select and the effect of each:

Options	Action
Not Configured	Displays the setting
Enabled	Hides the setting
Disabled	Displays the setting

You can hide the following specific settings from the Advanced Preferences sheet:

- · Configuration checker
- Connection Center
- · High DPI
- Data collection
- Delete saved passwords
- · Keyboard and Language bar
- · Shortcuts and Reconnect
- · Support information
- Citrix Casting

Hiding the Reset Workspace option from the Advanced Preferences sheet using the Registry editor

You can hide the **Reset Workspace** option from the Advanced Preferences sheet only using the Registry editor.

- 1. Launch the registry editor.
- 2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\Dazzle.
- 3. Create a String Value key **EnableFactoryReset** and set it to any of the following options:
 - True Displays the Reset Workspace option in the Advanced Preferences sheet.
 - False Hides the Reset Workspace option in the Advanced Preferences sheet.

Hiding Citrix Workspace Updates option from the Advanced Preferences sheet

Note:

The policy path for the Citrix Workspace Updates option is different from the other options present in the Advanced Preferences sheet.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Workspace Updates.
- 3. Select the Workspace Updates policy.
- 4. Select **Disabled** to hide the Workspace Updates settings from the **Advanced Preferences** sheet.

Citrix Casting

The Citrix Ready workspace hub combines digital and physical environments to deliver apps and data within a secure smart space. The complete system connects devices (or things), like mobile apps and sensors, to create an intelligent and responsive environment.

Citrix Ready workspace hub is built on the Raspberry Pi 3 platform. The device running Citrix Workspace app connects to the Citrix Ready workspace hub and casts the apps or desktops on a larger display. Citrix Casting is supported only on Microsoft Windows 10 Version 1607 and later or Windows Server 2016.

Citrix Casting feature allows instant and secure access of any app from a mobile device and display on a large screen.

Note:

- Citrix Casting for Windows supports Citrix Ready workspace hub Version 2.40.3839 and later. Workspace hub with earlier versions might not get detected or cause a casting error.
- The Citrix Casting feature is not supported on Citrix Workspace app for Windows (Store).

Prerequisites:

- Bluetooth enabled on the device for hub discovery.
- Both Citrix Ready workspace hub and Citrix Workspace app must be on the same network.
- Port 55555 is allowed between the device running Citrix Workspace app and the Citrix Ready workspace hub.
- For Citrix Casting, port 1494 must not be blocked.
- 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.
- Citrix Casting is supported only on Microsoft Windows 10 Version 1607 and later or Windows Server 2016.

• Run /IncludeCitrixCasting command during installation to enable Citrix Casting.

Configure Citrix Casting launch

Note:

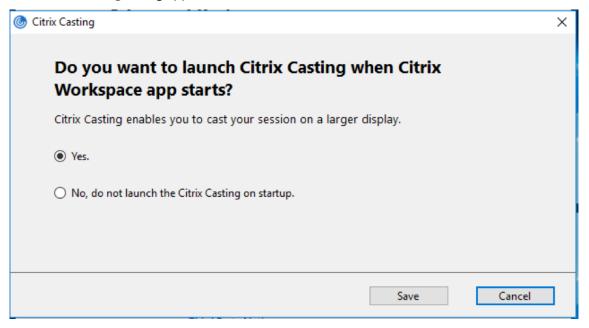
You can hide all or part of the Advanced Preferences sheet. For more information, see Advanced Preferences sheet.

1. Right-click the Citrix Workspace app icon from the notification area and select **Advanced Preferences**.

The **Advanced Preferences** dialog appears.

2. Select Citrix Casting.

The **Citrix Casting** dialog appears.



- 3. Select one of the options:
 - Yes Indicates that Citrix Casting is launched when Citrix Workspace app starts.
 - No, do not launch the Citrix Casting on startup Indicates that Citrix Casting does not launch when Citrix Workspace app starts.

Note:

Selecting the option **No** does not terminate the current screen casting session. The setting is applied only at the next Citrix Workspace app launch.

4. Click **Save** to apply the changes.

How to use Citrix Casting with Citrix Workspace app

1. Log on to Citrix Workspace app and enable Bluetooth on your device.

The list of available hubs is displayed. The list is sorted by the RSSI value of the workspace hub beacon package.

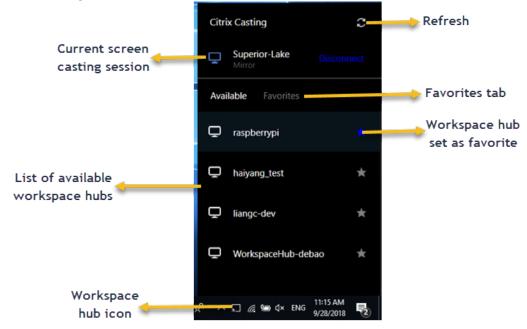
- 2. Select the workspace hub to cast your screen and choose one of the following:
 - **Mirror** to duplicate the primary screen and cast the display to the connected workspace hub device.
 - **Extend** to use the workspace hub device screen as your secondary screen.

Note:

Exiting Citrix Workspace app does not exit Citrix Casting.

In the **Citrix Casting notification** dialog, the following options are available:

- 1. The current screen casting session displayed at the top.
- 2. Refresh icon.
- 3. **Disconnect** to stop the current screen casting session.
- 4. Star icon to add the workspace hub to **Favorites**.
- 5. Right-click the workspace hub icon in the notification area and select **Exit** to disconnect the screen casting session and to exit Citrix Ready workspace hub.



Self-check list

If Citrix Workspace app cannot detect and communicate with any available workspace hubs in range, ensure that you do the following as part of self-check:

- 1. Citrix Workspace app and Citrix Ready workspace hub are connected to the same network.
- 2. Bluetooth is enabled and working properly on the device where Citrix Workspace app is launched.
- 3. The device where Citrix Workspace app is launched is within range (less than 10 meters and without any obstructing objects such as walls) of Citrix Ready workspace hub.
- 4. Launch a browser in Citrix Workspace app and type http://<hub_ip>:55555/device-details.xml to check whether it displays the details of workspace hub device.
- 5. Click **Refresh** in Citrix Ready workspace hub and try reconnecting to the workspace hub.

Known issues and limitations

- 1. Citrix Casting does not work unless the device is connected to the same network as the Citrix Ready workspace hub.
- 2. If there are network issues, there might be a lag in display on the workspace hub device.
- 3. When you select **Extend**, the primary screen where Citrix Ready workspace app is launched flashes multiple times.
- 4. In **Extend** mode, you cannot set the secondary display as the primary display.
- 5. The screen casting session automatically disconnects when there is any change in the display settings on the device. For example, change in screen resolution, change in screen orientation.
- 6. During the screen casting session, if the device running Citrix Workspace app locks, sleeps or hibernates, an error appears at login.
- 7. Multiple screen casting sessions are not supported.
- 8. The maximum screen resolution supported by Citrix Casting is 1920 x 1440.
- 9. Citrix Casting supports Citrix Ready workspace hub Version 2.40.3839 and later. Workspace hub with earlier versions might not get detected or cause a casting error.
- 10. This feature is not supported on Citrix Workspace app for Windows (Store).
- 11. On Windows 10, Build 1607, Citrix Casting in **Extend** mode might not be properly positioned.

For more information about Citrix Ready workspace hub, see the Citrix Ready workspace hub section in the Citrix Virtual Apps and Desktops documentation.

SaaS apps

September 27, 2023

Secure access to SaaS applications provides a unified user experience that delivers published SaaS applications to the users. SaaS apps are available with single sign-on. Administrators can now protect the organization's network and end-user devices from malware and data leaks. Administrators can achieve this by filtering access to specific websites and website categories.

Citrix Workspace app for Windows support the use of SaaS apps using the Citrix Secure Private Access. The service enables administrators to provide a cohesive experience, integrating single sign-on, and content inspection.

Delivering SaaS apps from the cloud has the following benefits:

- Simple configuration Easy to operate, update, and consume.
- Single sign-on Hassle-free log on with single sign-on.
- Standard template for different apps Template-based configuration of popular apps.

Citrix Workspace app launches the SaaS apps on Citrix Enterprise Browser (formerly Citrix Workspace Browser). For information, see Citrix Enterprise Browser documentation.

Limitations:

- When you launch a published app with the print option enabled and download disabled, and give a print command on a launched app, you can still save the PDF. As a workaround, to strictly disable the download functionality, disable the print option.
- · Videos embedded in an app might not work.
- You can't open SaaS apps using Storebrowse commands.

For more information about Workspace configuration, see Workspace configuration in Citrix Cloud.

Data collection and monitoring

September 26, 2023

Citrix Analytics

Citrix Workspace app is instrumented to securely transmit logs to Citrix Analytics. The logs are analyzed and stored on Citrix Analytics servers when enabled. For more information about Citrix Analytics, see Citrix Analytics.

Enhancement to Citrix Analytics Service

With this release, Citrix Workspace app is instrumented to securely transmit the public IP address of the most recent network hop to Citrix Analytics Service. This data is collected per session launch.

It helps the Citrix Analytics Service to analyze whether poor performance issues are tied to specific geographic areas.

By default, the IP address logs are sent to the Citrix Analytics Service. However, you can disable this option on the Citrix Workspace app using the Registry editor.

To disable IP address log transmissions, navigate to the following registry path and set the SendPublicIPAddress key to **Off**.

- On 64-bit Windows machines, navigate to: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node \Citrix\Dazzle.
- On 32-bit Windows machines, navigate to: HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ Dazzle.

Note:

- IP address transmissions are a best-case effort. Although Citrix Workspace app transmits every IP address that it is launched on, some of the addresses might not be accurate.
- In closed customer environments, where the endpoints are operating within an intranet, ensure that the URL https://locus.analytics.cloud.com/api/locateip is whitelisted on the endpoint.

Citrix Workspace app is instrumented to securely transmit data to Citrix Analytics Service from ICA sessions that you launch from a browser.

For more information on how Performance Analytics uses this information, see Self-Service Search for Performance.

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 Windows and automatically sends the data to Citrix and Google Analytics.	This data helps Citrix improve the quality, functionality, and performance of the Citrix Workspace app, appropriately allocate resources for product development purposes, and maintain service levels and manage staffing and infrastructure investment.

Data collected

As noted above, Citrix collects Workspace app configuration and usage data to improve the quality, functionality, and performance of Workspace App, and to allow Citrix to appropriately allocate resources for product development purposes, as well as to maintain service levels and manage staffing and infrastructure investment. The data is used and analyzed in aggregated form only. No user or their machine is singled-out and no analysis is performed on specific end users based on the CEIP data.

The specific CEIP data elements collected by Google Analytics are:

Operating system version*	Workspace app version*	Authentication configuration	Workspace app language
Session launch method	Connection error	Connection protocol	VDA information
Installer configuration	Installer state	Client keyboard layout	Store configuration
Auto-update preference	Connection Center usage	App Protection configuration	Reason for the offline banner
Device Model/Properties	Citrix Virtual Apps and Desktops Session Launch Status	Virtual app/desktop name	Auto-update Status
Connection Lease Details	StoreFront to Workspace URL Migration Feature Usage	Citrix Enterprise Browser Usage	Auto-update channel
Inactivity Timeout Details	Citrix Enterprise Browser Version		

Note:

Starting with version 2206, the Citrix Workspace app doesn't collect any CEIP data from users located in the European Union (EU), European Economic Area (EEA), Switzerland, and United Kingdom (UK). Update your Workspace app if you wish to take advantage of this functionality.

Data Collection Preferences

Starting with version 2205, both users and administrators can stop sending CEIP data (except for the two data elements which can be blocked as specified in the Note below) by following the below steps.

- 1. Right-click the Citrix Workspace app icon from the notification area.
- 2. Select Advanced Preferences.

The **Advanced Preferences** dialog appears.

- 3. Select Data Collection.
- 4. Select **No, Thanks** to disable CEIP or to forego participation.
- 5. Click Save.

You can also navigate to the following registry entry as an administrator and set the value as suggested:

Path: HKEY_LOCAL_MACHINE\ SOFTWARE\Citrix\ICA Client\CEIP

Key: Enable_CEIP

Value: False

Note:

Once you select **No Thanks** or set the Enable_CEIP key to False, you can also stop sending the final two CEIP data elements, that is, Operating System and Workspace app version, by navigating to the following registry entry and set the value:

Path: HKEY_LOCAL_MACHINE\ SOFTWARE\Citrix\ICA Client\CEIP

Key: DisableHeartbeat

Value: True

Additional information

Citrix handles your data according to the terms of your contract with Citrix, and protect it as specified in the Citrix Services Security Exhibit. Citrix Services Security Exhibit is available on the Citrix Trust Center.

Security and authentication

September 26, 2023

This section describes the following:

Security

- Secure communications
- Authentication
 - Domain pass-through access matrix
 - Domain pass-through to Citrix Workspace using on-premises Citrix Gateway as the identity provider
 - Domain pass-through to Citrix Workspace using Azure Active Directory as the identity provider
 - Domain pass-through to Citrix Workspace using Okta as identity provider

Security

September 26, 2023

App Protection

App Protection feature is an add-on feature that provides enhanced security when using Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service). The feature restricts the ability of clients to compromise with keylogging and screen capturing malware. App Protection prevents exfiltration of confidential information such as user credentials and sensitive information on the screen. The feature prevents users and attackers from taking screenshots and from using keyloggers to glean and exploit sensitive information. For more information, see App Protection

Disclaimer

App Protection policies filter the access to required functions of the underlying operating system (specific API calls required to capture screens or keyboard presses). App Protection policies provide protection even against custom and purpose-built hacker tools. However, as operating systems evolve, new ways of capturing screens and logging keys might emerge. While we continue to identify and address them, we cannot guarantee full protection in specific configurations and deployments.

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

Note:

App Protection is supported only on upgrade from Version 1912 onwards.

Improved ICA file security

This feature provides enhanced security while handling ICA files during a virtual apps and desktops session launch.

Citrix Workspace app lets you store the ICA file in the system memory instead of the local disk when you launch a virtual apps and desktops session.

This feature aims to eliminate surface attacks and any malware that might misuse the ICA file when stored locally. This feature is also applicable on virtual apps and desktops sessions that are launched on workspace for Web

Configuration

ICA file security is also supported when Citrix Workspace or StoreFront is accessed through the web. Client detection is a prerequisite for the feature to work if it's accessed through the web. If you're accessing StoreFront using a browser, enable the following attributes in the web.config file on StoreFront deployments:

StoreFront Version	Attribute	
2.x	pluginassistant	
3.x	protocolHandler	

When you sign in to the store through the browser, click **Detect Workspace App**. If the prompt doesn't appear, clear the browser cookies and try again.

If it's a Workspace deployment, you can find the client detection settings by navigating to **Accounts** settings > Advanced > Apps and Desktops Launch Preference.

You can take extra measures so that sessions are launched only using the ICA file stored on system memory. Use any of the following methods:

- Group Policy Object (GPO) Administrative template on the client.
- Global App Config Service.
- · Workspace for web.

Using the GPO:

To block session launches from ICA files that are stored on the local disk, do the following:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Client Engine.

- 3. Select the **Secure ICA file session launch** policy and set it to **Enabled**.
- 4. Click **Apply** and **OK**.

Using the Global App Config Service:

You can use Global App Config Service from Citrix Workspace app 2106.

To block session launches from ICA files that are stored on the local disk, do the following:

Set the Block Direct ICA File Launches attribute to True.

For more information about Global App Config Service, see Global App Config Service documentation.

Using workspace for web:

To disallow ICA file download on the local disk when using workspace for Web, do the following:

Run the PowerShell module. See Configure DisallowICADownload.

Note:

The **DisallowICADownload** policy isn't available for StoreFront deployments.

Inactivity Timeout for Workspace Sessions

Admins can configure the inactivity timeout value to specify the amount of idle time allowed before the users automatically sign out of the Citrix Workspace session. You're automatically signed out of Workspace if the mouse, keyboard, or touch is idle for the specified interval of time. The inactivity timeout doesn't affect the active virtual apps and desktops sessions or Citrix StoreFront stores.

The inactivity timeout value can be set starting from a 1 minute to 1,440 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 in your session window three minutes before you're signed out, with an option to stay signed in, or sign out.
- The notification appears only if the configured inactivity timeout value is greater than or equal to five minutes.
- 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.

Note:

Admins can configure the inactivity timeout only for Workspace (cloud) sessions.

Secure communications

September 26, 2023

To secure the communication between Citrix Virtual Apps and Desktops server and Citrix Workspace app, you can integrate your Citrix Workspace app connections using a range of secure technologies such as the following:

- Citrix Gateway: For information, see the topics in this section and the Citrix Gateway, and Store-Front documentation.
- A firewall: Network firewalls can allow or block packets based on the destination address and port.
- Transport Layer Security (TLS) versions 1.0 through 1.3 are supported.
- Trusted server to establish trust relations in Citrix Workspace app connections.
- ICA file signing
- Local Security Authority (LSA) protection
- Proxy server for Citrix Virtual Apps deployments only: A SOCKS proxy server or secure proxy server. Proxy servers help to limit access to and from the network. They also handle the connections between Citrix Workspace app and the server. Citrix Workspace app supports SOCKS and secure proxy protocols.
- Outbound proxy

Citrix Gateway

Citrix Gateway (formerly Access Gateway) secures connections to StoreFront stores. Also, lets administrators control user access to desktops and applications in a detailed way.

To connect to desktops and applications through Citrix Gateway:

- 1. Specify the Citrix Gateway URL that your administrator provides using one of the following ways:
 - The first time you use the self-service user interface, you are prompted to enter the URL in the **Add Account** dialog box.
 - When you later use the self-service user interface, enter the URL by clicking Preferences >
 Accounts > Add.
 - If you're establishing a connection with the storebrowse command, enter the URL at the command line

The URL specifies the gateway and, optionally, a specific store:

- To connect to the first store that Citrix Workspace app finds, use a URL in the following format:
 - https://gateway.company.com

- To connect to a specific store, use a URL of the form, for example: <a href="https://gateway.company.com?<storename">https://gateway.company.com?<storename. This dynamic URL is in a non-standard form; do not include "=" (the "equals" sign character) in the URL. If you're establishing a connection to a specific store with storebrowse, you might need quotation marks around the URL in the storebrowse command.
- When prompted, connect to the store (through the gateway) using your user name, password, and security token. For more information about this step, see the Citrix Gateway documentation.

When authentication is complete, your desktops and applications are displayed.

Connecting through firewall

Network firewalls can allow or block packets based on the destination address and port. If you're using a firewall, Citrix Workspace app for Windows can communicate through the firewall with both the Web server and the Citrix server.

Common Citrix Communication Ports

Source	Туре	Port	Details
Citrix Workspace app	TCP	80/443	Communication with StoreFront
ICA or HDX	TCP/UDP	1494	Access to applications and virtual desktops
ICA or HDX with Session Reliability	TCP/UDP	2598	Access to applications and virtual desktops
ICA or HDX over TLS	TCP/UDP	443	Access to applications and virtual desktops

For more information about the ports, see the Knowledge Center article CTX101810.

Transport Layer Security

Transport Layer Security (TLS) is the replacement for the SSL (Secure Sockets Layer) 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.

To use TLS encryption as the communication medium, you must configure the user device and the Citrix Workspace app. For information about securing StoreFront communications, see the Secure section in the StoreFront documentation. For information about securing VDA, see Transport Layer Security (TLS) in the Citrix Virtual Apps and Desktops documentation.

You can use the following policies to:

- Enforce use of TLS: We recommend that you use TLS for connections using untrusted networks, including the Internet.
- Enforce use of FIPS (Federal Information Processing Standards): Approved cryptography and follow the recommendations in NIST SP 800-52. These options are disabled by default.
- Enforce use of a specific version of TLS and specific TLS cipher suites: Citrix supports the TLS 1.0, TLS 1.1, and TLS 1.2 protocols.
- · Connect only to specific servers.
- Check for revocation of the server certificate.
- Check for a specific server-certificate issuance policy.
- Select a particular client certificate, if the server is configured to request one.

Important:

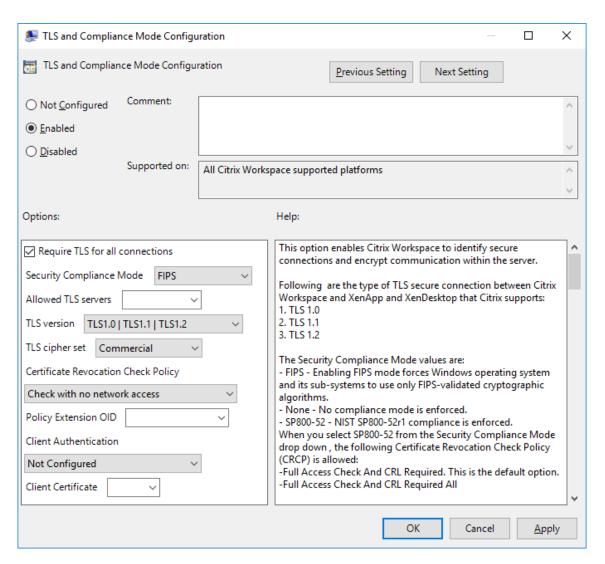
The following cipher suites are deprecated for enhanced security:

- Cipher suites RC4 and 3DES
- Cipher suites with prefix "TLS_RSA_*"
- 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)

For information on the supported cipher suites, see the Knowledge Center article CTX250104.

TLS support

- 1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc.
- Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > Network routing, and select the TLS and Compliance Mode Configuration policy.



3. Select **Enabled** to enable secure connections and to encrypt communication on the server. Set the following options:

Note:

Citrix recommends TLS for secure connections.

- a) Select **Require TLS for all connections** to force Citrix Workspace app to use TLS for connections to published applications and desktops.
- b) From the **Security Compliance Mode** menu, select the appropriate option:
 - i. None No compliance mode is enforced.
 - ii. **SP800-52** Select **SP800-52** for compliance with NIST SP 800-52. Select this option only if the servers or gateway follow NIST SP 800-52 recommendations.

Note:

If you select SP800-52, FIPS Approved cryptography is automatically used, even if

Enable FIPS isn't selected. Also, enable the Windows security option, **System Cryptography:** Use FIPS-compliant algorithms for encryption, hashing, and signing. Otherwise, Citrix Workspace app might fail to connect to the published applications and desktops.

If you select SP800-52, set the Certificate Revocation Check Policy setting to Full access check and CRL required.

When you select **SP800-52**, Citrix Workspace app verifies that the server certificate follows the recommendations in NIST SP 800-52. If the server certificate does not comply, Citrix Workspace app might fail to connect.

- i. Enable FIPS Select this option to enforce the use of FIPS approved cryptography. Also, enable the Windows security option from the operating system group policy, System Cryptography: Use FIPS-compliant algorithms for encryption, hashing, and signing. Otherwise, Citrix Workspace app might fail to connect to published applications and desktops.
- c) From the **Allowed TLS servers** drop-down menu, select the port number. Use a commaseparated list to ensure that the Workspace app connects only to a specified server. You can specify wildcards and port numbers. For example, *.citrix.com: 4433 allows connections to any server whose common name ends with .citrix.com on port 4433. The issuer of the certificate asserts the accuracy of the information in a security certificate. If Citrix Workspace does not recognize or trust the issuer, the connection is rejected.
- d) From the **TLS version** menu, select one of the following options:
 - TLS 1.0, TLS 1.1, or TLS 1.2 This is the default setting. This option is recommended only if there is a business requirement for TLS 1.0 for compatibility.
 - TLS 1.1 or TLS 1.2 Use this option to ensure that the connections use either TLS 1.1 or TLS 1.2.
- TLS 1.2 This option is recommended if TLS 1.2 is a business requirement.
- a) TLS cipher set To enforce use of a specific TLS cipher set, select Government (GOV), Commercial (COM), or All (ALL). For more information, see Knowledge Center article CTX250104.
- b) From the **Certificate Revocation Check Policy** menu, select any of the following:
 - **Check with No Network Access** Certificate Revocation list check is done. Only local certificate revocation list stores are used. All distribution points are ignored. A Certificate Revocation List check that verifies the server certificate available from the target SSL Relay/Citrix Secure Web Gateway server isn't mandatory.
 - Full Access Check Certificate Revocation List check is done. Local Certificate Revocation List stores and all distribution points are used. If revocation information for a certificate is

found, the connection is rejected. Certificate Revocation List check for verifying the server certificate available from the target server isn't critical.

- Full Access Check and CRL Required Certificate Revocation List check is done, except for the root Certificate Authority. Local Certificate Revocation List stores and all distribution points are used. If revocation information for a certificate is found, the connection is rejected. Finding all required Certificate Revocation Lists is critical for verification.
- Full Access Check and CRL Required All Certificate Revocation List check is done, including the root CA. Local Certificate Revocation List stores and all distribution points are used. If revocation information for a certificate is found, the connection is rejected. Finding all required Certificate Revocation Lists is critical for verification.
- No Check No Certificate Revocation List check is done.
- a) Using the **Policy Extension OID**, you can limit Citrix Workspace app to connect only to servers with a specific certificate issuance policy. When you select **Policy Extension OID**, Citrix Workspace app accepts only server certificates that contain the Policy Extension OID.
- b) From the **Client Authentication** menu, select any of the following:
- **Disabled** Client Authentication is disabled.
- **Display certificate selector** Always prompt the user to select a certificate.
- **Select automatically if possible** Prompt the user only if there a choice of the certificate to identify.
- **Not configured** Indicates that client authentication isn't configured.
- Use specified certificate Use the client certificate as set in the Client Certificate option.
- a) Use the **Client Certificate** setting to specify the identifying certificate's thumbprint to avoid prompting the user unnecessarily.
- b) Click **Apply** and **OK** to save the policy.

For information on the internal and external network connections matrix, see the Knowledge Center article CTX250104.

Trusted server

Enforce trusted server connections

Trusted server configuration policy identifies and enforces trust relations in Citrix Workspace app connections.

Using this policy, administrators can control how the client identifies the published application or desktop it is connecting to. The client determines a trust level, called a trust region with a connection. The trust region then determines how the client is configured for the connection.

Enabling this policy prevents connections to the servers that are not in the trusted regions.

By default, region identification is based on the address of the server the client is connecting to. To be a member of the trusted region, the server must be a member of the Windows **Trusted Sites zone**. You can configure this using the **Windows Internet zone** setting.

Alternatively, the server address can be specifically trusted using the **Address** setting. The server address must be comma-separated list of servers supporting the use of wildcards, for example, cps *.citrix.com.

To enable trusted server configuration using Group Policy Object administrative template

Prerequisite:

Exit from the Citrix Workspace app components including the Connection Center.

- 1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Network Routing > Configure trusted server configuration.
- 3. Select **Enabled** to force Citrix Workspace app for region identification.
- 4. Select **Enforce trusted server configuration**. This option forces the client to perform the identification using a trusted server.
- 5. From the **Windows internet zone** drop-down menu, select the client-server address. This setting is applicable only to the Windows Trusted Site zone.
- 6. In the **Address** field, set the client-server address for the trusted site zone other than the Windows. You can use a comma-separated list.
- 7. Click **OK** and **Apply**.

When this policy is enabled and the server is not in the trusted region, the connection is prevented, and an error message is displayed.

The identified server must be added to the Windows **Trusted Sites zone** for the connection to succeed. For example, add the server as either, http:// or https:// for SSL connections.

Note:

For SSL connections, the certificate common name must be trusted. For non-SSL connections all servers that are contacted must be individually trusted.

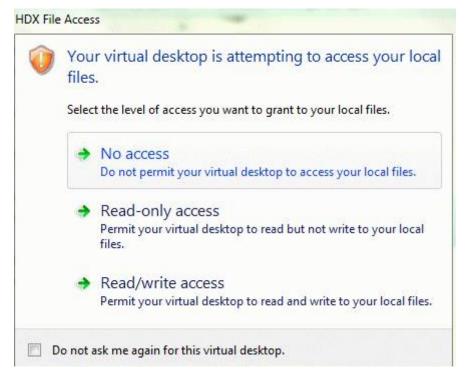
Also, ensure that the internal StoreFront FQDN is added to the Local Intranet zone or Trusted sites zones. For information, see **Modify the Internet Explorer settings** in Authenticate section.

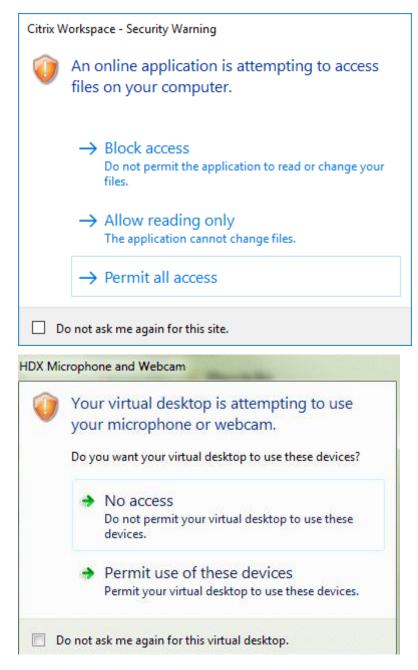
Client selective trust

In addition to allowing or preventing connections to the servers, the client also uses the regions to identify file, microphone, or webcam, SSO access.

Regions	Resources	Access level
Internet	File, Microphone, Web	Prompt user for access, SSO is not allowed
Intranet	Microphone, Web	Prompt user for access, SSO is allowed
Restricted Sites	All	No access and connection might be prevented
Trusted	Microphone, Web	Read or write, SSO is allowed

When the user has selected the default value for a region then the following dialog box might appear:





Administrators can modify this default behavior by creating and configuring the **Client Selective Trust** registry keys either using the Group Policy or in the registry. For more information on how to configure Client Selective Trust registry keys, see Knowledge Center article CTX133565.

ICA file signing

The ICA file signing helps protect you from an unauthorized application or desktop launch. Citrix Workspace app verifies that a trusted source generated the application or desktop launch based on an administrative policy and protects against launches from untrusted servers. You can configure ICA

file signing using the Group policy objects administrative template or StoreFront. The ICA file signing feature isn't enabled by default.

For information about enabling ICA file signing for StoreFront, see Enable ICA file signing in StoreFront documentation.

Configure ICA file signature

Note:

If the CitrixBase.admx\adml isn't added to the local GPO, the **Enable ICA File Signing** policy might not be present.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components.
- 3. Select **Enable ICA File Signing** policy and select one of the options as required:
 - a) Enabled Indicates that you can add the signing certificate thumbprint to the allow list of trusted certificate thumbprints.
 - b) Trust Certificates Click **Show** to remove the existing signing certificate thumbprint from the allow list. You can copy and paste the signing certificate thumbprints from the signing certificate properties.
 - c) Security policy Select one of the following options from the menu.
 - i. Only allow signed launches (more secure): Allows only signed application and desktop launches from a trusted server. A security warning appears when there's an invalid signature. The session launch fails because of non-authorization.
 - ii. Prompt user on unsigned launches (less secure) A message prompt appears when an unsigned or invalidly signed session is launched. You can choose to either continue the launch or cancel the launch (default).
- 4. Click **Apply** and **OK** to save the policy.
- 5. Restart the Citrix Workspace app session for the changes to take effect.

To select and distribute a digital signature certificate:

When selecting a digital signature certificate, we recommend you choose from the following priority list:

- 1. Buy a code-signing certificate or SSL signing certificate from a public Certificate Authority (CA).
- 2. If your enterprise has a private CA, create a code-signing certificate or SSL signing certificate using the private CA.
- 3. Use an existing SSL certificate.
- 4. Create a root CA certificate and distribute it to user devices using GPO or manual installation.

Local Security Authority (LSA) protection

Citrix Workspace app supports Windows Local Security Authority (LSA) protection, which maintains information about all aspects of local security on a system. This support provides the LSA level of system protection to hosted desktops.

Connecting through proxy server

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

When communicating with the server, Citrix Workspace app uses proxy server settings that are configured remotely on the server running workspace for web.

When communicating with the web server, Citrix Workspace app uses the proxy server settings configured through the **Internet** settings of the default web browser on the user device. Configure the **Internet** settings of the default web browser on the user device accordingly.

To enforce proxy settings through the ICA file on StoreFront, see Knowledge Center article CTX136516.

Outbound proxy support

SmartControl allows administrators to configure and enforce policies that affect the environment. For instance, you might want to prohibit users from mapping drives to their remote desktops. You can achieve the granularity using the SmartControl feature on the Citrix Gateway.

The scenario changes when the Citrix Workspace app and the Citrix Gateway belong to separate enterprise accounts. In such cases, the client domain can't apply the SmartControl feature because the gateway doesn't exist on the domain. You can then use the Outbound ICA Proxy. The Outbound ICA Proxy feature lets you use the SmartControl feature even when Citrix Workspace app and Citrix Gateway are deployed in different organizations.

Citrix Workspace app supports session launches using the NetScaler LAN proxy. Use the outbound proxy plug-in to configure a single static proxy or select a proxy server at runtime.

You can configure outbound proxies using the following methods:

- Static proxy: Proxy server is configured by giving a proxy host name and port number.
- Dynamic proxy: A single proxy server can be selected among one or more proxy servers using the proxy plug-in DLL.

You can configure the outbound proxy using the Group Policy Object administrative template or the Registry editor.

For more information about outbound proxy, see Outbound ICA Proxy support in the Citrix Gateway documentation.

Outbound proxy support - Configuration

Note:

If both static proxy and dynamic proxies are configured, the dynamic proxy configuration takes precedence.

Configuring the outbound proxy using the GPO administrative template:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > Network routing.
- 3. Select one of the following options:
 - For static proxy: Select the **Configure NetScaler LAN proxy manually** policy. Select **Enabled** and then provide the host name and port number.
 - For dynamic proxy: Select the **Configure NetScaler LAN proxy using DLL** policy. Select **Enabled** and then provide the full path to the DLL file. For example, C:\Workspace\Proxy\Proxy\ProxyChooser.dll.
- 4. Click **Apply** and **OK**.

Configuring the outbound proxy using the Registry editor:

- For static proxy:
 - Launch the Registry editor and navigate to HKEY_LOCAL_MACHINE\SOFTWARE\
 Policies\Citrix\ICA Client\Engine\Network Routing\Proxy\NetScaler.
 - Create DWORD value keys as follows:

```
"StaticProxyEnabled"=dword:00000001
"ProxyHost"="testproxy1.testdomain.com
"ProxyPort"=dword:000001bb
```

For dynamic proxy:

- Launch the Registry editor and navigate to HKEY_LOCAL_MACHINE\SOFTWARE\
 Policies\Citrix\ICA Client\Engine\Network Routing\Proxy\NetScaler
 LAN Proxy.
- Create DWORD value keys as follows:

```
"DynamicProxyEnabled"=dword:00000001
"ProxyChooserDLL"="c:\\Workspace\\Proxy\\ProxyChooser.dll"
```

Connections and certificates

Connections

HTTP store

- HTTPS store
- Citrix Gateway 10.5 and later

Certificates

Note:

Citrix Workspace app for Windows is digitally signed. The digital signature is time-stamped. So, the certificate is valid even after the certificate is expired.

- · Private (self-signed)
- Root
- Wildcard
- Intermediate

Private (self-signed) certificates

If a private certificate exists on the remote gateway, install the root certificate of the organization's certificate authority on the user device that's accessing the Citrix resources.

Note:

If the remote gateway's certificate cannot be verified upon connection, an untrusted certificate warning appears. This warning appears when the root certificate is missing in the local Keystore. When a user chooses to continue through the warning, the apps are displayed but cannot be launched.

Root certificates

For domain-joined computers, you can use a Group Policy Object administrative template to distribute and trust CA certificates.

For non-domain joined computers, the organization can create a custom install package to distribute and install the CA certificate. Contact your system administrator for assistance.

Wildcard certificates

Wildcard certificates are used on a server within the same domain.

Citrix Workspace app supports wildcard certificates. Use wildcard certificates by following your organization's security policy. An alternative to wildcard certificates is a certificate with the list of server names and the Subject Alternative Name (SAN) extension. Private and public certificate authorities issue these certificates.

Intermediate certificates

If your certificate chain includes an intermediate certificate, the intermediate certificate must be appended to the Citrix Gateway server certificate. For information, see Configuring Intermediate Certificates.

Certificate revocation list

Certificate revocation list (CRL) allows Citrix Workspace app to check if the server's certificate is revoked. The certificate check improves the server's cryptographic authentication and the overall security of the TLS connection between the user device and a server.

You can enable CRL checking at several levels. For example, it's possible to configure Citrix Workspace app to check only its local certificate list or to check the local and network certificate lists. You can also configure certificate checking to allow users to log on only if all the CRLs are verified.

If you're configuring certificate checking on your local computer, exit Citrix Workspace app. Check if all the Citrix Workspace components, including the **Connection Center**, are closed.

For more information, see the Transport Layer Security section.

Support to mitigate man-in-the-middle attacks

Citrix Workspace app for Windows helps you to reduce the risk of a man-in-the-middle attack using the **Enterprise Certificate Pinning** feature of Microsoft Windows. A man-in-the-middle attack is a type of cyber-attack where the attacker secretly intercepts and relays messages between two parties who believe they are communicating directly with each other.

Previously, when you contact the store server, there was no way to verify whether the response received is from the server you intended to contact or not. Using the **Enterprise Certificate Pinning** feature of Microsoft Windows, you can verify the validity and integrity of the server by pinning its certificate.

Citrix Workspace app for Windows is pre-configured to know what server certificate it must expect for a particular domain or site using the Certificate pinning rules. If the server certificate does not match the pre-configured server certificate, the Citrix Workspace app for Windows prevents the session from taking place.

For information on how to deploy the **Enterprise Certificate Pinning** feature, see the Microsoft documentation.

Note:

You must be aware of the expiry of the certificate and update the group policies and certificate trust lists correctly. Otherwise, you might fail to start the session, even if there is no attack.

Authentication

September 26, 2023

You can configure various types of authentication for your Citrix Workspace app, including domain pass-through (single sign-on or SSON), smart card, and Kerberos pass-through.

Domain pass-through (Single Sign-on) authentication

Domain pass-through (single sign-on or SSON) lets you authenticate to a domain and use Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service) without having to reauthenticate again.

Note:

If you disable the **Enable MPR notifications for the System** policy in the Group Policy Object template, the domain pass-through (single sign-on) authentication feature isn't supported on Windows 11.

When enabled, domain pass-through (single sign-on) caches your credentials, so that you can connect to other Citrix applications without having to sign in each time. Ensure that only software that is in accordance with your corporate policies runs on your device to mitigate the risk of credential compromise.

When you log on to Citrix Workspace app, your credentials are passed through to StoreFront, along with the apps and desktops and Start menu settings. After configuring single sign-on, you can log on to Citrix Workspace app and launch virtual apps and desktops sessions without having to retype your credentials.

All web browsers require you to configure single sign-on using the Group Policy Object (GPO) administrative template. For more information about configuring single sign-on using the Group Policy Object (GPO) administrative template, see Configure single sign-on with Citrix Gateway.

You can configure single sign-on on both fresh installation or upgrade setup, using any of the following options:

- Command-line interface
- GUI

Note:

The terms domain pass-through, single sign-on, and SSON might be used interchangeably in this document.

Configure single sign-on during fresh installation

To configure single sign-on during fresh installation, do the following steps:

- 1. Configuration on StoreFront.
- 2. Configure XML trust services on the Delivery Controller.
- 3. Modify Internet Explorer settings.
- 4. Install Citrix Workspace app with single sign-on.

Configure single sign-on on StoreFront

Single sign-on lets you authenticate to a domain and use Citrix Virtual Apps and Desktops and Citrix DaaS from the same domain without having to reauthenticate to each app or desktop.

When you add a store using the **Storebrowse** utility, your credentials pass through the Citrix Gateway server, along with the apps and desktops enumerated for you, including your Start menu settings. After configuring single sign-on, you can add the store, enumerate your apps and desktops, and launch the required resources without having to type your credentials multiple times.

Depending on the Citrix Virtual Apps and Desktops deployment, single sign-on authentication can be configured on StoreFront using the Management Console.

Use the following table for different use cases and its respective configuration:

Use case	Configuration details	Additional information
Configured SSON on StoreFront	Launch Citrix Studio, go to Stores > Manage Authentication Methods - Store > enable Domain pass-through.	When Citrix Workspace app isn't configured with Single sign-on, it automatically switches the authentication method from Domain pass-through to User name and password , if available.
When workspace for web is required	Launch Stores > Workspace for Web Sites > Manage Authentication Methods - Store > enable Domain pass-through.	When Citrix Workspace app isn't configured with Single sign-on, it automatically switches the authentication method from Domain pass-through to User name and password , if available.

Configure single sign-on with Citrix Gateway

You enable single sign-on with Citrix Gateway using the Group Policy Object administrative template. However, you must ensure that you have enabled basic authentication and single factor (nFactor with 1 Factor) authentication on the Citrix Gateway.

- 1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Template > Citrix Components > Citrix Workspace > User Authentication, and select Single Sign-on for Citrix Gateway policy.
- 3. Select Enabled.
- 4. Click Apply and OK.
- 5. Restart Citrix Workspace app for the changes to take effect.

Configure XML trust services on the Delivery Controller

On Citrix Virtual Apps and Desktops and Citrix DaaS, run the following PowerShell command as an administrator on the Delivery Controller:

asnp Citrix*; Set-BrokerSite -TrustRequestsSentToTheXmlServicePort \$True

Modify the Internet Explorer settings

- 1. Add the StoreFront server to the list of trusted sites using Internet Explorer. To add:
 - a) Launch **Internet Options** from the Control panel.
 - b) Click Security > Local Intranet and click Sites.The Local Intranet window appears.
 - c) Select Advanced.
 - d) Add the URL of the StoreFront FQDN with the appropriate HTTP or HTTPS protocols.
 - e) Click Apply and OK.
- 2. Modify the **User Authentication** settings in **Internet Explorer**. To modify:
 - a) Launch Internet Options from the Control panel.
 - b) Click Security tab > Local Intranet.
 - c) Click **Custom level**. The **Security Settings Local Intranet Zone** window appears.
 - d) In the User Authentication pane, select Automatic logon with current user name and password.

8	User A	uthentication
	🎎 Log	on
		Anonymous logon
	0	Automatic logon only in Intranet zone
	•	Automatic logon with current user name and password
	\circ	Prompt for user name and password

e) Click Apply and OK.

Configure single sign-on using the command-line interface

Install Citrix Workspace app with the /includeSSON switch and restart Citrix Workspace app for the changes to take effect.

Note:

When you install Citrix Workspace app for Windows without the single sign-on component, upgrade to the Citrix Workspace app latest version with the /includeSSON switch isn't supported.

Configure single sign-on using the GUI

- 1. Locate the Citrix Workspace app installation file (CitrixWorkspaceApp.exe).
- 2. Double-click CitrixWorkspaceApp.exe to launch the installer.
- 3. In the **Enable Single Sign-on installation** wizard, select the **Enable Single Sign-on** option.
- 4. Click **Next** and follow the prompts to complete the installation.

You can now log on to an existing store (or configure a new store) using Citrix Workspace app without entering user credentials.

Configure single sign-on on workspace for web

You can configure single sign-on on workspace for web using the Group Policy Object administrative template.

- 1. Open the workspace for web GPO administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Template > Citrix Component > Citrix Workspace > User Authentication.
- 3. Select the Local user name and password policy and set it to Enabled.
- 4. Click **Enable pass-through authentication**. This option allows the workspace for web to use your login credentials for authentication on the remote server.
- 5. Click **Allow pass-through authentication for all ICA connections**. This option bypasses any authentication restriction and allows credentials to pass-through on all the connections.
- 6. Click **Apply** and **OK**.
- 7. Restart the workspace for web for the changes to take effect.

Verify that the single sign-on is enabled by launching the **Task Manager** and check if the ssonsvr. exe process is running.

Configure single sign-on using Active Directory

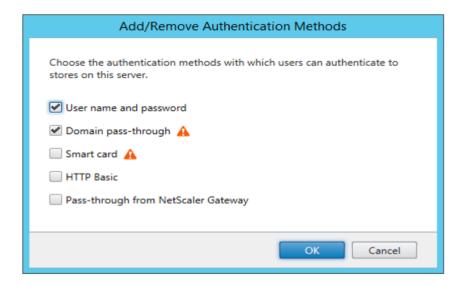
Complete the following steps to configure Citrix Workspace app for pass-through authentication using Active Directory group policy. In this scenario, you can achieve the single sign-on authentication without using the enterprise software deployment tools, such as the Microsoft System Center Configuration Manager.

- 1. Download and place the Citrix Workspace app installation file (CitrixWorkspaceApp.exe) on a suitable network share. It must be accessible by the target machines you install Citrix Workspace app on.
- 2. Get the CheckAndDeployWorkspacePerMachineStartupScript.battemplate from the Citrix Workspace app for Windows Download page.
- 3. Edit the content to reflect the location and the version of CitrixWorkspaceApp.exe.
- 4. In the Active Directory Group Policy Management console, type CheckAndDeployWorkspacePerMachir. bat as a startup script. For more information on deploying the startup scripts, see the Active Directory section.
- 5. In the Computer Configuration node, go to Administrative Templates > Add/Remove Templates to add the receiver.adml file.
- 6. After adding the receiver.adml template, go to Computer Configuration > Administrative Templates > Citrix Components > Citrix Workspace > User authentication. For more information about adding the template files, see Group Policy Object administrative template.
- 7. Select the Local user name and password policy and set it to Enabled.
- 8. Select Enable pass-through authentication and click Apply.
- 9. Restart the machine for the changes to take effect.

Configure single sign-on on StoreFront

StoreFront configuration

- 1. Launch Citrix Studio on the StoreFront server and select Stores > Manage Authentication Methods Store.
- 2. Select Domain pass-through.



Authentication tokens

Authentication tokens are encrypted and stored on the local disk so that you don't need to reenter your credentials when your system or session restarts. Citrix Workspace app provides an option to disable the storing of authentication tokens on the local disk.

For enhanced security, we now provide a Group Policy Object (GPO) policy to configure the authentication token storage.

Note:

This configuration is applicable only in cloud deployments.

To disable storing of authentication tokens using the Group Policy Object (GPO) policy:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit .msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > SelfService.
- 3. In the **Store authentication tokens** policy, select one of the following:
 - Enabled: Indicates that the authentication tokens are stored on the disk. By default, set to Enabled.
 - Disabled: Indicates that the authentication tokens aren't stored on the disk. Reenter your credentials when your system or session restarts.
- 4. Click Apply and OK.

Starting with Version 2106, Citrix Workspace app provides another option to disable the storing of authentication tokens on the local disk. Along with the existing GPO configuration, you can also disable the storing of authentication tokens on the local disk using the Global App Configuration Service.

In the Global App Configuration Service, set the Store Authentication Tokens attribute to False.

You can configure this setting using the Global App Configuration service in one of the following methods:

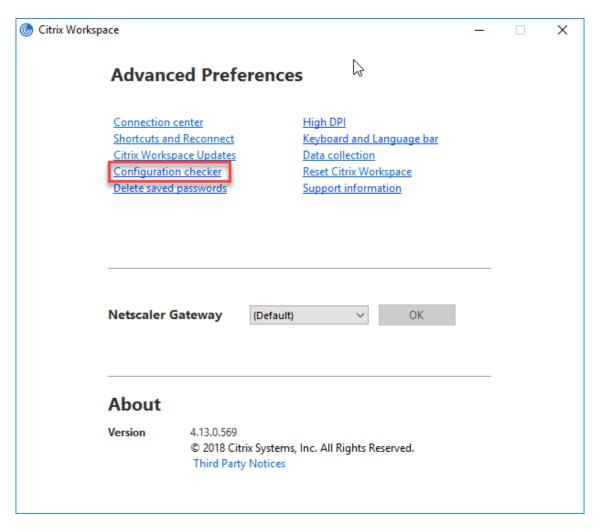
- Global App Configuration service User Interface (UI): To configure using UI, see Configure Citrix Workspace app
- API: To configure settings using APIs, see the Citrix Developer documentation.

Configuration Checker

Configuration Checker lets you run a test to check if the single sign-on is configured properly. The test runs on different checkpoints of the single sign-on configuration and displays the configuration results.

- 1. Right-click Citrix Workspace app icon in the notification area and click **Advanced Preferences**. The **Advanced Preferences** dialog appears.
- 2. Click Configuration Checker.

 The Citrix Configuration Checker window appears.



- 3. Select **SSONChecker** from the **Select** pane.
- 4. Click **Run**. A progress bar appears, displaying the status of the test.

The **Configuration Checker** window has the following columns:

- 1. **Status:** Displays the result of a test on a specific check point.
 - A green check mark indicates that the specific checkpoint is configured properly.
 - A blue I indicates information about the checkpoint.
 - A Red X indicates that the specific checkpoint isn't configured properly.
- 2. **Provider:** Displays the name of the module on which the test is run. In this case, single sign-on.
- 3. **Suite:** Indicates the category of the test. For example, Installation.
- 4. **Test:** Indicates the name of the specific test that is run.
- 5. **Details:** Provides additional information about the test, for both pass and fail.

The user gets more information about each checkpoint and the corresponding results.

The following tests are done:

- 1. Installed with single sign-on.
- 2. Logon credential capture.
- 3. Network Provider registration: The test result against Network Provider registration displays a green check mark only when "Citrix Single Sign-on" is set to be first in the list of Network Providers. If Citrix Single Sign-on appears anywhere else in the list, the test result against Network Provider registration appears with a blue I and additional information.
- 4. Single sign-on process is running.
- 5. Group Policy: By default, this policy is configured on the client.
- 6. Internet Settings for Security Zones: Make sure that you add the Store/XenApp Service URL to the list of Security Zones in the Internet Options.
 - If the Security Zones are configured via Group policy, any change in the policy requires the **Advanced Preferences** window to be reopened for the changes to take effect and to display the correct status of the test.
- 7. Authentication method for StoreFront.

Note:

- If you're accessing workspace for web, the test results aren't applicable.
- If Citrix Workspace app is configured with multiple stores, the authentication method test runs on all the configured stores.
- You can save the test results as reports. The default report format is .txt.

Hide the Configuration Checker option from the Advanced Preferences window

- 1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc.
- 2. Go to Citrix Components > Citrix Workspace > Self Service > DisableConfigChecker.
- Click Enabled to hide the Configuration Checker option from the Advanced Preferences window.
- 4. Click Apply and OK.
- 5. Run the gpupdate /force command.

Limitation:

Configuration Checker does not include the checkpoint for the configuration of trust requests sent to the XML service on Citrix Virtual Apps and Desktops servers.

Beacon test

Citrix Workspace app allows you to do a beacon test using the Beacon checker that is available as part of the **Configuration Checker** utility. The Beacon test helps to confirm if the beacon (ping.citrix.com) is reachable. This diagnostic test helps to eliminate one of the many possible causes for slow resource enumeration, that is the beacon not being available. To run the test, right-click the Citrix Workspace

app in the notification area and select **Advanced Preferences > Configuration Checker**. Select the **Beacon checker** option from the list of Tests and click **Run**.

The test results can be any of the following:

- Reachable Citrix Workspace app is successfully able to contact the beacon.
- Not reachable Citrix Workspace app is unable to contact the beacon.
- Partially reachable Citrix Workspace app can contact the beacon intermittently.

Note:

- The test results aren't applicable on workspace for web.
- The test results can be saved as reports. The default format for the report is .txt.

Domain pass-through (Single Sign-on) authentication with Kerberos

This topic applies only to connections between Citrix Workspace app for Windows and StoreFront, Citrix Virtual Apps and Desktops, and Citrix DaaS.

Citrix Workspace app supports Kerberos for domain pass-through (single sign-on or SSON) authentication for deployments that use smart cards. Kerberos is one of the authentication methods included in **Integrated Windows Authentication (IWA)**.

When enabled, Kerberos authenticates without passwords for Citrix Workspace app. As a result, prevents Trojan horse-style attacks on the user device that try to gain access to passwords. Users can log on using any authentication method and access published resources, for example, a biometric authenticator such as a fingerprint reader.

When you log on using a smart card to Citrix Workspace app, StoreFront, Citrix Virtual Apps and Desktops, and Citrix DaaS configured for smart card authentication- the Citrix Workspace app:

- 1. Captures the smart card PIN during single sign-on.
- 2. Uses IWA (Kerberos) to authenticate the user to StoreFront. StoreFront then provides your Workspace app with information about the available Citrix Virtual Apps and Desktops and Citrix DaaS.

Note:

Enable Kerberos to avoid an extran PIN prompt. If Kerberos authentication isn't used, Citrix Workspace app authenticates to StoreFront using the smart card credentials.

3. The HDX engine (previously referred to as the ICA client) passes the smart card PIN to the VDA to log the user on to Citrix Workspace app session. Citrix Virtual Apps and Desktops and Citrix DaaS then delivers the requested resources.

To use Kerberos authentication with Citrix Workspace app, check if the Kerberos configuration conforms to the following.

- Kerberos works only between Citrix Workspace app and servers that belong to the same or to trusted Windows Server domains. Servers are trusted for delegation, an option you configure through the Active Directory Users and Computers management tool.
- Kerberos must be enabled both on the domain and Citrix Virtual Apps and Desktops and Citrix DaaS. For enhanced security and to make sure that Kerberos is used, disable any non-Kerberos IWA options on the domain.
- Kerberos logon isn't available for Remote Desktop Services connections that're configured to
 use either Basic authentication, always use specified logon information, or always prompt for
 a password.

Warning:

Using the Registry editor incorrectly might cause serious problems that can require you to reinstall the operating system. Citrix can't guarantee that problems resulting from incorrect use of the Registry editor can be solved. Use the Registry Editor at your own risk. Make sure you back up the registry before you edit it.

Domain pass-through (Single Sign-on) authentication with Kerberos for use with smart cards

Before continuing, see Secure your deployment section in the Citrix Virtual Apps and Desktops document.

When you install Citrix Workspace app for Windows, include the following command-line option:

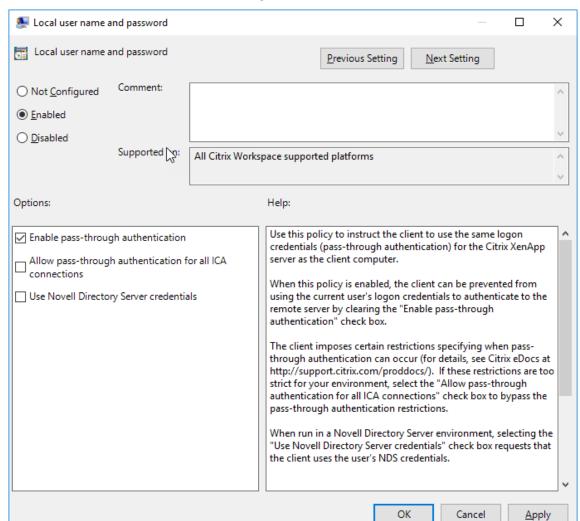
• /includeSSON

This option installs the single sign-on component on the domain-joined computer, enabling your workspace to authenticate to StoreFront using IWA (Kerberos). The single sign-on component stores the smart card PIN, used by the HDX engine when it remotes the smart card hardware and credentials to Citrix Virtual Apps and Desktops and Citrix DaaS. Citrix Virtual Apps and Desktops and Citrix DaaS automatically selects a certificate from the smart card and gets the PIN from the HDX engine.

A related option, ENABLE_SSON, is enabled by default.

If a security policy prevents you from enabling single sign-on on a device, configure Citrix Workspace app using Group Policy Object administrative template.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Choose Administrative Templates > Citrix Components > Citrix Workspace > User authentication > Local user name and password
- 3. Select Enable pass-through authentication.



4. Restart Citrix Workspace app for the changes to take effect.

To configure StoreFront:

When you configure the authentication service on the StoreFront server, select the **Domain pass-through** option. That setting enables Integrated Windows Authentication. You do not need to select the Smart card option unless you also have non domain-joined clients connecting to StoreFront using smart cards.

For more information about using smart cards with StoreFront, see Configure the authentication service in the StoreFront documentation.

Support for Conditional Access with Azure Active Directory

Conditional Access is a tool used by Azure Active Directory to enforce organizational policies. Workspace administrators can configure and enforce Azure Active Directory conditional access

policies for users authenticating to the Citrix Workspace app. The Windows machine running the Workspace app must have Microsoft Edge WebView2 Runtime version 99 or later installed.

For complete details and instructions about configuring conditional access policies with Azure Active Directory, see **Azure AD Conditional Access documentation** at *Docs.microsoft.com/en-us/azure/active-directory/conditional-access/*.

Note:

This feature is supported only on Workspace (Cloud) deployments.

Support for modern authentication methods for StoreFront stores

Starting with Citrix Workspace app 2303 for Windows, you can enable support for modern authentication methods for StoreFront stores using Group Policy Object (GPO) template. With Citrix Workspace app version 2305.1, you can enable this feature using Global App Configuration service.

You can authenticate to Citrix StoreFront stores using any of the following ways:

- Using Windows Hello and FIDO2 security keys. For more information, see Other ways to authenticate.
- Single sign-on to Citrix StoreFront stores from Azure Active Directory (AAD) joined machines with AAD as the identity provider. For more information, see Other ways to authenticate.
- Workspace administrators can configure and enforce Azure Active Directory conditional access
 policies for users authenticating to Citrix StoreFront stores. For more information, see Support
 for Conditional access with Azure AD.

To enable this feature, you must use Microsoft Edge WebView2 as the underlying browser for direct StoreFront and gateway authentication.

Note:

Ensure that the Microsoft Edge WebView2 Runtime version is 102 or later.

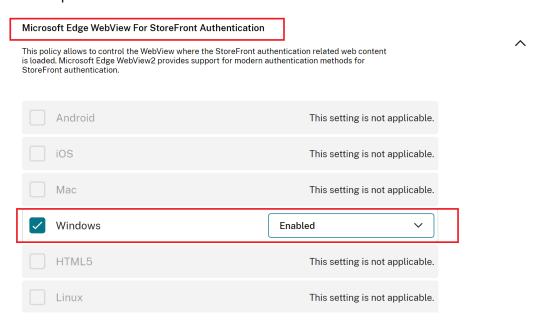
You can enable modern authentication methods for StoreFront storess using Global App Config service and Group Policy Object (GPO) template.

Using Global App Config service

To enable this feature:

- From the Citrix Cloud menu, select Workspace Configuration and then select App Configuration.
- 2. Click Security & Authentication.
- 3. Ensure the **Windows** check box is selected.

4. Select **Enabled** next to **Windows** from the **Microsoft Edge WebView for Storefront Authentication** drop-down list.



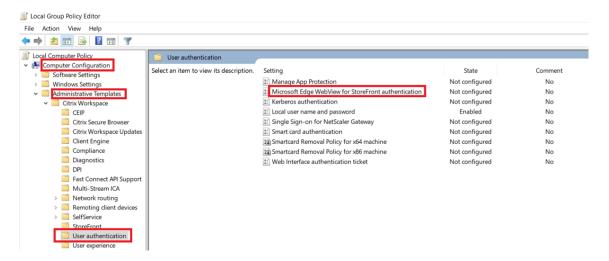
Note:

If you select **Disabled** next to **Windows** from the **Microsoft Edge WebView for Storefront Authentication** drop-down list, Internet Explorer WebView is used within the Citrix Workspace app. As a result, the modern authentication methods for Citrix Storefront stores are not supported.

Using GPO

To enable this feature:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > User Authentication.
- 3. Click the Microsoft Edge WebView for StoreFront authentication policy and set it to Enabled.



4. Click **Apply** and then **OK**.

When this policy is disabled, Citrix Workspace app uses Internet Explorer WebView. As a result, the modern authentication methods for Citrix StoreFront stores are not supported.

Other ways to authenticate

You can configure the following authentication mechanisms with the Citrix Workspace app. For the following authentication mechanisms to work as expected, the Windows machine running the Workspace app must have Microsoft Edge WebView2 Runtime version 99 or later installed.

 Windows Hello based authentication – For instructions about configuring Windows Hello based authentication, see Configure Windows Hello for Business Policy settings - Certificate Trust at _Docs.microsoft.com/en-us/windows/security/identity-protection/hello-for-business/hello-cert-trust-policy-settings.

Note:

Windows Hello based authentication with domain pass-through (single-sign-on or SSON) is not supported.

- 2. FIDO2 Security Keys based authentication FIDO2 security keys provide a seamless way for enterprise employees to authenticate without entering a user name or password. You can configure FIDO2 Security Keys based authentication to Citrix Workspace. If you would like your users to authenticate to Citrix Workspace with their Azure AD account using a FIDO2 security key, see Enable passwordless security key sign-in at Docs.microsoft.com/en-us/azure/active-directory/authentication/howto-authentication-passwordless-security-key.
- 3. You can also configure Single Sign-On (SSO) to Citrix Workspace app from Microsoft Azure Active Directory (AAD) joined machines with AAD as an identity provider. For more details about configuring Azure Active Directory Domain services, see **Configuring Azure Active Directory Domain**

services at *Docs.microsoft.com/en-us/azure/active-directory-domain-services/overview*. For information about how to connect Azure Active Directory to Citrix Cloud, see Connect Azure Active Directory to Citrix Cloud.

Smart card

Citrix Workspace app for Windows supports the following smart card authentication:

- Pass-through authentication (single sign-on) Pass-through authentication captures the smart card credentials when users log on to Citrix Workspace app. Citrix Workspace app uses the captured credentials as follows:
 - Users of domain-joined devices who log on to Citrix Workspace app using the smart card can start virtual desktops and applications without needing to reauthenticate.
 - Citrix Workspace app running on non-domain joined devices with the smart card credentials must type their credentials again to start a virtual desktop or application.

Pass-through authentication requires configuration both on StoreFront and Citrix Workspace app.

- Bimodal authentication Bimodal authentication offers users a choice between using a smart
 card and typing the user name and password. This feature is effective when you can't use the
 smart card. For example, the logon certificate has expired. Dedicated stores must be set up per
 site to allow Bimodal authentication, using the DisableCtrlAltDel method set to False to allow
 smart cards. Bimodal authentication requires StoreFront configuration.
 - Using the Bimodal authentication, the StoreFront administrator can allow both user name and password and smart card authentication to the same store by selecting them in the StoreFront console. See StoreFront documentation.
- **Multiple certificates** Multiple certificates can be availed for a single smart card and if multiple smart cards are in use. When you insert a smart card in a card reader, the certificates are applicable to all applications running on the user device, including Citrix Workspace app.
- **Client certificate authentication** Client certificate authentication requires Citrix Gateway and StoreFront configuration.
 - For access to StoreFront through Citrix Gateway, you must reauthenticate after removing the smart card.
 - When the Citrix Gateway SSL configuration is set to **Mandatory client certificate authentication**, operation is more secure. However, mandatory client certificate authentication isn't compatible with bimodal authentication.
- **Double hop sessions** If a double-hop is required, a connection is established between Citrix Workspace app and the user's virtual desktop.

• **Smart card-enabled applications** - Smart card-enabled applications, such as Microsoft Outlook and Microsoft Office, allow users to digitally sign or encrypt documents available in virtual apps and desktops sessions.

Limitations:

- Certificates must be stored on the smart card and not on the user device.
- Citrix Workspace app does not save the choice of the user certificate, but stores the PIN when configured. The PIN is cached in non-paged memory only during the user session and isn't stored on the disk.
- Citrix Workspace app does not reconnect to a session when a smart card is inserted.
- When configured for smart card authentication, Citrix Workspace app does not support virtual private network (VPN) single-sign on or session pre-launch. To use VPN with smart card authentication, install the Citrix Gateway Plug-in. Log on through a webpage using their smart cards and PINs to authenticate at each step. Pass-through authentication to StoreFront with the Citrix Gateway Plug-in isn't available for smart card users.
- Citrix Workspace app updater communications with citrix.com and the Merchandising Server aren't compatible with smart card authentication on Citrix Gateway.

Warning

Some configuration requires registry edits. Using the Registry editor incorrectly might cause problems that can require you to reinstall the operating system. Citrix can't guarantee that problems resulting from incorrect use of the Registry Editor can be solved. Make sure you back up the registry before you edit it.

To enable single sign-on for smart card authentication:

To configure Citrix Workspace app for Windows, include the following command-line option during installation:

• ENABLE_SSON=Yes

Single sign-on is another term for pass-through authentication. Enabling this setting prevents Citrix Workspace app from displaying a second prompt for a PIN.

• In the Registry editor, navigate to the following path and set the SSONCheckEnabled string to False if you have not installed the single sign-on component.

```
HKEY_CURRENT_USER\Software{ Wow6432 } \Citrix\AuthManager\protocols\
integratedwindows\
```

```
HKEY_LOCAL_MACHINE\Software{ Wow6432 } \Citrix\AuthManager\protocols\
integratedwindows\
```

The key prevents the Citrix Workspace app authentication manager from checking for the single sign-on component and allows Citrix Workspace app to authenticate to StoreFront.

To enable smart card authentication to StoreFront instead of Kerberos, install Citrix Workspace app for Windows with the following command-line options:

- /includeSSON installs single sign-on (pass-through) authentication. Enables credential caching and the use of pass-through domain-based authentication.
- If the user logs on to the endpoint with a different authentication method, for example, user name and password, the command line is:

```
/includeSSON LOGON_CREDENTIAL_CAPTURE_ENABLE=No
```

This type of authentication prevents capturing of the credentials at logon time and allows Citrix Workspace app to store the PIN during Citrix Workspace app login.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Go to Administrative Templates > Citrix Components > Citrix Workspace > User Authentication > Local user name and password.
- 3. Select **Enable pass-through authentication**. Depending on the configuration and security settings, select **Allow pass-through authentication for all ICA option** for pass-through authentication to work.

To configure StoreFront:

• When you configure the authentication service, select the **Smart card** check box.

For more information about using smart cards with StoreFront, see Configure the authentication service in the StoreFront documentation.

To enable user devices for smart card use:

- 1. Import the certificate authority root certificate into the device's keystore.
- 2. Install your vendor's cryptographic middleware.
- 3. Install and configure Citrix Workspace app.

To change how certificates are selected:

By default, if multiple certificates are valid, Citrix Workspace app prompts the user to choose a certificate from the list. Instead, you can configure Citrix Workspace app to use the default certificate (per the smart card provider) or the certificate with the latest expiry date. If there are no valid logon certificates, the user is notified, and given the option to use an alternate logon method if available.

A valid certificate must have all of these characteristics:

- The current time of the clock on the local computer is within the certificate validity period.
- The **Subject public** key must use the RSA algorithm and have a key length of 1024 bits, 2048 bits, or 4096 bits.
- Key usage must include digital signature.
- Subject Alternative Name must include the User Principal Name (UPN).

- Enhanced key usage must include smart card logon and client authentication, or all key usages.
- One of the Certificate Authorities on the certificate's issuer chain must match one of the allowed Distinguished Names (DN) sent by the server in the TLS handshake.

Change how certificates are selected by using either of the following methods:

On the Citrix Workspace app command line, specify the option AM_CERTIFICATESELECTIONMODE
 ={ Prompt | SmartCardDefault | LatestExpiry }.

Prompt is the default. For SmartCardDefault or LatestExpiry, if multiple certificates meet the criteria, Citrix Workspace app prompts the user to choose a certificate.

```
Add the following key value to SmartCardDefault LatestExpiry }.

the registry key

HKEY_CURRENT_USER OR

HKEY_LOCAL_MACHINE\
Software\[Wow6432Node\]
Citrix\AuthManager:
CertificateSelectionMode={
Prompt
```

Values defined in HKEY_CURRENT_USER take precedence over values in HKEY_LOCAL_MACHINE to best assist the user in selecting a certificate.

To use CSP PIN prompts:

By default, the PIN prompts presented to users are provided by Citrix Workspace app for Windows rather than the smart card Cryptographic Service Provider (CSP). Citrix Workspace app prompts users to enter a PIN when required and then passes the PIN to the smart card CSP. If your site or smart card has more stringent security requirements, such as to disallow caching the PIN per-process or per-session, you can configure Citrix Workspace app to use the CSP components to manage the PIN entry, including the prompt for a PIN.

Change how PIN entry is handled by using either of the following methods:

- On the Citrix Workspace app command line, specify the option AM_SMARTCARDPINENTRY=CSP.

Smart card support and removal changes

A Citrix Virtual Apps session logs off when you remove the smart card. If Citrix Workspace app is configured with smart card as the authentication method, configure the corresponding policy on Citrix

Workspace app for Windows to enforce the Citrix Virtual Apps session for logoff. The user is still logged into the Citrix Workspace app session.

Limitation:

When you log on to the Citrix Workspace app site using smart card authentication, the user name is displayed as **Logged On**.

Fast smart card

Fast smart card is an improvement over the existing HDX PC/SC-based smart card redirection. It improves performance when smart cards are used in high-latency WAN environments.

Fast smart cards are supported on Linux VDA only.

To enable fast smart card logon on Citrix Workspace app:

Fast smart card logon is enabled by default on the VDA and disabled by default on Citrix Workspace app. To enable fast smart card logon, include the following parameter in the **default**.ica file of the associated StoreFront site:

```
1 copy[WFClient]
2 SmartCardCryptographicRedirection=On
3 <!--NeedCopy-->
```

To disable fast smart card logon on Citrix Workspace app:

To disable fast smart card logon on Citrix Workspace app, remove the SmartCardCryptographicRedirection parameter from the **default.** ica file of the associated StoreFront site.

For more information, see smart-cards.

Silent authentication for Citrix Workspace

Citrix Workspace app introduces a Group Policy Object (GPO) policy to enable silent authentication for Citrix Workspace. This policy enables Citrix Workspace app to log in to Citrix Workspace automatically at system startup. Use this policy only when domain pass-through (single sign-on or SSON) is configured for Citrix Workspace on domain-joined devices.

For this policy to function, the following criteria must be met:

- Single sign-on must be enabled.
- The SelfServiceMode key must be set to Off in the Registry editor.

Enabling silent authentication:

Open the Citrix Workspace app Group Policy Object administrative template by running gpedit

 msc.

- 2. Under the **Computer Configuration** node, go to **Administrative Templates > Citrix Workspace > Self Service**.
- 3. Click the Silent authentication for Citrix Workspace policy and set it to Enabled.
- 4. Click **Apply** and **OK**.

Prevent Citrix Workspace app for Windows from caching passwords and usernames

By default, Citrix Workspace app for Windows automatically populates the last user name entered. To clear autofill of the user name field, edit the registry on the user device:

- 1. Create a REG_SZ value HKLM\SOFTWARE\Citrix\AuthManager\RememberUsername.
- 2. Set its value false.

To disable the **Remember my password** check box and prevent an automatic sign-in, create following registry key on client machine where Citrix Workspace app for Windows is installed:

• Path: HKLM\Software\wow6432node\Citrix\AuthManager

• Type: REG_SZ

• Name: SavePasswordMode

• Value: Never

Note:

Using Registry Editor incorrectly can cause serious problems that can require you to reinstall the operating system. Citrix cannot guarantee that problems resulting from incorrect use of Registry Editor can be solved. Use Registry Editor at your own risk. Make sure you back up the registry before you edit it.

To prevent caching credentials for the StoreFront stores, see Prevent Citrix Workspace app for Windows from caching passwords and usernames in the StoreFront documentation.

Support for more than 200 groups in Azure AD

With this release, an Azure AD user who is part of more than 200 groups can view apps and desktops assigned to the user. Previously, the same user wasn't able to view these apps and desktops.

Note:

Users must sign out from Citrix Workspace app and sign in back to enable this feature.

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:

The version numbers mentioned as part of the User-Agent in the following table are examples and it is automatically updated based on the versions that you are using.

The following table describes the scenario, description, and the corresponding User-Agent for each scenario:

Scenario	Description	User-Agent
Regular HTTP requests	In general, a network request made by Citrix Workspace app contains a User-Agent. For example, network requests like: GET /Citrix/Roaming/Accounts and GET / AGServices/discover	CitrixReceiver /23.5.0.63 Windows /10.0 (22H2 Build 19045.2965)SelfService /23.5.0.63 (Release) X1Class CWACapable
Cloud store	When a user authenticates to a cloud store in Citrix Workspace app, network requests are made with a specific User-Agent. For example, network requests with path /core/connect/authorize.	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/113.0.0.0 Safari/537.36 Edg /113.0.1774.50 CWA /23.5.0.63 Windows /10.0 (22H2 Build 19045.2965)
On-premises store with Gateway Advanced Auth using Edge WebView	When a user authenticates to the Gateway configured with Advanced Auth on Citrix Workspace app using Edge WebView, network requests are made with a specific User-Agent. For example, network requests that include: GET /nf/auth/doWebview.do and GET /logon/LogonPoint/tmindex.html.	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/108.0.00 Safari/537.36 Edg /108.0.1462.54 CWAWEBVIEW/23.2.0.2111 Windows/10.0 (22H2 Build 19045.2364)

Scenario	Description	User-Agent
On-premises store with Gateway Advanced Auth using IE WebView	When a user authenticates to the Gateway configured with Advanced Auth on Citrix Workspace app using Internet Explorer WebView, network requests are made with a specific User-Agent. For example, network requests that include: GET /nf/auth /doWebview.do and GET /logon/LogonPoint/tmindex.html.	Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; rv:11.0) like Gecko, CWAWEBVIEW /23.5.0.43
Custom web store	When a user adds a custom web store to Citrix Workspace app, the app sends a User-Agent.	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/113.0.0.0 Safari/537.36 Edg /113.0.1774.50 CWA /23.5.0.63 Windows /10.0 (22H2 Build 19045.2965)

Domain pass-through access matrix

May 31, 2023

If you are using Citrix Workspace and want to achieve domain pass-through, the tables in the subsections describe the different scenarios and whether you can achieve domain pass-through for each scenario or not.

The different header elements in the tables and the additional information about the header elements are as follows:

• End Point joined to: Indicates the directory to which the endpoint is joined. The directory provides access control to on-premises resources. This can be on-premises Active Directory (AD), Azure Active Directory (AAD) or hybrid.

- Identity Provider (IdP): Entity used to provide authentication services to Citrix Workspace. It allows you to connect to the resources.
- Federated Authentication Service (FAS): For more information, see Enable single sign-on for workspaces with Citrix Federated Authentication Service.
- Virtual Delivery Agent (VDA): For more information, see Install VDAs.
- VDA Joined to: Indicates the directory to which the VDA device is joined. For more information, see Identity and access management.
- Single sign-on (SSO) to Citrix Workspace/VDA: Yes or No value indicates if domain pass-through to Citrix Workspace or VDA is supported.
- Citrix Workspace app: To achieve single sign-on, see Configure single sign-on during fresh installation in Domain pass-through authentication.

Note:

You might require latest version of Citrix Workspace app to get domain pass-through support for some of the following scenarios.

Domain pass-through support for Citrix Workspace

End Point			SSO to Citrix		
Joined to	IdP	VDA Joined to	Workspace	SSO to VDA	Documentation
AD	On-premises Citrix Gateway	AD	Yes	Citrix Workspace app/FAS	Domain pass-through to Citrix Workspace using on-premises Citrix Gateway as
					the identity provider.

End Point Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
AD	Adaptive Authentication	AD	Yes	Citrix Workspace app/FAS	To configure adaptive authentication, see Adaptive Authentication service and follow the instruction in Domain pass-through to Citrix Workspace using on-premises Citrix Gateway as the identity provider.
AD	Citrix Gateway federated to another IdP (AAD/Okta)	AD	Yes	Citrix Workspace app/FAS	Configure IdP using Configure SAML single sign-on and refer to the documenta- tion for the IdP used to configure domain pass-through.

End Point Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
AD	Okta	AD	Yes	Citrix Workspace app/FAS	Domain pass-through to Citrix Workspace using Okta as identity provider.
AD/Hybrid Joined	AAD (AD with AAD Connect)	AD	Yes	Citrix Workspace app/FAS **	Domain pass-through to Citrix Workspace using Azure Active Directory as the identity provider.
AD	Any SAML based IdP (ex ADFS)	AD	Yes	Citrix Workspace app/FAS	See Connect SAML as an identity provider to Citrix Cloud and refer to the documentation for the IdP used to configure the domain pass-through.
AD	AD	AD	No	Not supported	NA
AD	AD+OTP	AD	No	Not supported	NA
AD	AAD	AAD	No	Not supported	NA

End Point			SSO to Citrix		
Joined to	IdP	VDA Joined to	Workspace	SSO to VDA	Documentation
AAD	AAD without on-premises AD	AD	Yes	FAS	Citrix Workspace uses Microsoft Edge WebView which allows SSO to workspace. SSO to VDA is supported via FAS. For more information, see Enable single sign-on for workspaces with Citrix Federated Authentication Service.
AAD	AAD	AAD	Yes	User must enter credentials.	Citrix Workspace uses Microsoft Edge WebView which allows SSO to Workspace. SSO to VDA isn't supported.

End Point			SSO to Citrix		
Joined to	IdP	VDA Joined to	Workspace	SSO to VDA	Documentation
Non-Domain	IdP that	AD	No	FAS	Citrix
Joined	supports				Workspace
	password less				uses
	authentica-				Microsoft
	tion - link				Edge
					WebView
					which allows
					SSO to
					Workspace.
					SSO to VDA is
					supported via
					FAS. For more
					information,
					see Other
					ways to
					authenticate
					to Citrix
					Workspace.

Notes:

- Client must be reachable to AD for Kerberos to work.
- **Citrix Single Sign-on (SSONSVR.exe) works only with the user name or password on the client. If the user is using Windows Hello to sign in, then FAS is required.
- Authentication might not be fully silent in cloud if LLT is enabled or if the end user acceptance policy is configured.
- It is recommended to configure FAS as it applies to non-windows platforms.

Domain pass-through support for StoreFront

End Point			SSO to Citrix		
Joined to	IdP	VDA Joined to	Workspace	SSO to VDA	Documentation
AD	StoreFront	AD	Yes	Citrix	Domain
				Workspace	pass-through
				арр	authentica-
					tion

End Point Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
AD/Hybrid joined/Win- dows Hello for Business	StoreFront	AD	Yes(1)	Citrix Workspace app /FAS(2)	Domain pass-through authentica- tion and Enable single sign-on for workspaces with Citrix Federated Au- thentication Service.
AD	Citrix Gateway - Advanced Au- thentication	AD	Yes	Citrix Workspace app(3))	
AD	Citrix Gateway - Basic authen- tication	AD	Yes	Citrix Workspace app(4)	Domain pass-through authentication.

Notes:

1. In the Registry editor, navigate to the following path and set the SSONCheckEnabled string to False if you have not installed the single sign-on component.

HKEY_LOCAL_MACHINE\Software{ Wow6432 } \Citrix\AuthManager\protocols \integratedwindows\

The key prevents the Citrix Workspace app authentication manager from checking for the single sign-on component and allows Citrix Workspace app to authenticate to StoreFront.

- 2. If you are using Windows Hello to sign in, FAS is required and registry configuration to enable SSO.
- 3. Needs client to be reachable to AD as it uses Kerberos.
- 4. Works even if client is not reachable to AD. Not using Kerberos.

Domain pass-through to Citrix Workspace using on-premises Citrix Gateway as the identity provider

September 26, 2023

Important:

This article helps in configuring domain pass-through authentication. If you have already setup on-premises Gateway as IdP, skip to Configure domain pass-through as the authentication method in the Citrix Gateway section.

Citrix Cloud supports using an on-premises Citrix Gateway as an identity provider to authenticate subscribers signing into their workspaces.

By using Citrix Gateway authentication, you can:

- Continue authenticating users through your existing Citrix Gateway so they can access the resources in your on-premises Virtual Apps and Desktops deployment through Citrix Workspace.
- Use the Citrix Gateway authentication, authorization, and auditing functions with Citrix Workspace.
- Provide your users access to the resources that they need through Citrix Workspace using features such as pass-through authentication, smart cards, secure tokens, conditional access policies, federation.

Citrix Gateway authentication is supported for use with the following product versions:

• Citrix Gateway 13.1.4.43 Advanced edition or later

Prerequisites:

- Cloud Connectors You need at least two servers on which to install the Citrix Cloud Connector software.
- An Active Directory and make sure that the domain is registered.
- Citrix Gateway requirements
 - Use advanced policies on the on-premises gateway because of the deprecation of classic policies.
 - When configuring the Gateway for authenticating subscribers to Citrix Workspace, the gateway acts as an OpenID Connect provider. Messages between Citrix Cloud and Gateway conform to the OIDC protocol, which involves digitally signing tokens. Therefore, you must configure a certificate for signing these tokens.
 - Clock synchronization Citrix Gateway must be synchronized to NTP time.

For details, see Prerequisites in the Citrix Cloud documentation.

Before creating the OAuth IdP policy, you need to first set up Citrix Workspace or Cloud to use Gateway as the authentication option in the IdP. For details on how to set up, see Connect an on-premises

Citrix Gateway to Citrix Cloud. When you complete the setup, the Client ID, Secret, and Redirect URL required for creating the OAuth IdP policy are generated.

Domain pass-through for Workspace for web is enabled if you are using Internet Explorer, Microsoft Edge, Mozilla Firefox, and Google Chrome. Domain pass-through is enabled only when the client is detected successfully.

Note:

If HTML5 client is preferred by a user or is enforced by the administrator, domain pass-through authentication method is not enabled.

When launching StoreFront URL in a browser, the **Detect Receiver** prompt is shown.

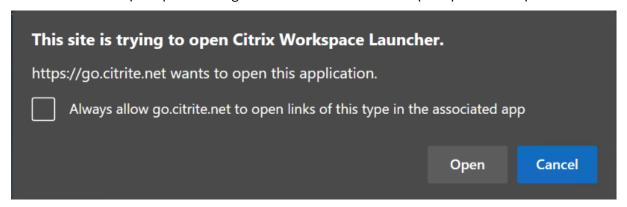
If the devices are managed, configure the group policy to disable this prompt instead of disabling client detection. For more information, see:

- URLAllowlist in the Microsoft documentation.
- URLAllowlist in the Google Chrome documentation.

Note:

Protocol handler used by Workspace app is **receiver:**. Configure this as one of the URLs allowed.

Users can also select the check box as shown in the following example prompt for a StoreFront URL in the client detection prompt. Selecting this check box also avoids the prompt for subsequent launches.



The following steps explain how Citrix Gateway can be set up as IdP.

Create an OAuth IdP policy on the on-premises Citrix Gateway

Creating an OAuth IdP authentication policy involves the following tasks:

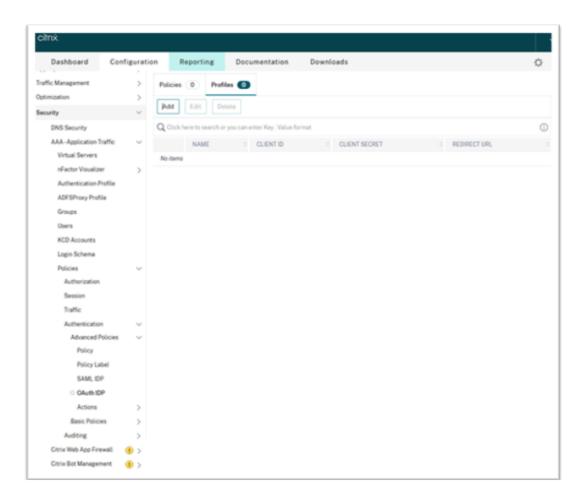
- 1. Create an OAuth IdP profile.
- 2. Add an OAuth IdP policy.
- 3. Bind the OAuth IdP policy to a virtual server.
- 4. Bind the certificate globally.

Create an OAuth IdP profile

1. To create an OAuth IdP profile by using the CLI, type the following in the command prompt:

```
1 add authentication OAuthIdPProfile <name> [-clientID <string>][-
      clientSecret ][-redirectURL <URL>][-issuer <string>][-audience
      <string>][-skewTime <mins>] [-defaultAuthenticationGroup <</pre>
      string>]
  add authentication OAuthIdPPolicy <name> -rule <expression> [-
      action <string> [-undefAction <string>] [-comment <string>][-
      logAction <string>]
5 add authentication ldapAction <name> -serverIP <IP> -ldapBase "dc=
      aaa,dc=local"
7 | IdapBindDn <administrator@aaa.local> -IdapBindDnPassword <password
      > -ldapLoginName sAMAccountName
8
   add authentication policy <name> -rule <expression> -action <
      string>
11 bind authentication vserver auth_vs -policy <ldap_policy_name> -
      priority <integer> -gotoPriorityExpression NEXT
12
  bind authentication vserver auth_vs -policy <OAuthIdPPolicyName> -
      priority <integer> -gotoPriorityExpression END
14
15 bind vpn global - certkey <>
16
17 <!--NeedCopy-->
```

- 2. To create an OAuth IdP profile by using the GUI:
 - a) Log into your on-premises Citrix Gateway management portal and navigate to Security >
 AAA Application Traffic > Policies > Authentication > Advanced Policies > OAuth IDP.



- b) In the **OAuth IdP** page, click the **Profiles** tab and click **Add**.
- c) Configure the OAuth IdP profile.

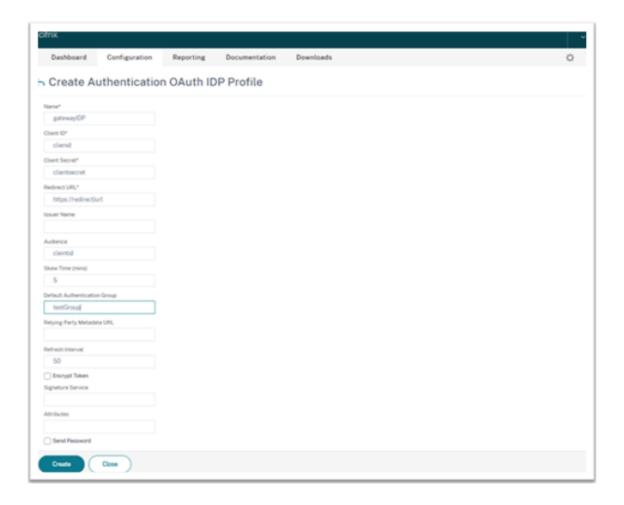
Note:

- Copy and paste the Client ID, Secret, and Redirect URL values from the Citrix Cloud > Identity and Access Management > Authentication tab to establish the connection to Citrix Cloud.
- Enter the Gateway URL correctly in the Issuer Name field. For example, https://GatewayFQDN.com.
- Also copy and paste the client ID in the **Audience** field.
- **Send Password**: Enable this option for single sign-on support. This option is disabled by default.
- d) On the **Create Authentication OAuth IdP Profile** screen, set values for the following parameters and click **Create**.
 - Name Name of the authentication profile. Must begin with a letter, number, or the underscore character (_). Name must have only letters, numbers, and the hyphen (-), period (.) pound (#), space (), at (@), equals (=), colon (:), and underscore characters.

You cannot change the name after the profile is created.

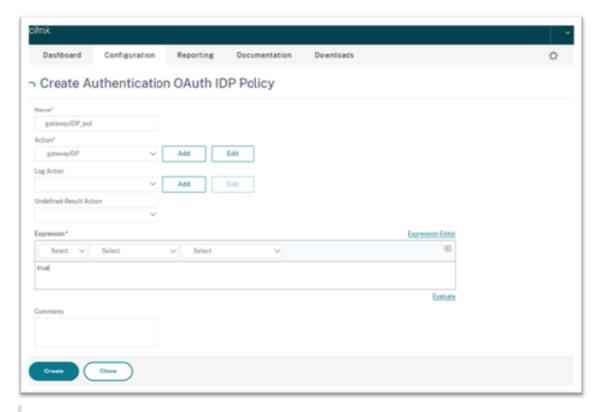
- **Client ID** Unique string that identifies SP. Authorization server infers client configuration using this ID. Maximum Length: 127.
- **Client Secret** Secret string established by user and authorization server. Maximum Length: 239.
- Redirect URL Endpoint on SP to which code/token must be posted.
- Issuer Name Identity of the server whose tokens are to be accepted. Maximum Length: 127. Example: https://GatewayFQDN.com.
- Audience Target recipient for the token sent by IdP. The recipient verifies this token.
- **Skew Time** This option specifies the allowed clock skew (in minutes) that Citrix ADC allows on an incoming token. For example, if skewTime is 10 then the token is valid from (current time 10) mins to (current time + 10) mins, that is 20 mins in all. Default value: 5.
- **Default Authentication Group** A group added to the session internal group list when this profile is chosen by IdP which can be used in the nFactor flow. It can be used in the expression (AAA.USER.IS_MEMBER_OF("xxx")) for authentication policies to identify relying party related nFactor flow. Maximum Length: 63

A group is added to the session for this profile to simplify policy evaluation and help in customizing policies. This group is the default group that is chosen when the authentication succeeds in addition to the extracted groups. Maximum Length: 63.



Add an OAuth IdP policy

- 1. In the OAuth IdP page, click **Policies** and click **Add**.
- 2. On the **Create Authentication OAuth IdP Policy** screen, set values for the following parameters and click **Create**.
 - Name The name of the authentication policy.
 - Action Name of profile created earlier.
 - **Log Action** Name of the message log action to use when a request matches this policy. Not a mandatory filed.
 - **Undefined-Result Action** Action to perform if the result of policy evaluation is undefined (UNDEF). Not a mandatory field.
 - **Expression** Default syntax expression that the policy uses to respond to specific request. For example, true.
 - **Comments** Any comments about the policy.



Note:

When sendPassword is set to ON (OFF by default), user credentials are encrypted and passed through a secure channel to Citrix Cloud. Passing user credentials through a secure channel allows you to enable SSO to Citrix Virtual Apps and Desktops upon launch.

Bind the OAuthIDP policy and LDAP policy to the virtual authentication server

Now you need to bind the OAuth IdP Policy to the virtual authentication server on the on-premises Citrix Gateway.

- Log into your on-premises Citrix Gateway management portal and navigate to Configuration >
 Security > AAA-Application Traffic > Policies > Authentication > Advanced Policies > Actions
 > LDAP.
- 2. On the **LDAP Actions** screen, click **Add**.
- 3. On the Create Authentication LDAP Server screen, set the values for the following parameters, and click **Create**.
 - Name The name of the LDAP action.
 - ServerName/ServerIP Provide FQDN or IP of the LDAP server.
 - Choose appropriate values for **Security Type**, **Port**, **Server Type**, **Time-Out**.
 - Make sure that **Authentication** is checked.
 - Base DN Base from which to start LDAP search. For example, dc=aaa, dc=local.

- Administrator Bind DN: User name of the bind to LDAP server. For example, admin@aaa
 local.
- Administrator Password/Confirm Password: Password to bind LDAP.
- Click **Test Connection** to test your settings.
- Server Logon Name Attribute: Choose "sAMAccountName".
- Other fields are not mandatory and hence can be configured as required.
- 4. Navigate to Configuration > Security > AAA-Application Traffic > Policies > Authentication > Advanced Policies > Policy.
- 5. On the Authentication Policies screen, click Add.
- 6. On the **Create Authentication Policy** page, set the values for the following parameters, and click **Create**.
 - Name Name of the LDAP Authentication Policy.
 - Action Type Choose LDAP.
 - Action Choose the LDAP action.
 - **Expression** Default syntax expression that the policy uses to respond to specific request. For example, true**.

Bind the certificate globally to the VPN

Binding the certificate globally to the VPN requires CLI access to the on-premises Citrix Gateway. Using Putty (or similar) login to the on-premises Citrix Gateway using SSH.

- 1. Launch a command-line utility, such as, Putty.
- 2. Sign in to the on-premises Citrix Gateway using SSH.
- 3. Type the following command:

```
show vpn global
```

Note:

No certificate must be bound.

4. To list the certificates on the on-premises Citrix Gateway, type the following command: show ssl certkey

5. Select the appropriate certificate and type the following command to bind the certificate globally to VPN:

```
bind vpn global -certkey cert_key_name
```

where cert_key_name is the name of the certificate.

6. Type the following command to check if the certificate is bound globally to the VPN:

show vpn global

```
Show vpn global

Certificate: Gateway

1) VPN Clientless Access Policy Name: ns_cvpn_owa_policy Priority: 95000

Bindpoint: REQ_DEFAULT

2) VPN Clientless Access Policy Name: ns_cvpn_sp_policy Priority: 96000

Bindpoint: REQ_DEFAULT

3) VPN Clientless Access Policy Name: ns_cvpn_sp2013_policy Priority: 97000

Bindpoint: REQ_DEFAULT

4) VPN Clientless Access Policy Name: ns_cvpn_default_policy Priority: 100000

Bindpoint: REQ_DEFAULT

Done
```

Configure domain pass-through as the authentication method in the Citrix Gateway

When you complete setting up the Citrix Gateway as IdP, perform the following steps to configure the domain pass-through as the authentication method in the Citrix Gateway.

When the domain pass-through is set as the authentication method, the client uses Kerberos tickets to authenticate instead of credentials.

Citrix Gateway supports both Impersonation and Kerberos Constrained Delegation (KCD). However, this article describes KCD authentication. For more information, see Knowledge Center article CTX236593.

Configuring the domain pass-through includes the following steps:

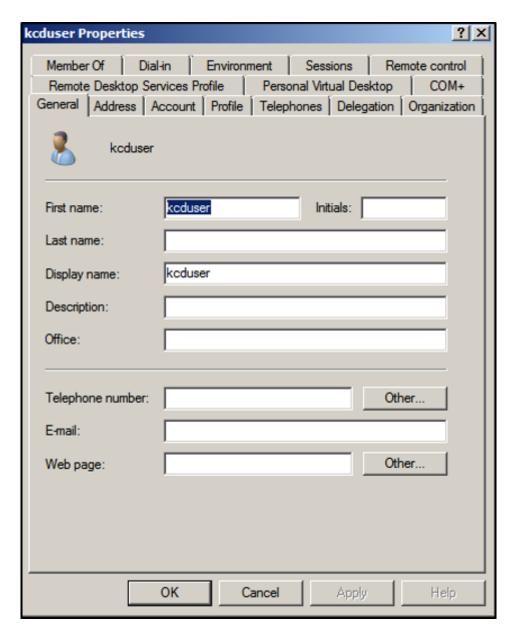
- 1. Kerberos Constrained Delegation configuration
- 2. Client configuration

Kerberos Constrained Delegation configuration

1. Create a KCD user in the Active Directory

Kerberos works on a ticket granting system to authenticate users to resources, and involves a client, server, and Key Distribution Center (KDC).

For Kerberos to work, the client needs to request a ticket from the KDC. The client must first authenticate to the KDC using their user name, password, and domain before requesting a ticket, called as AS request.



2. Associate the new user with the Service Principal Name (SPN).

SPN of Gateway is used by the client to authenticate.

• Service Principal Name (SPN): A Service Principal Name (SPN) is a unique identifier of a service instance. Kerberos authentication uses SPN to associate a service instance with a service sign-in account. This function allows a client application to request for the service authentication of an account even if the client doesn't have the account name.

SetSPN is the application for managing SPNs on a Windows device. With SetSPN, you can view, edit, and delete SPN registrations.

- a) In the Active Directory server, open a command prompt.
- b) In the command prompt, enter the following command:

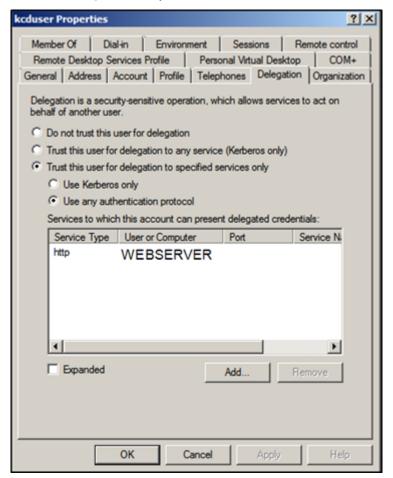
setspn -A http/<LB fqdn> <domain\Kerberos user>

c) To confirm the SPNs for the Kerberos user, run the following command:

setspn -l <Kerberos user>

The Delegation tab appears after running the setspn command.

d) Select **Trust this user for delegation to specified services only** option and **Use any authentication protocol** option. Add the web server and select the HTTP service.

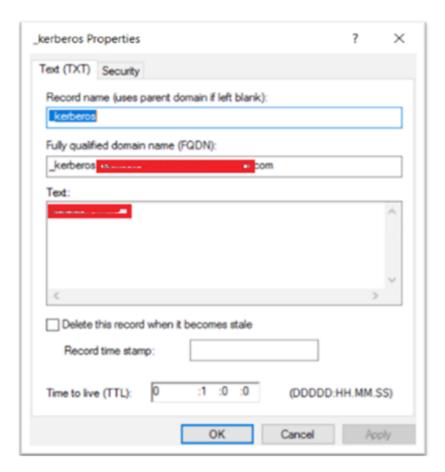


3. Create a DNS record for the client to find the Gateway's SPN:

Add a TXT DNS record in the Active Directory.

Note:

Name must start with _Kerberos, Data must be the domain name. The FQDN must show Kerberos..



A window's domain joined client uses _kerberos.fqdn to request tickets. For example, if the client is joined to citrite.net, the operating system can get tickets for any websites with *.citrite.net. However, if the Gateway domain is external like gateway.citrix.com, then the client operating system can't get the Kerberos ticket.

Hence, you must create a DNS TXT record that helps the client to look up for the _kerberos.gateway.citrix.com and get the Kerberos ticket for authentication.

- 4. Configure Kerberos as the authentication factor.
 - a) Create a KCD Account for the NetScaler user. Here we opted to do this manually, but you can create a keytab file.

Note:

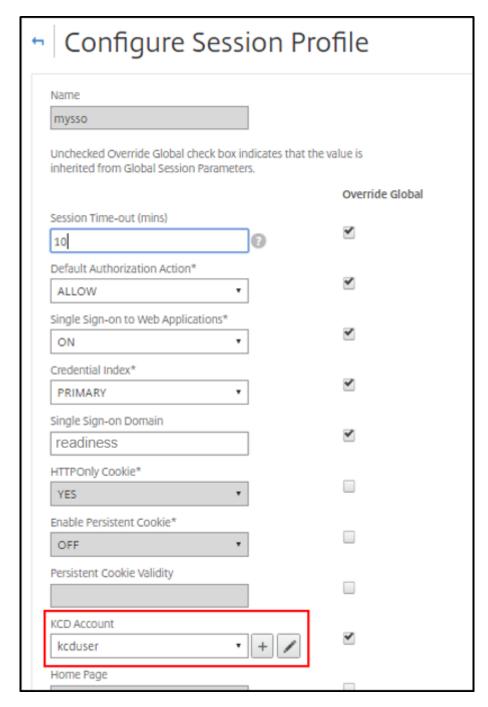
If you are using alternate domains (Internal domain and external domain) then you must set the Service SPN to HTTP/PublicFQDN.com@InternalDomain.ext.

- **Realm** Kerberos Realm. Usually your Internal Domain suffix.
- User Realm This is your user's Internal Domain suffix.
- **Enterprise Realm** This needs to be given only in certain KDC deployments where KDC expects Enterprise user name instead of Principal Name.

• **Delegated User** - This is the NetScaler user account for KCD that you created in AD in the prior steps. Make sure that the password is correct.



b) Ensure that the Session Profile is using the right KCD account. Bind the session policy to the authentication, authorization, and auditing virtual server.



c) Bind the Authentication policy to the authentication, authorization, and auditing virtual server. These policies use authentication, authorization, and auditing methods that do not obtain a password from the client, hence the need to use KCD. However, they must still obtain the user name and domain information, in UPN format.

Note:

You can use IP address or EPA scan to differentiate domain joined and non-domain

joined devices and use Kerberos or regular LDAP as a factor for authentication.

Configure the client

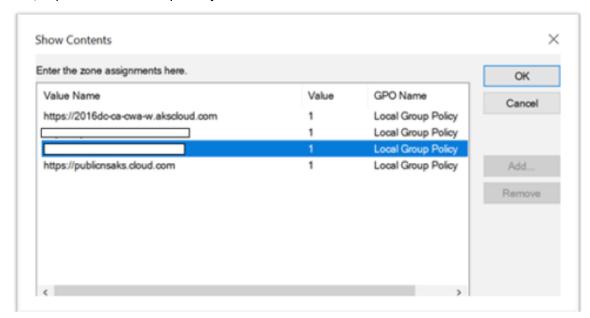
To allow successful single sign-on to VDA, perform the following.

Prerequisites:

- Domain joined machine
- Citrix Workspace 2112.1or later with SSO setting enabled
- Trust necessary URLs that checks if the connections are secured
- Validate Kerberos from Client and AD. Client OS must have connectivity to AD to get Kerberos tickets.

Following are some of the URLs to be trusted in the browser:

- · Gateway URL or FQDN
- AD FQDN
- · Workspace URL for SSO from browser-based launches.
- 1. If you are using Internet Explorer, Microsoft Edge, or Google Chrome, do the following:
 - a) Launch the browser.
 - b) Open the Local Group Policy Editor on the Client.



- a) Go to Computer Configuration > Windows Component > Internet Explorer > Internet Control Panel > Security page.
- b) Open Site to zone Assignment list and add all the listed URLs with the Value one (1).
- c) (Optional) Run Gpupdate to apply policies.

- 2. If you are using Mozilla Firefox browser, do the following:
 - a) Open the browser.
 - b) Type about: config in the search bar.
 - c) Accept the risk and continue.
 - d) In the search field, type **negotiate**.
 - e) From the list of populated data, verify if the **network.negotiate-auth.trusted-uris** is set to the domain value.



This completes the configuration on the client-side.

3. Login using Workspace app or browser to Workspace.

This must not prompt for user name or password on a domain joined device.

Troubleshooting Kerberos

Note:

You must be domain admin to run this verification step.

In the command prompt or Windows PowerShell, run the following command to verify Kerberos ticket validation for the SPN user:

KLIST get host/FQDN of AD

Domain pass-through to Citrix Workspace using Azure Active Directory as the identity provider

September 26, 2023

You can implement single sign-on (SSO) to Citrix Workspace using Azure Active Directory (AAD) as an identity provider with Domain joined, Hybrid, and Azure AD enrolled endpoints/VMs.

With this configuration, you can also use Windows Hello to SSO to Citrix Workspace using AAD enrolled endpoints.

- You can authenticate to Citrix Workspace app using Windows Hello.
- FIDO2 based Authentication with the Citrix Workspace app.
- Single sign-on to Citrix Workspace app from Microsoft AAD joined machines (AAD as IdP) and conditional access with AAD.

To achieve SSO to virtual apps and desktops, you can either deploy FAS or configure Citrix Workspace app as follows.

Note:

You can achieve SSO to the Citrix Workspace resources only when using Windows Hello. However, you're prompted for user name and password when accessing your published virtual apps and desktops. To solve this prompt, you can deploy FAS and SSO to virtual apps and desktops.

Prerequisites:

- 1. Connect Azure Active Directory to Citrix Cloud. For more information, see Connect Azure Active Directory to Citrix Cloud in the Citrix Cloud documentation.
- 2. Enable Azure AD authentication to access workspace. For more information, see Enable Azure AD authentication for workspaces in the Citrix Cloud documentation.

To achieve single sign-on to Citrix Workspace:

- 1. Configure Citrix Workspace app with includeSSON.
- 2. Disable prompt=login attribute in Citrix Cloud.
- 3. Configure Azure Active Directory pass-through with Azure Active Directory Connect.

Configure Citrix Workspace app to support SSO

Prerequisites:

• Citrix Workspace version 2109 or higher.

Note:

If you're using FAS for SSO, Citrix Workspace configuration isn't needed.

1. Install Citrix Workspace app from administrative command line with option includeSSON:

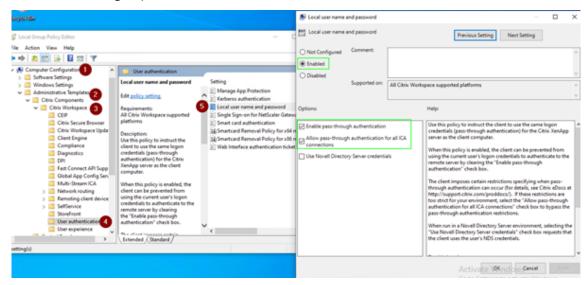
```
CitrixWorkspaceApp.exe /includeSSON
```

- 2. Sign out from the Windows client and sign in to start the SSON server.
- 3. Click Computer configuration > Administrative templates > Citrix Components > Citrix Workspace > User Authentication to change Citrix Workspace GPO to allow Local username and password.

Note:

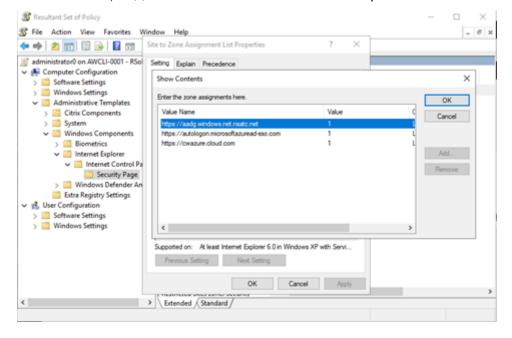
These policies can be pushed to the client device via Active Directory. This step is required only when accessing Citrix Workspace from the web browser.

4. Enable the setting as per the screenshot.



5. Add the following trusted sites via GPO:

- https://aadg.windows.net.nsatc.net
- https://autologon.microsoftazuread-sso.com
- https://xxxtenantxxx.cloud.com: Workspace URL



Note:

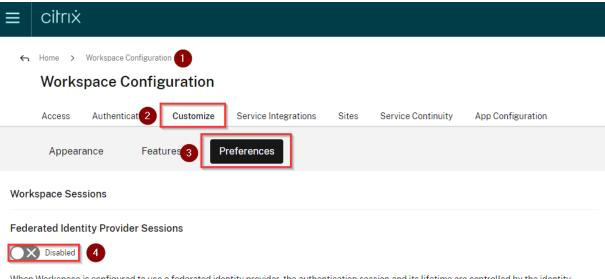
Single sign-on for AAD is disabled when the **AllowSSOForEdgeWebview** registry in Computer\
HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\Dazzle is set to false.

Disable prompt=login parameter in Citrix Cloud

By default prompt=login is enabled for Citrix Workspace that forces the authentication even if the user opted to **stay signed in** or if the device is Azure AD joined.

You can disable prompt=login in your citrix cloud account. Navigate to Workspace Configuration \Customize\Preferences-Federated Identity Provider Sessions and disable the toggle.

For more information, see Knowledge Center article CTX253779.



When Workspace is configured to use a federated identity provider, the authentication session and its lifetime are controlled by the identity provider. When enabled, Workspace forces a login prompt with the identity provider when a new Workspace session is needed. When disabled, a subscriber will not be prompted to authenticate with the identity provider if accessing Workspace with a valid session, achieving single sign-on.

Note:

On AAD joined or hybrid AAD joined devices, if AAD is used as IdP for Workspace, then Citrix Workspace app doesn't prompt for credentials. Users can automatically sign in using work or school account.

To allow users to sign in using different account, set the following registry to false.

Create and add a registry string REG_SZ with the **AllowSSOForEdgeWebview** name under Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\Dazzle or Computer\HKEY_CURRENT_USER\SOFTWARE\Citrix\Dazzle and set its value as False. Alternatively, if users sign out from Citrix Workspace app, users can sign in with a different

account on the next sign-in.

Configure Azure Active Directory pass-through with Azure Active Directory Connect

- If you're installing Azure Active Directory Connect for the first time, on the User sign-in page, select Pass-through Authentication as the sign On method. For more information, see Azure Active Directory Pass-through Authentication: Quickstart in the Microsoft documentation.
- If Microsoft Azure Active Directory Connect exists:
 - 1. Select the Change user sign-in task and click Next.
 - 2. Select **Pass-through Authentication** as the sign-in method.

Note:

You can skip this step if the client device is Azure AD joined, or hybrid joined. If the device is AD joined, domain pass-through authentication works using kerberos authentication.

Domain pass-through to Citrix Workspace using Okta as identity provider

September 19, 2023

You can achieve single sign-on to Citrix Workspace using Okta as the identity provider (IdP).

Prerequisites:

- · Citrix Cloud
 - Cloud Connectors

Note:

If you're new to Citrix Cloud, define a Resource Location, and have the connectors configured. It's recommended to have at least two cloud connectors deployed in production environments. For information on how to install Citrix Cloud Connectors, see Cloud Connector Installation.

- Citrix Workspace
- Federated Authentication Service (optional). For more information, see Enable single sign-on for workspaces with Citrix Federated Authentication Service.
- Citrix DaaS (formerly Citrix Virtual Apps and Desktops Service)
- AD domain joined VDA or physical AD joined devices

- Okta Tenant
 - Okta IWA Agent (Integrated Windows Authentication)
 - Okta Verify (Okta Verify can be downloaded from the app store) (optional)
- Active Directory
- 1. Deploy the Okta AD Agent:
 - a) In the Okta Admin portal, click **Directory > Directory Integrations**.
 - b) Click Add Directory > Add Active Directory.
 - c) Review the installation requirements by following the workflow, which covers the Agent Architecture and Installation Requirements.
 - d) Click the **Set Up Active Directory** button and then click **Download Agent**.
 - e) Install Okta AD Agent onto a Windows server by following the instruction provided in Install the Okta Active Directory agent.

Note:

Make sure that the prerequisites mentioned in Active Directory integration prerequisites are met before installing the agent.

- 2. Set up Integrated Windows Authentication (IWA):
 - a) On the Okta Admin portal, click **Security** and then **Delegated Authentication**.
 - b) Scroll down to the **On-prem Desktop SSO** part on the page that loads and click **Download Agent**.
 - c) Set up the **Routing Rules** for IWA. For more information, see Configure Identity Provider routing rules.
- 3. Launch the Okta customer portal.

Note:

• When you install Okta IWA Agent and the status is enabled, you can sign in from a Windows Domain joined device. This configuration also jumps past the login and directs you to the IWA login page and passes the user credentials.



- For more information on how to troubleshoot any issues, see Install and configure the Okta IWA Web agent for Desktop single sign-on.
- 4. Sign in to Citrix Cloud at https://citrix.cloud.com and enable Okta as the IdP. For information, see Tech Insight: Authentication Okta in the Citrix Tech Zone documentation.

Note:

You can sign in from either the Citrix Workspace app or browser, both provides the passthrough experience as per the Tech Zone documentation.

5. To achieve SSO to virtual apps and desktops, you can either deploy FAS or configure the Citrix Workspace app.

Note:

Without FAS, you're prompted for the AD user name and password. For more information, see Enable single sign-on for workspaces with Citrix Federated Authentication Service.

If you aren't using FAS, Configure Citrix Workspace app to support SSO.

HDX

September 26, 2023

This section describes the following:

- Graphics and display
- Optimized Microsoft Teams
- HDX transport
- Browser content redirection
- Bidirectional content redirection
- ICA settings reference

Graphics and display

September 26, 2023

Multi-monitor support

You can use up to eight monitors with Citrix Workspace app for Windows.

Each monitor in a multiple monitor configuration has its own resolution designed by its manufacturer. Monitors can have different resolutions and orientations during sessions.

Sessions can span multiple monitors in two ways:

- Full screen mode, with multiple monitors shown inside the session; applications snap to monitors as they would locally.
 - **Citrix Virtual Apps and Desktops and Citrix Daas:** To display the Desktop Viewer window across any rectangular subset of monitors, resize the window across any part of those monitors and click **Maximize**.
- Windowed mode, with one single monitor image for the session, applications do not snap to individual monitors.

Citrix Virtual Apps and Desktops and Citrix DaaS: When any desktop in the same assignment (formerly "desktop group") is launched then, the window setting is preserved and the desktop is displayed across the same monitors. Multiple virtual desktops can be displayed on one device provided the monitor arrangement is rectangular. If the primary monitor on the device is used by the virtual apps and desktops session, it becomes the primary monitor in the session. Otherwise, the numerically lowest monitor in the session becomes the primary monitor.

To enable multi-monitor support, check the following:

- The user device is configured to support multiple monitors.
- The operating system can detect each of the monitors. On Windows platforms, to verify that
 this detection occurs, go to Settings > System and click Display and confirm that each monitor
 appears separately.
- After your monitors are detected:
 - Citrix Virtual Desktops: Configure the graphics memory limit using the Citrix Machine
 Policy setting Display memory limit.
 - Citrix Virtual Apps: Depending on the version of the Citrix Virtual Apps server, you've installed:
 - * Configure the graphics memory limit using the **Citrix Computer Policy** setting Display memory limit.

- * From the Citrix management console for the Citrix Virtual Apps server, select the farm and in the task pane, select:
 - Modify Server Properties > Modify all properties > Server Default > HDX
 Broadcast > Display or
 - Modify Server Properties > Modify all properties > Server Default > ICA > Display) and
- * Set the Maximum memory to use for each session's graphics.

Check if the setting is large enough (in kilobytes) to provide sufficient graphic memory. If this setting isn't high enough, the published resource is restricted to the subset of the monitors that fits within the size specified.

Using Citrix Virtual desktops on dual monitor:

- 1. Select the Desktop Viewer and click the down arrow.
- 2. Select Window.
- 3. Drag the Citrix Virtual Desktops screen between the two monitors. Ensure that about half the screen is present in each monitor.
- 4. From the Citrix Virtual Desktop toolbar, select Full-screen.

The screen is now extended to both the monitors.

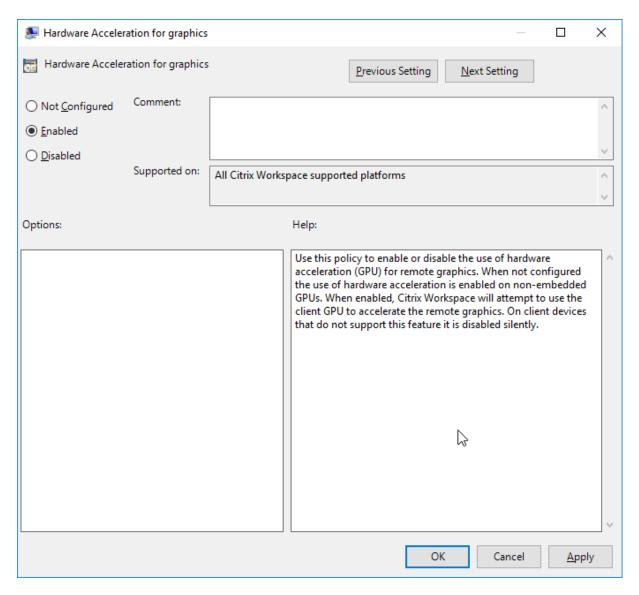
For calculating the session's graphic memory requirements for Citrix Virtual Apps and Desktops and Citrix DaaS, see Knowledge Center article CTX115637.

Hardware decoding

When using Citrix Workspace app (with HDX engine 14.4), the GPU can be used for H.264 decoding wherever it's available at the client. The API layer used for GPU decoding is DirectX Video Acceleration.

To enable hardware decoding using Citrix Workspace app Group Policy Object administrative template:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > User Experience.
- 3. Select Hardware Acceleration for graphics.
- 4. Select **Enabled** and click **Apply** and **OK**.



To validate if the policy is set and hardware acceleration is used for an active ICA session, check the following registry entries:

Registry Path: HKEY_CURRENT_USER\SOFTWARE\Citrix\ICA Client\CEIP\Data\GfxRender.

Tip

The value for **Graphics_GfxRender_Decoder** and **Graphics_GfxRender_Renderer** must be 2. If the value is 1, that means CPU-based decoding is being used.

When using the hardware decoding feature, consider the following limitations:

- If the client has two GPUs and if one of the monitors is active on the second GPU, CPU decoding is used.
- When connecting to a Citrix Virtual Apps server running on Windows Server 2008 R2, don't use hardware decoding on the user's Windows device. If enabled, issues like slow performance

while highlighting text and flickering issues are seen.

Virtual display layout

This feature lets you define a virtual monitor layout that applies to the remote desktop. You can also split a single client monitor virtually into up to eight monitors on the remote desktop. You can configure the virtual monitors on the **Monitor Layout** tab in the Desktop Viewer. There, you can draw horizontal or vertical lines to separate the screen into virtual monitors. The screen is split according to specified percentages of the client monitor resolution.

You can set a DPI for the virtual monitors that is used for DPI scaling or DPI matching. After applying a virtual monitor layout, resize or reconnect the session.

This configuration applies only to full-screen, single-monitor desktop sessions, and does not affect any published applications. This configuration applies to all subsequent connections from this client.

Starting from Citrix Workspace app for Windows 2106, virtual display layout is also supported for full-screen and multi-monitor desktop sessions. Virtual display layout is enabled by default. In a multi-monitor scenario, the same virtual display layout is applied to all the session monitors if the total number of virtual displays doesn't exceed eight virtual displays. In case this limit is exceeded, the virtual display layout is ignored and not applied to any session monitor.

Multi-monitor enhancement can be disabled by setting the following registry key:

• HKEY_CURRENT_USER\Software\Citrix\XenDesktop\DesktopViewer

Name: SplitAllMonitors

Type: DWORD

Values:

1 - Enabled

0 - Disabled

DPI scaling

Citrix Workspace app is DPI aware and supports matching display resolution and DPI scale settings on the Windows client to the virtual apps and desktops session.

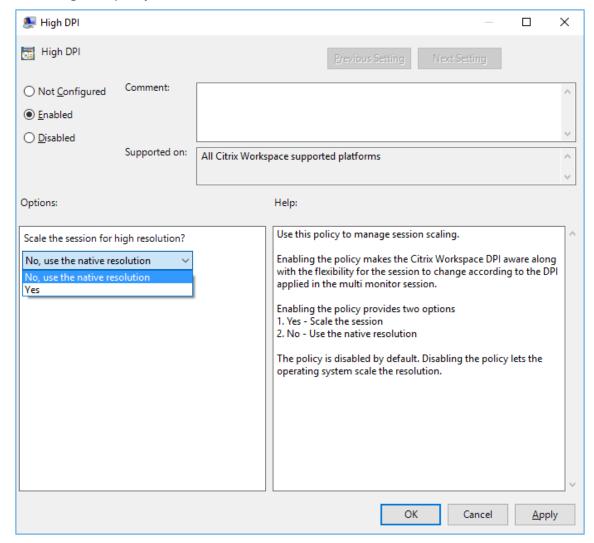
DPI scaling is mostly used with large size and high-resolution monitors to display applications, text, images, and other graphical elements in a size that can be viewed comfortably.

This feature is enabled by default, and it is the recommended setting for all use cases. However, administrators can still configure the DPI scaling using Group Policy Object (GPO) administrative template (per-machine configuration) if necessary.

To configure DPI scaling using GPO administrative template:

To configure DPI scaling using GPO administrative template:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates> Citrix Components > Citrix Workspace > DPI
- 3. Select High DPI policy.



- 4. Select from one of the following options:
 - a) Yes Indicates that high DPI is applied in a session.
 - b) No, use the native resolution Indicates that the resolution is set by the operating system.
- 5. Click **Apply** and **OK**.
- 6. From the command line, run the gpupdate /force command to apply the changes.

Configure DPI scaling using the graphical user interface:

- 1. Right-click Citrix Workspace app icon from the notification area.
- 2. Select Advanced Preferences and click High DPI setting.
- 3. Select one of the following options:
 - a) Yes Indicates that high DPI is applied in a session.
 - b) **No, use the native resolution** Indicates that the Workspace app detects the DPI on the VDA and applies it.
 - c) Let the operating system scale the resolution By default, this option is selected. It allows the Windows to handle the DPI scaling. This option also means that the High DPI policy is set to disabled.
- 4. Click Save.
- 5. Restart the Citrix Workspace app session for the changes to take effect.

NOTE:

Additional considerations:

- DPI matching requires Citrix Virtual Apps and Desktops versions 1912 LTSR or later.
- The **No, use the native resolution** (DPI matching) setting is recommended in most cases.
- The default setting Let the operating system scale the resolution disables DPI awareness
 on the Citrix Workspace App. This mode might result in blurry graphics when the Windows
 client DPI scale is set to anything other than 100%. This mode doesn't support multiple
 monitors with different DPI scales.
- The Yes option results in the Citrix Workspace app upscaling the session window to match
 the DPI scale configured on the Windows client. This is a legacy function recommended
 only for connections to legacy XenApp and XenDesktop environments when DPI scales
 above 100% are required on the client. This mode might result in blurry graphics.

For information about troubleshooting issues with DPI scaling, see Knowledge Center article CTX230017.

H.265 video encoding

Citrix Workspace app supports the use of the H.265 video codec for hardware acceleration of remote graphics and videos. H.265 video codec must be supported and enabled on both the VDA and Citrix Workspace app. If the GPU on the endpoint doesn't support H.265 decoding using the DXVA interface, the H265 Decoding for graphics policy setting is ignored and the session falls back H.264 video codec.

Prerequisites:

- 1. VDA 7.16 and later.
- 2. Enable the Optimize for 3D graphics workload policy on the VDA.
- 3. Enable the Use hardware encoding for video codec policy on the VDA.

Note:

H.265 encoding is supported only on the NVIDIA GPU.

In Citrix Workspace app for Windows, this feature is set to **Disabled** by default.

Configuring Citrix Workspace app to use H.265 video encoding using Citrix Group Policy Object (GPO) administrative template:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Workspace > User Experience.
- 3. Select the **H265 Decoding for graphics** policy.
- 4. Select Enabled.
- 5. Click **Apply** and **OK**.

Configuring H.265 video encoding using Registry editor:

Enabling H.265 video encoding on a non-domain joined network on a 32-bit operating system:

- 1. Launch the Registry Editor using regedit on the Run command.
- 2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Citrix\ICA Client\ Graphics Engine.
- 3. Create a DWORD key by name **EnableH265** and set the value of the key to 1.

Enabling H.265 video encoding on a non-domain joined network on a 64-bit operating system:

- 1. Launch the Registry Editor using regedit on the Run command.
- 2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Policies\Citrix\ICA Client\Graphics Engine.
- 3. Create a DWORD key by name EnableH265 and set the value of the key to 1.

Restart the session for the changes to take effect.

Note:

- If the **Hardware acceleration for Graphics** policy is disabled in the Citrix Workspace app for Windows Group Policy Object administrative template, the **H265 Decoding for graphics** policy settings are ignored and the feature does not work.
- Run the HDX Monitor 3.x tool to identify if the H.265 video encoder is enabled within the sessions. For more information about HDX Monitor 3.x tool, see the Knowledge Center article CTX135817.

Optimized Microsoft Teams

September 26, 2023

- Screen sharing
- Encoder performance estimator
- Acoustic Echo Cancellation

Upgraded version of WebRTC for the optimized Microsoft Teams

Starting from Version 2209. the version of WebRTC that is used for the optimized Microsoft Teams is upgraded to version M98.

Background blurring and effects for Microsoft Teams optimization with HDX

Citrix Workspace app for Windows now supports background blurring and effects in Microsoft Teams optimization with HDX.

You can either blur or replace the background with a custom image and avoid unexpected distractions by helping the conversation stay focused on the silhouette (body and face). The feature can be used with either P2P or conference calls.

Note:

This feature is now integrated with the Microsoft Teams UI/buttons. MultiWindow support is a prerequisite that requires a VDA update to 2112 or higher. For more information, see Multiwindow meetings and chat.

Limitations:

- Admin and user-defined background replacement is not supported.
- The background effect doesn't persist between sessions. When you close and relaunch Microsoft Teams or VDA is reconnected, the background effect is reset to off.
- After the ICA session is reconnected, the effect is off. However, the Microsoft Teams UI shows that the previous effect is still On by a tick mark. Citrix and Microsoft are working together to resolve this issue.
- The device must be connected to the internet while replacing the background image.

Note:

This feature is available only after future update roll-out from Microsoft Teams. When the update is rolled-out by Microsoft, you can check CTX253754 and the Microsoft 365 Public roadmap for the documentation update and the announcement.

Screen sharing

Starting with Version 2006.1, new functionalities in the outgoing screen sharing feature for the Microsoft Teams application that uses HDX optimization are introduced.

The contents shared using Microsoft Teams are limited to the contents of the **Desktop Viewer** window. Areas outside the **Desktop Viewer** window (client local desktop, apps) are blacked out.

On a Windows 10 operating system, the following aren't blacked out when they overlap the **Desktop Viewer** window:

- Start menu, Search menu, and Task View.
- Notification bar and Notifications that appear at the right-side of the task bar.
- On a multi-monitor set up with different DPI settings, if a local app is overlapping 2 different monitors and its DPI doesn't match the main monitor DPI which has the Desktop Viewer window.
- App and preview shown when you mouse-hover over the app's icon in the task bar.

Encoder performance estimator

The HdxRtcEngine.exe is the WebRTC media engine embedded in Citrix Workspace app that handles Microsoft Teams redirection. Starting from Citrix Workspace app 1912 or higher, 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 (also called webrtcapi. EndpointPerformance) runs when HdxTeams.exe initializes. The macroblock code determines 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 (either 640x360 16:9 @ 30 fps, or 640x480 4:3 @ 30 fps)	1	
very slow	240p (either 320x180 16:9 @ 30 fps, or 320x240 4:3 @ 30 fps)	0	

Registry Path in Citrix Workspace app:

Navigate to the registry path HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream and create the following key:

Name	Туре	Values	Description
OverridePerformance	DWORD	0;1;2;3	Force desired performance. Value must be in the range between 0 and 3, where 0 indicates slow and 3 fast.

For information about configuring the endpoint encoder, see Encoder performance estimator.

For more information about Microsoft Teams optimization, see Optimization for Microsoft Teams.

Acoustic Echo Cancellation

Echo cancellation in HdxRtcEngine.exe can be disabled to troubleshoot audio performance issues or compatibility with peripherals that have built-in AEC capabilities.

Navigate to the registry path HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream and create the following key:

Name: EnableAEC Type: REG_DWORD

Data: 0

(0 disables AEC. 1 enables AEC. If Regkey isn't present, the default behavior in HdxRtcEngine is to enable AEC, irrespective of the peripheral's hardware capabilities.)

Enhancements to Microsoft Teams optimization

- Starting from Citrix Workspace app 2112.1 for Windows, the following features (MultiWindow and Give/Take Control) are available only after future update roll-out from Microsoft Teams.
 - When the update is rolled-out by Microsoft, you can check CTX253754 for the documentation update and the announcement.
 - **Multi-window chat and meetings for Microsoft Teams**: You can use multiple windows for chat and meetings in Microsoft Teams when optimized by HDX in Citrix Virtual Apps and Desktops (2112 or higher). You can pop out the conversations or meetings in various ways.

For details about 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 Virtual Delivery Agent (VDA), Microsoft might deprecate the single-window code in the future. However, you can upgrade to the VDA or Citrix Workspace app version that supports multiple windows (2112 or higher), before nine months after the feature is GA.

- **Give control**: 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'll both have control of the shared screen and you can take back the control anytime.
- Take control: During screen sharing sessions, any participants can request control access
 through the Request control button. The person sharing the screen can then approve or
 deny the request. When you've the control, you can control the keyboard and mouse input
 on the screen shared and release the control to stop sharing control.

Limitation:

The **Request control** option is not available during the peer-to-peer call 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: Citrix Workspace app supports dynamic emergency calling. When used in Microsoft Calling Plans, Operator Connect, and Direct Routing, it provides the option to:
 - * configure and route emergency calls
 - * notify security personnel

The notification is sent based on the current location of the Citrix Workspace app that runs on the endpoint, instead of the Microsoft Teams client 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.

App sharing: Previously, you weren't able to share an app using the Screen sharing feature in Microsoft Teams when you enable the HDX 3D Pro policy in Citrix Studio.

Starting with Citrix Workspace app 2112.1 for Windows and Citrix Virtual Apps and Desktops 2112, **Screen sharing** feature allows you to share app in Microsoft Teams. You can share an app when HDX 3D Pro policy is enabled.

- Starting from Citrix Workspace app 2109.1 for Windows, the following features are available:
 - Support for WebRTC 1.0: Citrix Workspace app 2109.1 for Windows supports WebRTC 1.0
 for a better video conferencing experience along with Gallery View.

- Screen sharing enhancement: You can 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.
- App Protection compatibility: When App Protection is enabled, you can now share content through Microsoft Teams with HDX optimization. With this feature, you can share an application window running in the virtual desktop. Citrix Virtual Delivery Agent 2109 is a prerequisite for this feature.

Note:

Full monitor or desktop sharing is disabled when App Protection is enabled for the delivery group.

- Citrix Workspace app 2109.1 for Windows supports the following in an optimized Microsoft Teams on VM hosted apps:
 - peer-to-peer audio and video call
 - conference call
 - screen sharing
- Starting from Citrix Workspace app 2106 for Windows:
 - 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 window mode, the user can share the Desktop Viewer window. In seamless mode, the user can select one from all the screens to share. When the Desktop Viewer changes the window mode (maximized, restore, or minimize), the screen share stops.
- Starting from Citrix Workspace app 2105 for Windows:
 - You can configure a preferred network interface for media traffic.

Navigate to \HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream and create a key called NetworkPreference(REG_DWORD).

Select one of the following values as required:

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

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

- You can disable the audio device module 2 (ADM2) so that the legacy audio device module

(ADM) is used for quad-channel microphones. Disabling ADM2 helps in resolving issues related to microphones in a call.

To disable ADM2, navigate to \HKEY_CURRENT_USER\SOFTWARE\Citrix\HDXMediaStream and create a key named DisableADM2 (REG_DWORD) and set the value to 1.

- Starting from Citrix Workspace app 2103.1 for Windows:
 - The VP9 video codec is now disabled by default.
 - Enhancement to echo cancellation, auto gain control, noise suppression configurations: If Microsoft Teams configures these options, Citrix-redirected Microsoft Teams honors the values as configured. Otherwise, these options are set to **True** by default.
 - DirectShow is now the default renderer.

To change the default renderer, do the following:

- 1. Launch the Registry editor.
- 2. Navigate to the following key location: HKEY_CURRENT_USER\SOFTWARE\Citrix\ HDXMediaStream.
- 3. Update the following value: "UseDirectShowRendererAsPrimary"=dword
 :00000000

Other possible values:

- * 0: Media Foundation
- * 1: DirectShow (Default)
- 4. Relaunch the Citrix Workspace app.
- Starting from Citrix Workspace app 2012 for Windows:
 - Peers can now see the presenter's mouse pointer in a screen sharing session.
 - The WebRTC media engine now honors the proxy server configured on the client device.
- Starting from Citrix Workspace app 2009.6 for Windows:
 - Microsoft Teams displays previously used peripheral devices in the **Preferred devices** list.
 - The WebRTC media engine accurately determines the maximum encoding resolution possible on an endpoint. The WebRTC media engine estimates multiple times a day and not only on first launch.
 - The Citrix Workspace app installer is packaged with the Microsoft Teams ringtones.
 - Echo cancellation improvements Reduced echo level when a peer has a speaker or microphone that generates an echo.
 - Screen sharing improvements when you share your screen, only the **Desktop Viewer** screen is captured in native bitmap format. Previously, client local windows that overlaid on top of the **Desktop Viewer** window were blacked out.

- Starting from Citrix Workspace app 2002 for Windows:
 - when you share your workspace using Microsoft Teams, Citrix Workspace app displays a
 red border around the area of the monitor that is currently being shared. You can share
 only the **Desktop Viewer** window, or any local window overlaid on top of it. When you
 minimize the **Desktop Viewer** window, screen sharing is paused.
- Starting from Citrix Workspace app 2302 for Windows:
 - Updated audio device selection behavior for optimized Microsoft Teams When you change the default audio devices in the sound settings on the endpoint, the optimized Microsoft Teams in the Citrix VDI changes the current audio devices selection to match the endpoint defaults.
 - However, if you make an explicit device selection in Microsoft Teams, your selection takes precedence and does not follow the endpoint defaults. Your selection is persistent until you clear the Microsoft Teams cache.
- Starting from Citrix Workspace app 2303 for Windows:
 - Improved experience for optimized Microsoft Teams video conference calls: The simulcast support is enabled by default 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.

- Starting from Citrix Workspace app 2307 for Windows:
 - Added support for playing short tones in optimized Microsoft Teams: Earlier, with the secondary ringtone feature enabled, short tones such as beeps or notifications were playing repeatedly. For example, the tone that was played when a guest joins the Microsoft Teams meeting was repeated. The only workaround was to quit and restart Microsoft Teams. This issue resulted in a poor end-user experience.

With this release, Citrix Workspace app supports playing the short tones as desired. This support also enables the secondary ringtone feature.

Prerequisites:

1 Update to the latest version of Microsoft Teams.

Note:

The preceding feature is available only after the roll-out of a corresponding update from Microsoft Teams. Check the documentation update and the announcement in CTX253754.

HDX transport

September 26, 2023

HDX adaptive throughput

HDX adaptive throughput intelligently fine-tunes the peak throughput of the ICA session by adjusting output buffers. The number of output buffers is initially set at a high value. This high value allows data to be transmitted to the client more quickly and efficiently, especially in high latency networks.

Provides better interactivity, faster file transfers, smoother video playback, higher framerate, and resolution results in an enhanced user experience.

Session interactivity is constantly measured to determine whether any data streams within the ICA session are adversely affecting interactivity. If that occurs, the throughput is decreased to reduce the impact of the large data stream on the session and allow interactivity to recover.

This feature is supported only on Citrix Workspace app 1811 for Windows and later.

Important:

HDX adaptive throughput changes the output buffers by moving the mechanism from the client to the VDA. So, adjusting the number of output buffers on the client as described in the Knowledge Center article CTX125027 has no effect.

Adaptive transport

Adaptive Transport is a mechanism in Citrix Virtual Apps and Desktops and Citrix DaaS that allows to use Enlightened Data Transport (EDT) as the transport protocol for ICA connections. For more information, see Adaptive transport section in the Citrix Virtual Apps and Desktops documentation.

Browser content redirection

September 26, 2023

Browser content redirection prevents the rendering of webpages in the allow list on the VDA side. This feature uses Citrix Workspace app to instantiate a corresponding rendering engine on the client side, which fetches the HTTP and HTTPS content from the URL.

Note:

You can specify that webpages be redirected to the VDA side (and not redirected on the client side) by using a block list.

Browser content redirection supports the Google Chrome browser in addition to the Internet Explorer browser. Browser content redirection redirects the contents of a web browser to a client device, and creates a corresponding browser embedded within the Citrix Workspace app. This feature offloads network usage, page processing, and graphics appearing at the endpoint. Doing so improves the user experience when browsing demanding webpages, especially webpages that incorporate HTML5 or WebRTC video.

- Cookies are persistent across the sessions: When you exit and relaunch a browser, you are not prompted to reenter your credentials.
- Browsers now honor the local system language.

For more information, see Browser content redirection.

Configure path for Browser Content Redirection overlay Browser temp data storage

Starting with Citrix Workspace app 2303 version, you are requested to configure temp data storage path for Chromium Embedded Framework (CEF) based browser. To configure the path, do the following:

- 1. Open the registry editor.
- 2. Navigate to the HKCU\Software\Citrix\HdxMediaStream registry path.
- 3. Create a registry value with the following attributes:
 - Registry key name: BCRProfilePath
 - Registry value: string < folder for CEF based BCRtmp files>
- 4. Restart the Citrix Workspace app for the changes to take effect.

Bidirectional content redirection

September 26, 2023

The bidirectional content redirection policy allows you to enable or disable client to host and host to client URL redirection. Server policies are set in Studio, and client policies are set from the Citrix Workspace app Group Policy Object administration template.

Citrix offers host to client redirection and Local App Access for client to URL redirection. However, we recommend that you use bidirectional content redirection for domain-joined Windows clients.

You can enable bidirectional content redirection using one of the following methods:

- 1. Group Policy Object (GPO) administrative template
- 2. Registry editor

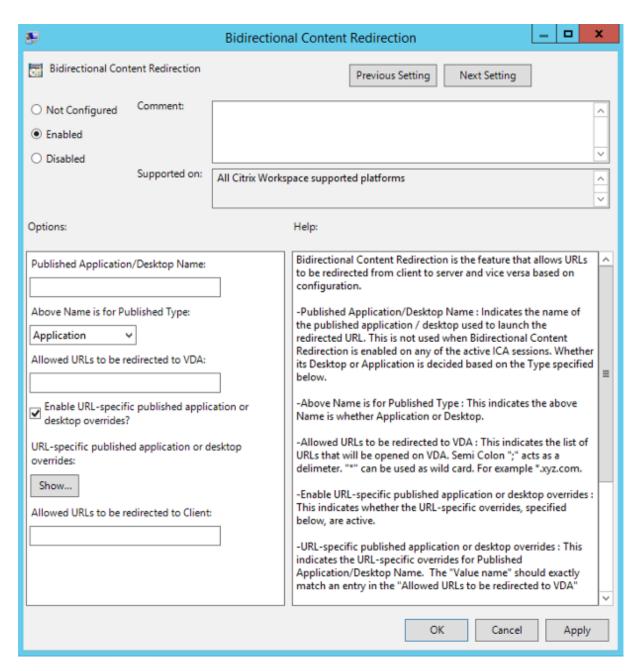
Note:

- Bidirectional content redirection does not work on the session where Local App Access is enabled.
- Bidirectional content redirection must be enabled both on the server and the client. When it is disabled either on the server or the client, the functionality is disabled.
- When you include URLs, you can specify one URL or a semi-colon delimited list of URLs. You can use an asterisk (*) as a wildcard.

To enable bidirectional content redirection using the GPO administrative template:

Use Group Policy Object administrative template configuration only for a first-time installation of Citrix Workspace app for Windows.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the User Configuration node, go to Administrative Templates > Classic Administrative Templates (ADM) > Citrix Components > Citrix Workspace > User experience.
- 3. Select the **Bidirectional Content Redirection** policy.



1. In the **Published Application or Desktop name** field, provide the name of the resource used to launch the redirected URL.

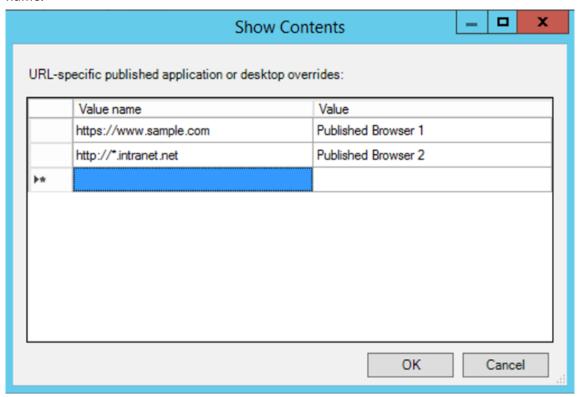
Note:

When you include URLs, specify a single URL or a semi-colon delimited list of URLs. You can use an asterisk (*) as a wildcard.

- 2. From the **Above Name is for Published Type**, select **Application** or **Desktop** of the resource as appropriate.
- 3. In the Allowed URLs to be redirected to VDA field, enter the URL that must be redirected. Sep-

arate the list with a semicolon.

- 4. Select the **Enable URL-specific published application for desktop overrides?** option to override a URL.
- Click Show to display a list where the value name must match any of the URLs listed in the Allowed URLs to be redirected to the VDA field. The value must match a published application name.



6. In the **Allowed URLs to be redirected to Client:** field, enter the URL that must be redirected from the server to the client. Separate the list with a semicolon.

Note:

When you include URLs, specify a single URL or a semi-colon delimited list of URLs. You can use an asterisk (*) as a wildcard.

- 7. Click **Apply** and **OK**.
- 8. From the command line, run the gpupdate /force command.

To enable bidirectional content redirection using the registry:

To enable bidirectional content redirection, run the redirector.exe /RegIE command on the Citrix Workspace app client and from the Citrix Workspace app installation folder C:\Program Files (x86)\Citrix\ICA Client).

Important:

- Ensure that the redirection rule does not result in a looping configuration. A looping configuration results if VDA rules are set so that, for example, a URL, https://www.my\\
 _company.com is configured to be redirected to the client, and the VDA.
- URL redirection supports only explicit URLs: URLs appearing in the address bar of the browser or found using the in-browser navigation, depending on the browser).
- If two applications with same display name use multiple StoreFront accounts, the display name in the primary StoreFront account is used for launching the application or a desktop session.
- New browser window opens only when a URL is redirected to the client. When a URL is redirected to VDA, if the browser is already open, then the redirected URL opens in the new tab.
- Embedded links in files like documents, emails, PDF is supported.
- Ensure that only one of the server file type associations exist and the host content redirection policies are set to Enabled on the same machine. Citrix recommends that you disable either the server file type association or the Host Content (URL) Redirection feature to confirm that URL redirection works properly.
- In Internet Explorer, click Settings > Internet options > Advanced, and select Enable third-party browser extensions check box under Browsing section.

Limitation:

No fallback mechanism is present if the redirection fails due to session launch issues.

Bi-directional URL support with Chromium-based browsers

Bidirectional content redirection allows you to configure URLs to redirect from client to server and from server to client using policies on the server and the client.

Server policies are set on the Delivery Controller and client policies on Citrix Workspace app. The policies are set using the Group Policy Object (GPO) administrative template.

Starting with Version 2106, bidirectional URL redirection support has been added for Google Chrome and Microsoft Edge.

Prerequisites:

- Citrix Virtual Apps and Desktops Version 2106 or later.
- Browser redirection extension version 5.0.

To register Google Chrome browser to bidirectional URL redirection, run the following command from the Citrix Workspace app installation folder:

%ProgramFiles(x86)%\Citrix\ICA Client\redirector.exe /regChrome /verbose

Note:

When using these commands on Chrome browsers, the bidirectional content redirection extension installs automatically from the Chrome Web Store.

To unregister Google Chrome browser from bidirectional URL redirection, run the following command from the Citrix Workspace app installation folder:

%ProgramFiles(x86)%\Citrix\ICA Client\redirector.exe /unregChrome /verbose

Note:

If you get the following error when accessing the Browser Extensions page, ignore the message:

Websocket connection to wss://... failed.

For information on configuring URL redirection on Citrix Workspace app, see Bidirectional content redirection.

For more information about browser content redirection, see Browser content redirection in the Citrix Virtual Apps and Desktops documentation.

To prevent the desktop viewer window from dimming:

If you have multiple Desktop Viewer windows, by default the desktops that are not active are dimmed. If users want to view multiple desktops simultaneously, information on them might be unreadable. You can disable the default behavior and prevent the **Desktop Viewer** window from dimming by editing the Registry editor.

Caution

Editing the registry incorrectly can cause serious problems that might require you to reinstall your Operating system. Citrix cannot guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Be sure to back up the registry before you edit it

- On the user device, create a REG_DWORD entry called **DisableDimming** in one of the following keys, depending on whether you want to prevent dimming for the current user of the device or the device itself. An entry exists if the Desktop Viewer has been used on the device:
 - HKEY_CURRENT_USER\Software\Citrix\XenDesktop\DesktopViewer
 - HKEY_LOCAL_MACHINE\Software\Citrix\XenDesktop\DesktopViewer

Optionally, instead of controlling dimming, you can define a local policy by creating the same REG_WORD entry in one of the following keys:

- HKEY_CURRENT_USER\Software\Policies\Citrix\XenDesktop\DesktopViewer
- HKEY_LOCAL_MACHINE\Software\Policies\Citrix\XenDesktop\DesktopViewer

Before using these keys, check whether the Citrix Virtual Apps and Desktops and Citrix DaaS administrator has set a policy for this feature.

Set the entry to any non-zero value such as 1 or true.

If no entries are specified or the entry is set to 0, the **Desktop Viewer** window is dimmed. If multiple entries are specified, the following precedence is used. The first entry in this list and its value determine whether the window is dimmed:

- 1. HKEY_CURRENT_USER\Software\Policies\Citrix\...
- 2. HKEY_LOCAL_MACHINE\Software\Policies\Citrix\...
- 3. HKEY_CURRENT_USER\Software\Citrix\...
- 4. HKEY_LOCAL_MACHINE\Software\Citrix\...

ICA Settings Reference

May 31, 2023

The ICA Settings Reference file provides registry settings and ICA file settings lists, allowing administrators to customize the behavior of the Citrix Workspace app. You can also use the ICA Settings Reference to troubleshoot an unexpected Citrix Workspace app behavior.

ICA Settings Reference (PDF download)

Devices

September 27, 2023

This section describes the following:

- Mouse
- Keyboard
- Printing
- USB
- · Client drive-mapping
- Microphone

Mouse

September 26, 2023

Relative mouse

The relative mouse feature determines how far the mouse has moved since the last frame within a window or screen.

The relative mouse uses the pixel delta between the mouse movements. When you change, for example, the direction of the camera using mouse controls, the feature is efficient. Apps also often hide the mouse cursor because the position of the cursor relative to the screen coordinates isn't relevant, when manipulating a 3-D object or scene.

Relative mouse support provides an option to interpret the mouse position in a relative rather than an absolute manner. The interpretation is required for applications that demand relative mouse input rather than absolute.

You can configure the feature both on a per-user and a per-session basis, which gives more granular control on the feature availability.

Note

This feature can be applied in a published desktop session only.

Configuring the feature using the Registry Editor or the default.ica file allows the setting to be persistent even after the session is terminated.

Configuring relative mouse using the Registry editor

To configure the feature, set the following registry keys as applicable and then restart the session for the changes to take effect:

To make the feature available on a per-session basis:

HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Citrix\ICA Client\Engine\Lockdown Profiles\All Regions\Lockdown\Virtual Channels\RelativeMouse

To make the feature available on a per-user basis:

HKEY_CURRENT_USER\Software\Policies\Citrix\ICA Client\Engine\Lockdown Profiles\All Regions\Lockdown\Virtual Channels\RelativeMouse

• Name: RelativeMouse

Type: REG_SZValue: True

Note:

- The values set in the Registry editor take precedence over the ICA file settings.
- The values set in HKEY_LOCAL_MACHINE and HKEY_CURRENT_USER must be the same. Different values might cause conflicts.

Configuring the relative mouse using the default.ica file

- 1. Open the default.ica file typically at C:\inetpub\wwwroot\Citrix\<site name>\conf\ default.ica, where sitename is the name specified for the site while creating. For StoreFront customers, the default.ica file is typically at C:\inetpub\wwwroot\Citrix\<Storename>\ App_Data\default.ica, where storename is the name set for the store when created.
- 2. Add a key by name RelativeMouse in the WFClient section. Set its value to the same configuration as the JSON object.
- 3. Set the value as required:
 - true To enable relative mouse
 - false To disable relative mouse
- 4. Restart the session for the changes to take effect.

Note:

The values set in the Registry editor take precedence over the ICA file settings.

Enabling relative mouse from the Desktop Viewer

- 1. Log on to Citrix Workspace app.
- 2. Launch a published desktop session.
- ${\it 3. \ From the Desktop Viewer toolbar, select \textbf{Preferences}}.$

The Citrix Workspace - Preferences window appears.

- 4. Select Connections.
- 5. Under **Relative Mouse** settings, enable **Use relative mouse**.
- 6. Click **Apply** and **OK.**

Note:

Configuring the relative mouse from the Desktop Viewer applies the feature to per-session only.

Keyboard

September 26, 2023

Keyboard shortcuts

You can configure combinations of keys that Citrix Workspace app interprets as having special functionality. When the keyboard shortcuts policy is enabled, you can specify Citrix Hotkey mappings,

behavior of Windows hotkeys, and keyboard layout for sessions.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates> Citrix Components > Citrix Workspace > User Experience.
- 3. Select the Keyboard shortcuts policy.
- 4. Select **Enabled**, and the required options.
- 5. Restart the Citrix Workspace app session for the changes to take effect.

Citrix Workspace app support for 32-bit color icons:

Citrix Workspace app supports 32-bit high color icons. To provide for seamless applications, it automatically selects the color depth for:

- applications visible in the Connection Center dialog,
- · the Start menu, and
- · task bar

Caution

Editing the registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix can't guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Be sure to back up the registry before you edit it.

To set a preferred depth, you can add a string registry key named TWIDesiredIconColor to HKEY _LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\ICA Client\Engine\Lockdown Profiles\All Regions\Preferences and set it to the required value. The possible color depths for icons are 4, 8, 16, 24, and 32 bits-per-pixel. The user can select a lower color depth for icons if the network connection is slow.

Customizing location for application shortcut using command line

The start menu integration and desktop shortcut only feature lets you bring published application shortcuts into the **Windows Start** menu and onto the desktop. Users do not have to subscribe to applications from the Citrix Workspace user interface. Start menu integration and desktop shortcut management provide a seamless desktop experience for groups of users. Also for users who need access to a core set of applications in a consistent way.

The flag is called **SelfServiceMode** and is set to True by default. When the administrator sets the **Self-ServiceMode** flag to False, you can't access the self-service user interface. Instead, you can access subscribed apps from the Start menu and desktop shortcuts that is referred as shortcut-only mode.

Users and administrators can use several registry settings to customize the way shortcuts are set up.

Working with shortcuts

- Users can't remove apps. All apps are mandatory when working with the SelfServiceMode flag set to false (shortcut-only mode). If you remove a shortcut icon from the desktop, the icon comes back when the user selects Refresh from the Citrix Workspace app icon in the notification area.
- Users can configure only one store. The Account and Preferences options aren't available to prevent the user from configuring more stores. The administrator can give a user special privileges to add more than one account using the Group Policy Object template. Administrators can also provide special privileges by manually adding a registry key (HideEditStoresDialog) on the client machine. When the administrator gives a user this privilege, the user has a Preferences option in the notification area, where they can add and remove accounts.
- Users can't remove apps using the **Windows Control** Panel.
- You can add desktop shortcuts via a customizable registry setting. Desktop shortcuts aren't added by default. After editing the registry settings, restart the Citrix Workspace app.
- Shortcuts are created in the Start menu with a category path as the default, UseCategoryAsStart-MenuPath.

Note:

Windows 10 does not allow the creation of nested folders within the Start menu. Applications are displayed individually or under the root folder. But, not within the Category sub folders that are defined with Citrix Virtual Apps.

- You can add a flag [/DESKTOPDIR="Dir_name"] during installation to bring all shortcuts into a single folder. CategoryPath is supported for desktop shortcuts.
- Auto Reinstall Modified Apps feature can be enabled using the registry key AutoReInstallModifiedApps
 - . When AutoReInstallModifiedApps is enabled, any changes to the published apps and desktops attributes on the server are displayed on the client machine. When AutoReInstallModifiedApps is disabled, apps and desktop attributes aren't updated and shortcuts aren't restored on refresh if deleted on the client. By default, the AutoReInstallModifiedApps is enabled.

Customizing location for application shortcut using the Registry editor

Note:

- By default, registry keys use the **String** format.
- Change registry keys before you configure a store. If at any time you or a user wants to customize the registry keys, you or the user must:
- 1. reset Citrix Workspace app
- 2. configure the registry keys, and then

3. reconfigure the store.

Manage workspace control reconnect

Workspace control lets applications follow users as they move between devices. For example, workspace control enables clinicians in hospitals to move from workstation to workstation without having to restart their applications on each device. For Citrix Workspace app, you manage workspace control on client devices by modifying the registry. Workspace control can also be done for domain-joined client devices using Group Policy.

Caution:

Editing the registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix can't guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Be sure to back up the registry before you edit it.

Create **WSCReconnectModeUser** and modify the existing registry key **WSCReconnectMode** in the Master Desktop Image or in the Citrix Virtual Apps server. The published desktop can change the behavior of the Citrix Workspace app.

WSCReconnectMode key settings for Citrix Workspace app:

- 0 = do not reconnect to any existing sessions
- 1 = reconnect on application launch
- 2 = reconnect on application refresh
- 3 = reconnect on application launch or refresh
- 4 = reconnect when Citrix Workspace interface opens
- 8 = reconnect on Windows sign-on
- 11 = combination of both 3 and 8

Disable workspace control

To disable workspace control, create the following key:

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\Dazzle (64-bit)

HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\\Dazzle (32-bit)

Name: WSCReconnectModeUser

Type: REG_SZ

Value data: 0

Modify the following key from the default value of 3 to zero

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\Dazzle (64-bit)

HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\Dazzle (32-bit)

Name: WSCReconnectMode

Type: REG_SZ

Value data: 0

You can also set the **WSCReconnectAll** key to false if you don't want to create a key.

Registry keys for 32-bit machines

Registry key: WSCSupported

Value: True

Key path:

```
1 - HKEY_CURRENT_USER\Software\Citrix\Dazzle
```

- 2 HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" +
 primaryStoreID +\Properties
- 3 HKEY_LOCAL_MACHINE\Software\Policies\Citrix\Dazzle
- 4 HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle

Registry key: WSCReconnectAll

Value: True

Key path:

```
1 - `HKEY_CURRENT_USER\Software\Citrix\Dazzle`
```

- 2 `HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" +
- primaryStoreID + \Properties`
- 3 `HKEY_LOCAL_MACHINE\Software\Policies\Citrix\Dazzle`
- 4 `HKEY_LOCAL_MACHINe\Software\Citrix\Dazzle`

Registry key: WSCReconnectMode

Value: 3

Key path:

```
1 - HKEY_CURRENT_USER\Software\Citrix\Dazzle
```

- 2 HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" +
 primaryStoreID +\Properties
- 3 HKEY_LOCAL_MACHINE\Software\Policies\Citrix\Dazzle

```
4 - HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle
```

Registry key: WSCReconnectModeUser

Value: Registry isn't created during installation.

Key path:

Registry keys for 64-bit machines:

Registry key: WSCSupported

Value: True

Key path:

```
    1 - HKEY_CURRENT_USER\Software\Citrix\Dazzle
    2 - HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" + primaryStoreID +\Properties
    3 - HKEY_LOCAL_MACHINE\Software\Wow6432Node\Policies\Citrix\Dazzle
    4 - HKEY_LOCAL_MACHINE\Software\Wow6432Node\Citrix\Dazzle
```

Registry key: WSCReconnectAll

Value: True

Key path:

```
    1 - HKEY_CURRENT_USER\Software\Citrix\Dazzle
    2 - HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" +
        primaryStoreID + \Properties
    3 - HKEY_LOCAL_MACHINE\Software\Wow6432Node\Policies\Citrix\Dazzle
    4 - HKEY_LOCAL_MACHINE\Software\Wow6432Node\Citrix\Dazzle
```

Registry key: WSCReconnectMode

Value: 3
Key path:

```
    HKEY_CURRENT_USER\Software\Citrix\Dazzle
    HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" +
        primaryStoreID +\Properties
    HKEY_LOCAL_MACHINE\Software\Wow6432Node\Policies\Citrix\Dazzle
    HKEY_LOCAL_MACHINE\Software\Wow6432Node\Citrix\Dazzle
```

Registry key: WSCReconnectModeUser

Value: Registry isn't created during installation.

Key path:

```
    1 - HKEY_CURRENT_USER\Software\Citrix\Dazzle
    2 - HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store" + primaryStoreID +\Properties
    3 - HKEY_LOCAL_MACHINE\Software\Wow6432Node\Policies\Citrix\Dazzle
    4 - HKEY_LOCAL_MACHINE\Software\Wow6432Node\Citrix\Dazzle
```

Keyboard layout and language bar

Keyboard layout

Note:

You can hide all or part of the Advanced Preferences sheet available from the Citrix Workspace app icon in the notification area. For more information, see Advanced Preferences sheet.

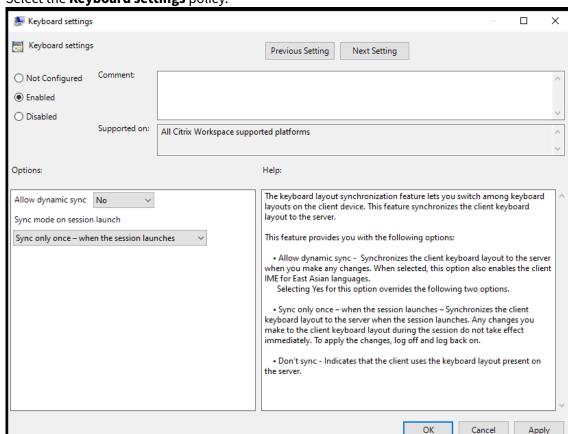
Keyboard layout synchronization enables you to switch among preferred keyboard layouts on the client device. This feature is disabled by default. The keyboard layout synchronization allows the client keyboard layout to automatically synchronize to the virtual apps and desktops session.

To configure keyboard layout synchronization using the GPO administrative template:

Note:

The GPO configuration takes precedence over the StoreFront and the GUI configurations.

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration or User Configuration node, go to Administrative Templates > Administrative Templates (ADM) > Citrix Components > Citrix Workspace > User experience.



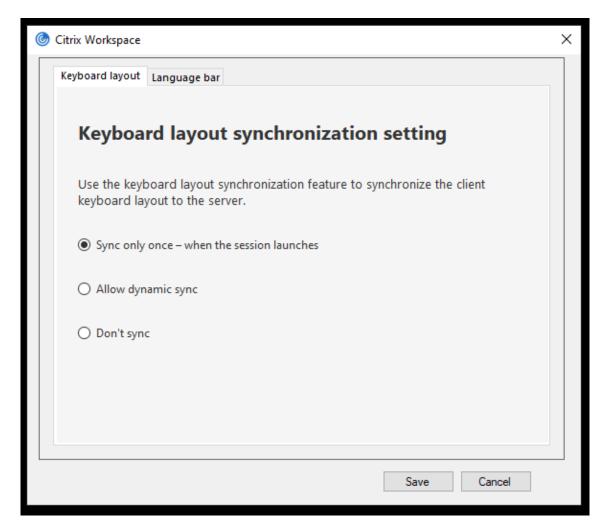
3. Select the Keyboard settings policy.

- 4. Select **Enabled** and select one the following options:
 - Allow dynamic sync From the drop-down menu, select Yes or No. This option synchronizes the client keyboard layout to the server when you change the client keyboard layout.
 When selected, this option also enables the client IME for East Asian languages.
 Selecting Yes for this option overrides the following two options.
 - Sync mode on session launch From the drop-down menu, select one of the following options:
 - Sync only once when session launches Synchronizes the client keyboard layout 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, log
 off and log back on.
 - **Don't sync** Indicates that the client uses the keyboard layout present on the server.
- 5. Select **Apply** and **OK**.

To configure keyboard layout synchronization using the graphical user interface:

1. From the Citrix Workspace app icon in the notification area icon, select **Advanced Preferences** > **Keyboard and Language bar**.

The **Keyboard and Language bar** dialog appears.



- 2. Select from one of the following options:
 - Sync only once when the session launches Indicates that the keyboard layout is synced from the VDA only once at the session launch.
 - **Allow dynamic sync** Indicates that the keyboard layout is synced dynamically to the VDA when the client keyboard is changed in a session.
 - Don't sync Indicates that the client uses the keyboard layout present on the server.
- 3. Click Save.

To configure keyboard layout synchronization using CLI:

Run the following command from the Citrix Workspace app for Windows installation folder.

Typically, Citrix Workspace app installation folder is at C:\Program files (x86)\Citrix\ICA Client.

- To enable: wfica32:exe /localime:on
- To disable: wfica32:exe /localime:off

Using the client keyboard layout option activates the Client IME (Input Method Editor). If users working in Japanese, Chinese, or Korean prefer to use the Server IME, they must disable the client keyboard layout option by selecting **No**, or running wfica32:exe /localime:off. The session reverts to the keyboard layout provided by the remote server when they connect to the next session.

Sometimes, switching the client keyboard layout does not take effect in an active session. To resolve this issue, log off from Citrix Workspace app and login again.

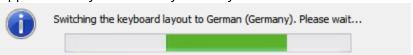
Configuring keyboard sync on Windows VDA

Note:

The following procedure applies only on Windows server 2016 and later. On Windows Server 2012 R2 and earlier, the keyboard sync feature is enabled by default.

- 1. Launch the Registry editor and navigate to HKEY_LOCAL_MACHINE\Software\Citrix\IcaIme.
- 2. Create the DWORD entry DisableKeyboardSync and set its value to 0.
 - 1 disables the keyboard layout sync feature.
- 3. Restart the session for the changes to take effect.

After you enable the keyboard layout on both the VDA and Citrix Workspace app, the following window appears when you switch keyboard layouts.



This window indicates that the session keyboard layout is being switched to the client keyboard layout.

Configuring keyboard sync on Linux VDA

Launch the command prompt and run the following command:

/opt/Citrix/VDA/bin/ctxreg update -k "HKEY_LOCAL_MACHINE\System\CurrentControlSet
\Control\Citrix\LanguageBar"-v "SyncKeyboardLayout"-d "0x00000001"

Restart the VDA for the changes to take effect.

For more information about the keyboard layout synchronization feature on Linux VDA, see Dynamic keyboard layout synchronization.

Hide the keyboard layout switch notification dialog:

The keyboard layout change notification dialog lets you know that the VDA session is switching the keyboard layout. The keyboard layout switch needs approximately two seconds to switch. When you

hide the notification dialog, wait for some time before you start typing to avoid incorrect character input.

Warning

Editing the registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix cannot guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Be sure to back up the registry before you edit it.

Hide the keyboard layout switch notification dialog using the Registry editor:

- 1. Launch the Registry editor and navigate to HKEY_LOCAL_MACHINE\Software\Citrix\IcaIme.
- 2. Create a String Value key by name **HideNotificationWindow**.
- 3. Set the DWORD value to 1.
- 4. Click OK.
- 5. Restart the session for the changes to take effect.

Limitations:

- Remote applications which run with elevated privilege (for example, right-click an application icon > Run as administrator) cannot be synchronized with the client keyboard layout. As a workaround, manually change the keyboard layout on the server side (VDA) or disable UAC.
- If the user changes the keyboard layout on the client to a layout that isn't supported on the server, the synchronization feature of the keyboard layout is disabled for security reasons. An unrecognized keyboard layout is treated as a potential security threat. To restore the keyboard layout synchronization feature, log off and relog in to the session.
- In an RDP session, you cannot change the keyboard layout using Alt + Shift shortcuts. As a workaround, use the language bar in the RDP session to switch the keyboard layout.

Language bar

The language bar displays the preferred input language in a session. The language bar appears in a session by default.

Note:

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

Configure the language bar using the GPO administrative template:

The language bar displays the preferred input language in an application session.

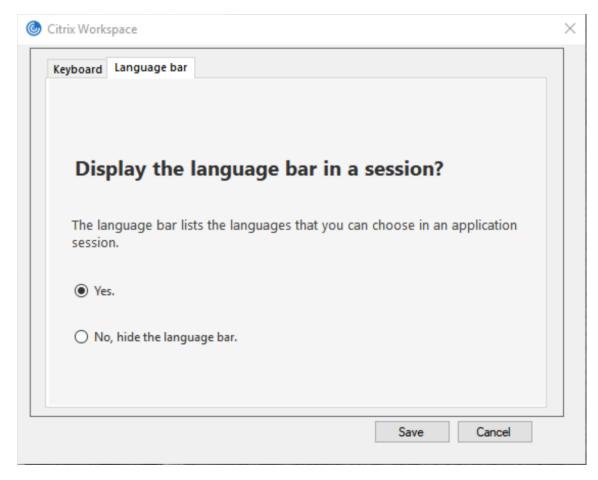
1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.

- 2. Under the Computer Configuration or User Configuration node, go to Administrative Templates > Administrative Templates (ADM) > Citrix Components > Citrix Workspace > User experience.
- 3. Select the Language bar policy.
- 4. Select **Enabled** and select one of the following options:
 - Yes Indicates that the language bar is displayed in an application session.
 - No, hide the language bar Indicates that the language bar is hidden in an application session.
- 5. Click **Apply** and **OK**.

Configure language bar using the graphical user interface:

- 1. Right-click the Citrix Workspace app icon from the notification area and select **Advanced Preferences**.
- 2. Select Keyboard and Language bar.
- 3. Select the Language bar tab.
- 4. Select from one of the following options:
 - a) Yes Indicates that the language bar is displayed in a session.
 - b) No, hide the language bar Indicates that the language bar is hidden in a session.
- 5. Click Save.

The setting changes take effect immediately.



Note:

- 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.

Hide the language bar tab from the Advanced Preferences sheet:

You can hide the language bar tab from the **Advanced Preferences** sheet by using the registry.

- 1. Launch the registry editor.
- 2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\Engine\Configuration \Advanced\Modules\LocalIME.
- 3. Create a DWORD value key, **ToggleOffLanguageBarFeature**, and set it to **1** to hide the Language bar option from the Advanced Preferences sheet.

Generic client Input Method Editors (IME)

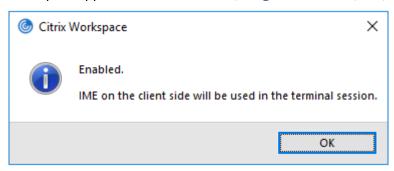
Note:

If you're using a Windows 10 Version 2004 operating system, you might face certain technical issues when using the IME feature in a session. Those issues are the result of a third-party limita-

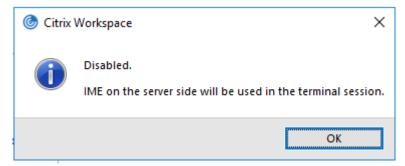
tion. For more information, see the Microsoft Support article.

Configuring generic client IME using the command-line interface:

• To enable generic client IME, run the wfica32.exe /localime:on command from the Citrix Workspace app installation folder C:\Program Files (x86)\Citrix\ICA Client.



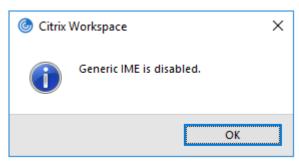
• To disable generic client IME, run the wfica32.exe /localime:offcommand from the Citrix Workspace app installation folder C:\Program Files (x86)\Citrix\ICA Client.



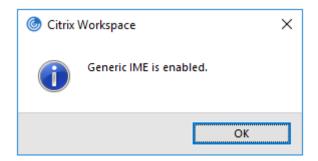
Note:

You can use the command-line switch wfica32.exe /localime:on to enable both generic client IME and keyboard layout synchronization.

• To disable generic client IME, run the wfica32.exe /localgenericime:off command from the Citrix Workspace app installation folder C:\Program Files (x86)\Citrix\ICA Client. This command does not affect keyboard layout synchronization settings.



If you have disabled generic client IME using the command-line interface, you can enable the feature again by running the wfica32.exe /localgenericime:on command.



Toggle:

Citrix Workspace app supports toggle functionality for this feature. You can run the wfica32.exe /localgenericime: on command to enable or disable the feature. However, the keyboard layout synchronization settings take precedence over the toggle switch. If keyboard layout synchronization is set to **Off**, toggling does not enable generic client IME.

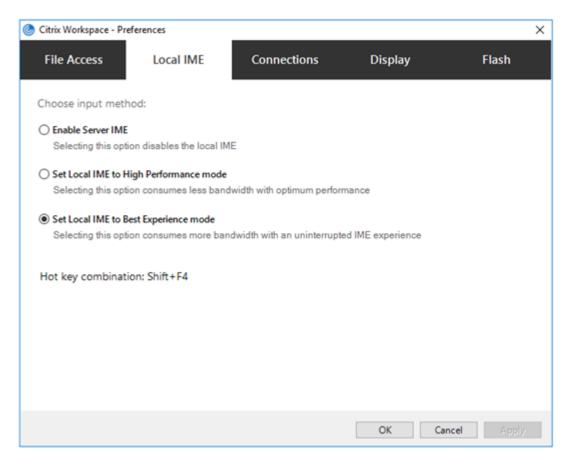
Configure generic client IME using the graphical user interface:

Generic client IME requires VDA Version 7.13 or later.

Generic client IME feature can be enabled by enabling keyboard layout synchronization. For more information, see Keyboard layout synchronization.

Citrix Workspace app allows you to configure different options to use generic client IME. You can select from one these options based on your requirements and usage.

- 1. Right-click the Citrix Workspace app icon in the notification area and select **Connection Center**.
- 2. Select Preferences and Local IME.



The following options are available to support different IME modes:

- 1. **Enable Server IME** Disables local IME and only the languages set on the server can be used.
- 2. **Set Local IME to High Performance mode** Uses local IME with limited bandwidth. This option restricts the candidate window functionality.
- 3. **Set Local IME to Best Experience mode** Uses local IME with best user experience. This option consumes high bandwidth. By default, this option is selected when generic client IME is enabled.

The changes are applied only for the current session.

Enabling hotkey configuration using a registry editor:

When generic client IME is enabled, you can use the **Shift+F4** hotkeys to select different IME modes. The different options for IME modes appear in the top-right corner of the session.

By default, the hotkey for generic client IME is disabled.

In the registry editor, navigate to HKEY_CURRENT_USER\SOFTWARE\Citrix\ICA Client\Engine \Lockdown Profiles\All Regions\Lockdown\Client Engine\Hot Key.

Select **AllowHotKey** and change the default value to 1.

You can use the **Shift+F4** hotkeys to select different IME modes in a session.

The different options for IME modes appear in the top-right corner of the session while switching using these hotkey combinations.



Limitations:

- Generic client IME does not support UWP (Universal Windows Platform) apps such as Search UI, and the Edge browser of the Windows 10 operating system. As a workaround, use the server IME instead.
- Generic client IME is not supported on Internet Explorer Version 11 in Protected Mode. As a
 workaround, you can disable Protected Mode by using Internet Options. To disable, click Security and clear Enable Protected Mode.

Printing

September 26, 2023

Printer

To override the printer settings on the user device

- 1. From the **Print** menu available from an application on the user device, choose **Properties**.
- 2. On the **Client Settings** tab, click Advanced Optimizations and modify the Image Compression and Image and Font Caching options.

On-screen keyboard control

To enable touch-enabled access to virtual applications and desktops from Windows tablets, Citrix Workspace app automatically displays the on-screen keyboard when:

- · you activate a text entry field and
- when the device is in tent or tablet mode.

On some devices and in some circumstances, Citrix Workspace app can't accurately detect the mode of the device. The on-screen keyboard might also appear when you don't want it to.

To suppress the on-screen keyboard from appearing when using a convertible device:

- create a REG_DWORD value DisableKeyboardPopup in HKEY_CURRENT_USER\\
 SOFTWARE\\Citrix\\ICA Client\\Engine\\Configuration\\Advanced\\Modules \\MobileReceiver and
- set the value to 1.

Note:

On a x64 machine, create the value in HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\MobileReceiver.

The keys can be set to the following 3 different modes:

- Automatic: AlwaysKeyboardPopup = 0; DisableKeyboardPopup = 0
- Always popup (on-screen keyboard): AlwaysKeyboardPopup = 1; DisableKeyboardPopup = 0
- **Never popup** (on-screen keyboard): AlwaysKeyboardPopup = 0; DisableKeyboardPopup = 1

PDF printing

Citrix Workspace app for Windows supports PDF printing in a session. The Citrix PDF Universal Printer driver allows you to print documents that are launched using hosted applications and desktops running on Citrix Virtual Apps and Desktops and Citrix DaaS.

When you select the **Citrix PDF Printer** option from the **Print** dialog, the printer driver converts the file to a PDF and transfers the PDF to the local device. The PDF is then launched using the default PDF viewer for viewing and prints from a locally attached printer.

Citrix recommends the Google Chrome browser or Adobe Acrobat Reader for PDF viewing.

You can enable Citrix PDF printing using Citrix Studio on the Delivery Controller.

Prerequisites:

- Citrix Virtual Apps and Desktops Version 7 1808 or later.
- At least one PDF viewer must be installed on your computer.

To enable PDF printing:

- 1. On the Delivery Controller, use the Citrix Studio, to select the **Policy** node in the left pane. You can either create a policy or edit an existing policy.
- 2. Set the **Auto-create PDF Universal Printer** policy to Enabled.

Restart the Citrix Workspace app session for the changes to take effect.

Limitation:

• PDF viewing and printing aren't supported on the Microsoft Edge browser.

Expanded tablet mode in Windows 10 using Windows Continuum

Windows Continuum is a Windows 10 feature that adapts to the way the client device is used. Citrix Workspace app for Windows supports Windows Continuum, including dynamic change of modes.

For touch-enabled devices, the Windows 10 VDA starts in tablet mode when there's no keyboard or mouse attached. It starts in desktop mode when either a keyboard or a mouse or both are attached. Detaching or attaching the keyboard on any client device or the screen on a 2-in-1 device like a Surface Pro toggles between tablet and desktop modes. For more information, see Tablet mode for touch-screen devices in Citrix Virtual Apps and Desktops documentation.

On a touch-enabled client device, the Windows 10 VDA detects the presence of a keyboard or mouse when you connect or reconnect to a session. It also detects when you attach or detach a keyboard or mouse during the session. This feature is enabled by default on the VDA. To disable the feature, modify the **Tablet mode toggle** policy using Citrix Studio.

Tablet mode offers a user interface that is better suited to touchscreens:

- Slightly larger buttons.
- The **Start** screen and all the apps you start open in a full screen.
- The taskbar includes a Back button.
- Icons are removed from the taskbar.

Desktop mode offers the traditional user interface where you interact in the same manner as a PC with a keyboard and mouse.

Note:

Workspace for web doesn't support the Windows Continuum feature.

USB

September 26, 2023

USB support

USB support enables you to interact with a wide range of USB devices when connected to a Citrix Virtual Apps and Desktops and Citrix DaaS. You can plug USB devices into their computers and the devices are remote to their virtual desktop. USB devices available for remoting include flash drives, smartphones, PDAs, printers, scanners, MP3 players, security devices, and tablets. Desktop Viewer

users can control whether USB devices are available on the Citrix Virtual Apps and Desktops and Citrix DaaS using a preference in the toolbar.

Isochronous features in USB devices, such as webcams, microphones, speakers, and headsets are supported in typical low latency or high-speed LAN environments. Such environment allows these devices to interact with packages, like Microsoft Office Communicator and Skype.

The following types of device are supported directly in a virtual apps and desktops session, and so does not use USB support:

- Keyboards
- Mice
- Smart cards

Specialist USB devices (for example, Bloomberg keyboards and 3-D mice) can be configured to use USB support. For information on configuring Bloomberg keyboards, see Configure Bloomberg keyboards.

For information on configuring policy rules for other specialist USB devices, see Knowledge Center article CTX122615.

By default, certain types of USB devices are not supported for remoting through Citrix Virtual Apps and Desktops and Citrix DaaS. For example, a user might have a NIC attached to the system board by internal USB. Remoting this device would not be appropriate. The following types of USB device are not supported by default in a virtual apps and desktops session:

- · Bluetooth dongles
- Integrated NIC
- USB hubs
- USB graphics adapters

USB devices connected to a hub can be remote, but the hub itself cannot be remote.

The following types of USB device are not supported by default for use in a virtual apps session:

- · Bluetooth dongles
- Integrated NIC
- USB hubs
- USB graphics adapters
- · Audio devices
- · Mass storage devices

How USB support works:

When a user plugs in a USB device, it is checked against the USB policy, and, if allowed, remoted to the virtual desktop. If the default policy denies a device, it is available only to the local desktop.

When a user plugs in a USB device, a notification appears to inform the user about a new device. The user can select which USB devices must be remoted to the virtual desktop each time they connect. Alternatively, the user can configure USB support so that all USB devices plugged in both before and/or during a session is automatically remoted to the virtual desktop that is in focus.

USB device classes allowed by default

Default USB policy rules allow different classes of USB device.

Although they are on this list, some classes are only available for remoting in virtual apps and desktops sessions after additional configuration. Such USB device classes are as follows.

Audio (Class 01)- Includes audio input devices (microphones), audio output devices, and MIDI controllers. Modern audio devices generally use isochronous transfers that XenDesktop 4 or later supports. Audio (Class01) is not applicable to virtual apps because these devices are not available for remoting in virtual apps using USB support.

Note:

Some specialty devices (for example, VOIP phones) require additional configuration. For more information, see Knowledge Center article CTX123015.

- **Physical Interface Devices (Class 05)** These devices are similar to Human Interface Devices (HIDs), but generally provide "real-time" input or feedback and include force feedback joysticks, motion platforms, and force feedback endoskeletons.
- Still Imaging (Class 06)- Includes digital cameras and scanners. Digital cameras often support
 the still imaging class which uses the Picture Transfer Protocol (PTP) or Media Transfer Protocol
 (MTP) to transfer images to a computer or other peripheral. Cameras might also appear as mass
 storage devices. It might be also possible to configure a camera to use either class, through the
 setup menus provided by the camera itself.

Note:

If a camera appears as a mass storage device, client drive mapping is used and USB support is not required.

• **Printers (Class 07)**- In general most printers are included in this class, although some use vendor-specific protocols (class ff). Multi-function printers might have an internal hub or be composite devices. In both cases the printing element generally uses the Printers class and the scanning or fax element uses another class; for example, Still Imaging.

Printers normally work appropriately without USB support.

Note

This class of device (in particular printers with scanning functions) requires additional configuration. For instructions, see Knowledge Center article CTX123015.

- Mass Storage (Class 08)- The most common mass storage devices are USB flash drives; others include USB-attached hard drives, CD/DVD drives, and SD/MMC card readers. There are a wide variety of devices with internal storage that also present a mass storage interface; these include media players, digital cameras, and mobile phones. Mass Storage (Class 08) is not applicable to virtual apps because these devices are not available for remoting in virtual apps using USB support. Known subclasses include:
 - 01 Limited flash devices
 - 02 Typically CD/DVD devices (ATAPI/MMC-2)
 - 03 Typically tape devices (QIC-157)
 - 04 Typically floppy disk drives (UFI)
 - 05 Typically floppy disk drives (SFF-8070i)
 - 06 Most mass storage devices use this variant of SCSI

Mass storage devices can often be accessed through client drive mapping, and so USB support is not required.

- **Content Security (Class 0d)** Content security devices enforce content protection, typically for licensing or digital rights management. This class includes dongles.
- **Video (Class 0e)** The video class cover devices that are used to manipulate video or video-related material. Devices, such as webcams, digital camcorders, analog video converters, some television tuners, and some digital cameras that support video streaming.

Important

Most video streaming devices use isochronous transfers that XenDesktop 4 or later supports. Some video devices (for example webcams with motion detection) require additional configuration. For instruction, see Knowledge Center article CTX123015.

- **Personal Healthcare (Class 0f)** These devices include personal healthcare devices such as blood pressure sensors, heart rate monitors, pedometers, pill monitors, and spirometry.
- Application and Vendor Specific (Classes fe and ff)- Many devices use vendor-specific protocols or protocols not standardized by the USB consortium, and such devices usually appear as vendor-specific (class ff).

USB devices classes denied by default

Default USB policy rules don't allow the following different classes of USB device:

- Communications and CDC Control (Classes 02 and 0a). The default USB policy doesn't allow these devices, because one of the devices might be providing the connection to the virtual desktop itself.
- Human Interface Devices (Class 03). Includes a wide variety of both input and output devices. Typical Human Interface Devices (HIDs) are keyboards, mice, pointing devices, graphic tablets, sensors, game controllers, buttons, and control functions.
 - Subclass 01 is known as the "boot interface" class and is used for keyboards and mice.
 - The default USB policy doesn't allow USB keyboards (class 03, subclass 01, protocol 1), or USB mice (class 03, subclass 01, protocol 2). The reason is most keyboards and mice are handled appropriately without USB support. Also, it is normally necessary to use these devices locally as well remotely when you connect to a virtual desktop.
- USB Hubs (Class 09). USB hubs allow extra devices to be connected to the local computer. It is not necessary to access these devices remotely.
- Smart Card (Class 0b). Smart card readers include contactless and contact smart card readers, and also USB tokens with an embedded smart card-equivalent chip.
 - Smart card readers are accessed using smart card remoting and do not require USB support.
- Wireless Controller (Class e0). Some of these devices might be providing critical network access, or connecting critical peripherals, such as Bluetooth keyboards or mice.
 - The default USB policy does not allow these devices. However, there might be particular devices to which it is appropriate to provide access using USB support.
- Miscellaneous network devices (Class ef, subclass 04)- Some of these devices might be providing critical network access. The default USB policy does not allow these devices. However, there might be particular devices to which it is appropriate to provide access using USB support.

Update the list of USB devices available for remoting

Edit the Citrix Workspace for Windows template file to update the range of USB devices available for remoting to desktops. The update allows you to make changes to the Citrix Workspace for Windows using Group Policy. The file is in the following installed folder:

```
\C:\Program Files\Citrix\ICA Client\Configuration\en
```

Alternatively, you can edit the registry on each user device, adding the following registry key:

 $\label{local_machine} HKEY_LOCAL_MACHINE \SOFTWARE \Policies \Citrix \ICA Client \Generic USB Type = String Name = "Device Rules" \\Value = \label{local_machine} Value = \label{local_machine}$

Important

Editing the Registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix cannot guarantee that problems resulting from the incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Be sure to back up the registry before you edit it.

The product default rules are stored in:

 $\label{local_machine} \begin{tabular}{l} HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA\Client\GenericUSB\Type=MultiSz\Name="DeviceRules" Value="The Name of Control of Con$

Do not edit the product default rules.

For more information about USB devices policy settings, see USB devices policy settings in Citrix Virtual Apps and Desktops documentation.

Composite USB device redirection

USB 2.1 and later supports the notion of USB composite devices where multiple child devices share a single connection with the same USB bus. Such devices employ a single configuration space and shared bus connection where a unique interface number 00-ff is used to identify each child device. Such devices are also not the same as a USB hub which provides a new USB bus origin for other independently addressed USB devices for connection.

Composite devices found on the client endpoint can be forwarded to the virtual host as either:

- a single composite USB device, or
- a set of independent child devices (split devices)

When a composite USB device is forwarded, the entire device becomes unavailable to the endpoint. Forwarding also blocks the local usage of the device for all applications on the endpoint, including the Citrix Workspace client needed for an optimized HDX remote experience.

Consider a USB headset device with both audio device and HID button for mute and volume control. If the entire device is forwarded using a generic USB channel, the device becomes unavailable for redirection over the optimized HDX audio channel. However, you can achieve best experience when the audio is sent through the optimized HDX audio channel unlike the audio sent using host-side audio drivers through generic USB remoting. The behavior is because of the noisy nature of the USB audio protocols.

You also notice issues when the system keyboard or pointing device are part of a composite device with other integrated features required for the remote session support. When a complete composite device is forwarded, the system keyboard or mouse becomes inoperable at the endpoint, except within the remote desktop session or application.

To resolve these issues, Citrix recommends that you split the composite device and forward only the child interfaces that use a generic USB channel. Such mechanism ensures that the other child devices are available for use by applications on the client endpoint, including, the Citrix Workspace app that provides optimized HDX experiences, while allowing only the required devices to be forwarded and available to the remote session.

Device Rules:

As with regular USB devices, device rules set in the policy or client Citrix Workspace app configuration on the end point select the composite devices for forwarding. Citrix Workspace app uses these rules to decide which USB devices to allow or prevent from forwarding to the remote session.

Each rule consists of an action keyword (Allow, Connect, or Deny), a colon (:), and zero or more filter parameters that match actual devices at the endpoints USB subsystem. These filter parameters correspond to the USB device descriptor metadata used by every USB device to identify itself.

Device rules are clear text with each rule on a single line and an optional comment after a # character. Rules are matched top down (descending priority order). The first rule that matches the device or child interface is applied. Subsequent rules that select the same device or interface are ignored.

Sample device rules:

- ALLOW: vid=046D pid=0102 # Allow a specific device by vid/pid
- ALLOW: vid=0505 class=03 subclass=01 # Allow any pid for vendor 0505 when subclass=01
- DENY: vid=0850 pid=040C # Deny a specific device (incl all child devices)
- DENY: class=03 subclass=01 prot=01 # Deny any device that matches all filters
- CONNECT: vid=0911 pid=0C1C # Allow and auto-connect a specific device
- ALLOW: vid=0286 pid=0101 split=01 # Split this device and allow all interfaces
- ALLOW: vid=1050 pid=0407 split=01 intf=00,01 # Split and allow only 2 interfaces
- CONNECT: vid=1050 pid=0407 split=01 intf=02 # Split and auto-connect interface 2
- DENY: vid=1050 pid=0407 split=1 intf=03 # Prevent interface 03 from being remoted

You can use any of the following filter parameters to apply rules to the encountered devices:

Filter parameter	Description
vid=xxxx	USB device vendor ID (four-digit hexadecimal code)
pid=xxxx	USB device product ID (four-digit hexadecimal code)
rel=xxxx	USB device release ID (four-digit hexadecimal code)
class=xx	USB device class code (two-digit hexadecimal code)

Filter parameter	Description
subclass=xx	USB device subclass code (two-digit hexadecimal code)
prot=xx	USB device protocol code (two-digit hexadecimal code)
split=1 (or split=0)	Select a composite device to be split (or non-split)
intf=xx[,xx,xx,]	Selects a specific set of child interfaces of a composite device (comma separated list of two-digit hexadecimal codes)

The first six parameters select the USB devices for which the rule must be applied. If any parameter is not specified, the rule matches a device with ANY value for that parameter.

The USB Implementors Forum maintains a list of defined class, subclass, and protocol values in Defined Class Codes. USB-IF also maintains a list of registered vendor IDs. You can check the vendor, product, release, and interface IDs of a specific device directly in the Windows device manager or using a free tool like UsbTreeView.

When present, the last two parameters apply only to USB composite devices. The split parameter determines if a composite device must be forwarded as split devices or as a single composite device.

- *Split=1* indicates that the selected child interfaces of a composite device must be forwarded as split devices.
- Split=0 indicates that the composite device must not be split.

Note:

If the split parameter is omitted, *Split=0* is assumed.

The *intf* parameter selects the specific child interfaces of the composite device to which the action must be applied. If omitted, the action applies to all interfaces of the composite device.

Consider a composite USB headset device with three interfaces:

- Interface 0 Audio class device endpoints
- Interface 3 HID class device endpoints (volume and mute buttons)
- Interface 5 Management/update interface

The suggested rules for this type of device are:

- CONNECT: vid=047F pid=C039 split=1 intf=03 # Allow and auto-connect HID device
- DENY: vid=047F pid=C039 split=1 intf=00 # Deny audio end points
- ALLOW: vid=047F pid=C039 split=1 intf=05 # Allow mgmt intf but don't auto-connect

Enable Device Rules policy:

Citrix Workspace app for Windows includes a set of default device rules that filters certain undesirable classes of devices and allow one that customers often encounter.

You can check these default device rules in the system registry at either:

- HKEY_LOCAL_MACHINE\Software\Citrix\ICA Client\GenericUSB (32 bit Windows) or
- HKEY_LOCAL_MACHINE\Software\WOW6432Node\Citrix\ICA Client\GenericUSB (64 bit Windows), in the multistring value named DeviceRules.

However, in the Citrix Workspace app for Window, you can apply **USB Device Rules** policy to overwrite these default rules.

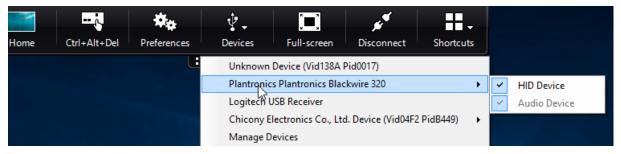
To enable device rules policy for Citrix Workspace app for Windows:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the User Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Remoting client devices > Generic USB Remoting.
- 3. Select the **USB Device Rules** policy.
- 4. Select Enabled.
- 5. In the **USB Device Rules** text box, paste (or edit directly) the USB device rules to be deployed.
- 6. Click Apply and OK.

Citrix recommends preserving the default rules shipped with the client when creating this policy by copying the original rules and inserting new rules to alter the behavior as desired.

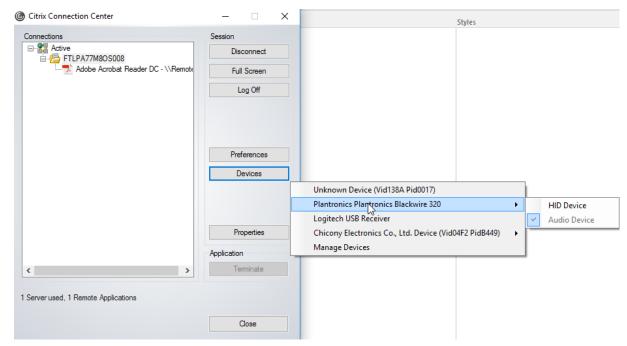
Connecting USB devices:

In a desktop session, split USB devices are displayed in the Desktop Viewer under **Devices**. Also, you can view split USB devices from **Preferences** > **Devices**.



Note:

CONNECT keyword enables automatic connection of a USB device. However, if the CONNECT keyword is not used when you split a composite USB device for generic USB redirection, you must manually select the device from the Desktop Viewer or Connection Center to connect an allowed device.



In an application session, split USB devices are displayed in the **Connection Center**.

To automatically connect an interface:

The CONNECT keyword introduced in Citrix Workspace app for Windows 2109 allows for automatic redirection of USB devices. The CONNECT rule can replace the ALLOW rule if the administrator allows the device or selected interfaces to automatically connect in the session.

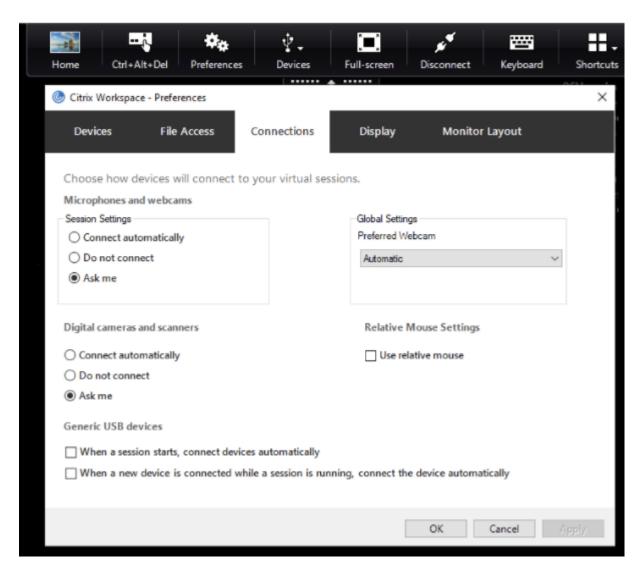
- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the User Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Remoting client devices > Generic USB Remoting.
- 3. Select the USB Device Rules policy.
- 4. Select Enabled.
- 5. In the **USB Device Rules** text box, add the USB device that you want to auto connect.

For example, CONNECT: vid=047F pid=C039 split=01 intf=00,03 – allows for splitting a composite device and auto connection of interfaces 00 and 03 interface and restriction other interfaces of that device.

6. Click **Apply** and **OK** to save the policy.

Changing USB device auto-connection preferences:

Citrix Workspace app automatically connects USB devices tagged with CONNECT action based on the preferences set for the current desktop resource. You can change the preferences in the **Desktop viewer** toolbar as shown in the following image.



The two check boxes at the bottom of the pane controls if the devices must connect automatically or wait for manual connection in the session. These settings are not enabled by default. You can change the preferences if generic USB devices must be connected automatically.

Alternatively, an administrator can override the user preferences by deploying the corresponding policies from Citrix Workspace app Group Policy Object administrative template. Both machine and user policies can be found under **Administrative Templates** > **Citrix Components** > **Citrix Workspace** > **Remoting client devices** > **Generic USB Remoting**. The corresponding policies are labeled as Existing USB Devices and New USB Devices respectively.

Change split device default setting:

By default, the Citrix Workspace app for Windows only splits composite devices that are explicitly tagged as *Split=1* in the device rules. However, it is possible to change the default disposition to split all composite devices that are not otherwise tagged with *Split=0* in a matching device rule.

1. Open the Citrix Workspace app Group Policy Object administrative template by running

gpedit.msc.

- 2. Under the User Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Remoting client devices > Generic USB Remoting.
- 3. Select the **SplitDevices** policy.
- 4. Select Enabled.
- 5. Click **Apply** and **OK** to save the policy.

Note:

Citrix recommends using explicit device rules to identify specific devices or interfaces that need to be split instead of changing the default. This setting will be deprecated in a future release.

Limitation:

Citrix recommends that you do not split interfaces for a webcam. As a workaround, redirect the device to a single device using Generic USB redirection. For a better performance, use the optimized virtual channel.

Bloomberg keyboards

Citrix Workspace app supports the use of Bloomberg keyboard in a virtual apps and desktops session. The required components are installed with the plug-in. You can enable the Bloomberg keyboard feature when installing Citrix Workspace app for Windows or by using the Registry editor.

Bloomberg keyboards provide other functionality when compared to standard keyboards, that allows the user to access financial market data and perform trades.

The Bloomberg keyboard consists of multiple USB devices built into one physical shell:

- · the keyboard
- a fingerprint reader
- an audio device
- a USB hub to connect all of these devices to the system
- HID buttons, for example, Mute, Vol Up, and Vol Down for the audio device

In addition to the normal functionality of these devices, the audio device includes support for some keys, control of the keyboard, and keyboard LEDs.

To use the specialized functionality inside a session, you must redirect the audio device as a USB device. This redirect makes the audio device available to the session, but prevents the audio device from being used locally. In addition, the specialized functionality can only be used with one session and cannot be shared between multiple sessions.

Multiple sessions with Bloomberg keyboards are not recommended. The keyboard operates in a single-session environment only.

Configuring Bloomberg keyboard 5:

Starting from Citrix Workspace app for Windows 2109 version, a new CONNECT keyword is introduced to allow automatic connection of USB devices at session startup and device insertion. The CONNECT keyword can be used to replace the ALLOW keyword when the user wants a USB device or interface to connect automatically.

Note:

With the introduction of Device redirection rules version 2 in Studio in Citrix Virtual Apps and Desktops 2212 version, it isn't required to configure the Bloomberg 5 keyboard through client-side group policies in Citrix Workspace app for Windows. For more details, see Client USB device redirection rules (Version 2) in Citrix Virtual Apps and Desktops documentation.

For versions prior to Citrix Workspace app for Windows version 2212, the following example shows how to use the CONNECT keyword:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- 2. Under the Computer Configuration node, go to Administrative Templates > Citrix Components > Citrix Workspace > Remoting client devices > Generic USB Remoting.
- 3. Select the **SplitDevices** policy.
- 4. Select Enabled.
- 5. In the **USB Device Rules** text box, add the following rules if it doesn't exist.
 - CONNECT: vid=1188 pid=A101 # Bloomberg 5 Biometric module
 - DENY: vid=1188 pid=A001 split=01 intf=00 # Bloomberg 5 Primary keyboard
 - CONNECT: vid=1188 pid=A001 split=01 intf=01 # Bloomberg 5 Keyboard HID
 - DENY: vid=1188 pid=A301 split=01 intf=02 # Bloomberg 5 Keyboard Audio Channel
 - CONNECT: vid=1188 pid=A301 split=01 intf=00,01 # Bloomberg 5 Keyboard Audio HID

Note:

New lines or semicolon can be used to separate rules which allows to read either single line or multi-line registry values.

- 6. Click **Apply** and **OK** to save the policy.
- 7. In the **Preferences** window, select the **Connections** tab, and select one or both check boxes to the connect devices automatically. The **Preferences** window is accessible from the Desktop Toolbar or Connection Manager.

This procedure makes the Bloomberg keyboard 5 ready for use. The DENY rules that are mentioned in the steps enforce the redirection of the primary keyboard and audio channel over an optimized channel but not over Generic USB. The CONNECT rules enable automatic redirection of the fingerprint module, special keys on the keyboard, and keys related to audio control.

Configure Bloomberg keyboard 4 or 3:

Caution

Editing the registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix cannot guarantee that problems resulting from the incorrect use of the Registry editor can be solved. Use the Registry editor at your own risk. Be sure to back up the registry before you edit it.

1. Locate the following key in the registry:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\GenericUSB
```

- 2. Do one of the following:
 - To enable this feature, for the entry with type DWORD and Name **EnableBloombergHID**, set the value to 1.
 - To disable this feature, set the value to 0.

Bloomberg keyboard 3 support is available in the online plug-in 11.2 for Windows and subsequent versions.

Bloomberg keyboard 4 support is available for Windows Receiver 4.8 and later versions.

Determining if Bloomberg keyboards support is enabled:

- To check if Bloomberg keyboard support is enabled in the online plug-in, check how the Desktop Viewer reports the Bloomberg keyboard devices. If the Desktop Viewer isn't used, you can check the registry on the machine where the online plug-in is running.
- If support for Bloomberg keyboards is not enabled, the Desktop Viewer shows:
 - two devices for the Bloomberg keyboard 3, that appears as Bloomberg Fingerprint Scanner and Bloomberg Keyboard Audio.
 - one policy redirected device for Bloomberg keyboard 4. This device appears as
 Bloomberg LP Keyboard 2013.
- If support for Bloomberg keyboards is enabled, there are two devices shown in the Desktop Viewer. One appears as **Bloomberg Fingerprint Scanner** as before, and the other as **Bloomberg Keyboard Features**.
- If the driver for the Bloomberg Fingerprint Scanner device is not installed, the Bloomberg Fingerprint Scanner entry might not appear in the Desktop Viewer. If the entry is missing, the Bloomberg Fingerprint Scanner might not be available for redirection. You can still check the name of the other Bloomberg device where Bloomberg keyboards support is enabled.
- You can also check the value in the registry to know if the support is enabled:

 HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICAClient\GenericUSB\EnableBloombergHID

If the value doesn't exist or is 0 (zero), support for Bloomberg keyboards is not enabled. If the value is 1, support is enabled.

Enabling Bloomberg keyboard support:

Note:

Citrix Receiver for Windows 4.8 introduced the support for composite devices through the **Split-Devices** policy. However, you must use the Bloomberg keyboard feature instead of this policy for the Bloomberg keyboard 4.

The support for the Bloomberg keyboard changes the way certain USB devices are redirected to a session. This support is not enabled by default.

• To enable the support during the installation time, specify the value of the **ENABLE_HID_REDIRECTION** property as TRUE at the installation command-line. For example:

```
CitrixOnlinePluginFull.exe /silent

ADDLOCAL="ICA_CLIENT,PN_AGENT,SSON,USB"

ENABLE_SSON="no"INSTALLDIR="c:\test"

ENABLE_DYNAMIC_CLIENT_NAME="Yes"

DEFAULT_NDSCONTEXT="Context1,Context2"

SERVER_LOCATION="http://testserver.net"ENABLE_HID_REDIRECTION="TRUE"
```

- To enable support after installing the online plug-in, edit the Windows Registry on the system where the online plug-in is running:
 - 1. Open Registry Editor.
 - 2. Navigate to the following key:
 HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\GenericUSB
 - 3. If the value **EnableBloombergHID** exists, modify it so that the value data is 1.
 - 4. If the value **EnableBloombergHID** does not exist, create a DWORD value with the name EnableBloombergHID and provide the value data as 1.

Disabling support for the Bloomberg keyboard:

You can disable support for the Bloomberg keyboard in the online plug-in as follows:

- 1. Open Registry Editor on the system running the online plug-in software.
- 2. Navigate to the following key:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\GenericUSB
```

3. If the value **EnableBloombergHID** exists, modify it so that the value data is 0 (zero).

If the value **EnableBloombergHID** doesn't exist, it indicates that the support for the Bloomberg keyboard is not enabled. In such case, you don't have to modify any registry values.

Using Bloomberg keyboards without enabling support:

- You can use the keyboard without enabling the Bloomberg keyboard support in the online plugin. However, you cannot have the benefit of sharing the specialized functionality among multiple sessions and you might experience increased network bandwidth from audio.
- Bloomberg keyboard ordinary keys are available in the same way as any other keyboard. You don't have to take any special action.
- To use the specialized Bloomberg keys, you must redirect the Bloomberg keyboard audio device into the session. If you are using the Desktop Viewer, the manufacturer name and device name of the USB devices appears and **Bloomberg Keyboard Audio** appears for the Bloomberg Keyboard audio device.
- To use the fingerprint reader, you must redirect the device to Bloomberg Fingerprint Scanner. If the drivers for the fingerprint reader are not installed locally, the device only shows:
 - if the online plug-in is set to connect devices automatically or
 - to let the user choose whether to connect devices.

Also, if the Bloomberg keyboard is connected before establishing the session and drivers for the fingerprint reader doesn't exist locally, then the fingerprint reader doesn't appear and isn't usable within the session.

Note:

For Bloomberg 3, a single session or the local system can use the fingerprint reader, and cannot be shared. Bloomberg 4 is prohibited for redirection.

Using Bloomberg keyboards after enabling support:

- If you enable support for Bloomberg keyboards in the online plug-in, you have the benefit of sharing the specialized keyboard functionality with multiple sessions. You also experience less network bandwidth from the audio.
- Enabling support for the Bloomberg keyboard prevents the redirection of the Bloomberg Keyboard audio device. Instead, a new device is made available. If you are using the Desktop Viewer, this device is called Bloomberg Keyboard Features. Redirecting this device provides the specialized Bloomberg keys to the session.

Enabling the Bloomberg keyboard support only affects the specialized Bloomberg keys and the audio device. Because the ordinary keys and fingerprint reader are used in the same way as when the support is not enabled.

HDX Plug and Play USB device redirection

HDX Plug and Play USB device redirection enables dynamic redirection of media devices to the server. The media device includes cameras, scanners, media players, and point of sale (POS) devices. You or the user can restrict the redirection of all or some of the devices. Edit policies on the server or apply

group policies on the user device to configure the redirection settings. For more information, see USB and client drive considerations in the Citrix Virtual Apps and Desktops documentation.

Important:

If you prohibit Plug and Play USB device redirection in a server policy, the user can't override that policy setting.

A user can set permissions in Citrix Workspace app to allow or reject device redirection always or notify each time a device is connected. The setting affects only devices plugged in after the user changes the setting.

To map a client COM port to a server COM port

Client COM port mapping allows devices attached to the COM ports of the user device to be used during sessions. These mappings can be used like any other network mappings.

You can map client COM ports at the command prompt. You can also control client COM port mapping from the Remote Desktop (Terminal Services) Configuration tool or using policies. For information about policies, see the Citrix Virtual Apps and Desktops documentation.

Important:

COM port mapping isn't TAPI-compatible.

- 1. For Citrix Virtual Apps and Desktops deployments, enable the Client COM port redirection policy setting.
- 2. Log on to Citrix Workspace app.
- 3. At a command prompt, type:

```
net use comx: \\\\client\\comz:
```

where:

- x is the number of the COM port on the server (ports 1 through 9 are available for mapping) and
- z is the number of the client COM port you want to map
- 4. To confirm the operation, type:

```
net use
```

The prompt displays mapped drives, LPT ports, and mapped COM ports.

To use this COM port in a virtual desktop or application, install your user device to the mapped name. For example, if you map COM1 on the client to COM5 on the server, install your COM port device on COM5 during the session. Use this mapped COM port as you would a COM port on the user device.

Configuring USB audio

Note:

- When you upgrade or install Citrix Workspace app for Windows for the first time, add the latest template files to the local GPO. For more information on adding template files to the local GPO, see Group Policy Object administrative template. For upgrade, the existing settings are retained while importing the latest files.
- This feature is available only on Citrix Virtual Apps server.

To configure USB audio devices:

- 1. Open the Citrix Workspace app Group Policy Object administrative template by running gpedit.msc.
- Under the Computer Configuration node, go to Administrative Templates > Classic Administrative Templates (ADM) > Citrix Components > Citrix Workspace > User experience, and select Audio through Generic USB Redirection.
- 3. Edit the settings.
- 4. Click **Apply** and **OK**.
- 5. Open the cmd prompt in administrator mode.
- 6. Run the following command gpupdate /force.

Mass storage devices

For mass storage devices only, in addition to USB support, remote access is available through client drive mapping. You can configure this through the Citrix Workspace app for Windows policy **Remoting client devices** > **Client drive mapping**. When you apply this policy, the drives on the user device automatically map to drive letters on the virtual desktop when users log on. The drives are displayed as shared folders with mapped drive letters.

The main differences between the two types of remoting policy are:

Feature	Client drive mapping	USB support
Enabled by default	Yes	No
Read-only access configurable	Yes	No
Safe to remove device during a session	No	Yes, if the user clicks Safely Remove Hardware in the notification area

If you enable both Generic USB and the client drive-mapping policies and insert a mass storage device before a session starts, it is redirected using client drive mapping first, before being considered for redirection through USB support. If it is inserted after a session has started, it will be considered for redirection using USB support before client drive mapping.

Client drive-mapping

September 26, 2023

Client drive-mapping supports the transfer of data between the host and the client as a stream. The file transfer adapts to the changing network throughput conditions. It also uses any available extra bandwidth to scale up the data transfer rate.

By default, this feature is enabled.

To disable this feature, set the following registry key and then restart the server:

Path: HKEY_LOCAL_MACHINE\System\Currentcontrolset\services\picadm\Parameters

Name: DisableFullStreamWrite

Type: REG_DWORD

Value:

0x01 - disables

or delete - enables

Citrix Workspace app for Windows supports device mapping on user devices so they're available from within a session. Users can:

- Transparently access local drives, printers, and COM ports
- Cut and paste between the session and the local Windows clipboard
- Hear audio (system sounds and .wav files) played from the session

Citrix Workspace app informs the server of the available client drives, COM ports, and LPT ports during sign-in. By default, client drives are mapped to server drive letters and server print queues are created for client printers, which make them appear to be directly connected to the session. These mappings are available only for the current user during the current session. They're deleted when the user logs off and recreated the next time the user logs on.

You can use the redirection policy settings to map user devices not automatically mapped at logon. For more information, see the Citrix Virtual Apps and Desktops documentation.

Disable user device mappings

You can configure user device-mapping including options for drives, printers, and ports, using the **Windows Server Manager** tool. For more information about the available options, see your Remote

Desktop Services documentation.

Redirect client folders

Client folder redirection changes the way client-side files are accessible on the host-side session. Enabling only Client drive-mapping on the server, client-side full volumes automatically maps to the sessions as Universal Naming Convention (UNC) links. When you enable client folder redirection on the server and the user configures it on the user device, part of the user specified local volume gets redirected.

Only the user-specified folders appear as UNC links inside the sessions, instead of the complete file system on the user device. If you disable UNC links through the registry, client folders appear as mapped drives inside the session. For more information, including how to configure client folder redirection for user devices, see the Citrix Virtual Apps and Desktops documentation.

Map client drives to host-side drive letters

Client drive-mapping redirects drive letters on the host-side to drives that exist on the user device. For example, drive H in a Citrix user session can be mapped to drive C of the user device running Citrix Workspace app for Windows.

Client drive-mapping is built into the standard Citrix device redirection facilities transparently. To File Manager, Windows Explorer, and your applications, these mappings appear like any other network mappings.

The server hosting virtual desktops and applications can be configured during installation to map client drives automatically to a given set of drive letters. The default installation maps drive letters assigned to client drives starting with V and works backward, assigning a drive letter to each fixed drive and CD-ROM drive. (Floppy drives are assigned their existing drive letters.) This method yields the following drive mappings in a session:

Client drive letter	Accessible by the server as:
А	А
В	В
С	V
D	U

The server can be configured so that the server drive letters don't conflict with the client drive letters. So, the server drive letters are changed to higher drive letters.

In the following example, changing server drives C to M and D to N allows client devices to access their C and D drives directly. This method yields the following drive mappings in a session:

Client drive letter	Accessible by the server as:
A	A
В	В
С	С
D	D

The drive letter used to replace the server drive C is defined during Setup. All other fixed drive and CD-ROM drive letters are replaced with sequential drive letters (for example; C > M, D > N, E > O). These drive letters must not conflict with any existing network drive mappings. If you map the network drive to the same drive letter as a server drive letter, the network drive mapping isn't valid.

Connecting a user device to a server, reestablishes client mappings unless automatic client device mapping is disabled. Client drive-mapping is enabled by default. To change the settings, use the Remote Desktop Services (Terminal Services) Configuration tool. You can also use policies to give you more control over how client device mapping is applied. For more information about policies, see the Citrix Virtual Apps and Desktops documentation.

Microphone

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Citrix Workspace app supports multiple client-side microphone inputs. You can use locally installed microphones for:

- Real-time activities, such as softphone calls and Web conferences.
- Hosted recording applications, such as dictation programs.
- Video and audio recordings.

Citrix Workspace app users can select whether to use microphones attached to their device using Connection Center. Citrix Virtual Apps and Desktops and Citrix DaaS users can also use the Citrix Virtual Apps and Desktops and Citrix DaaS viewer Preferences to disable their microphones and webcams.

Group Policy

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Group Policy Object administrative template

We recommend that you use the Group Policy Object administrative template to configure rules for:

- Network routing
- Proxy servers
- Trusted server configuration
- User routing
- · Remote user devices
- User experience

You can use the receiver.admx / receiver.adml template files with domain policies and local computer policies. For domain policies, import the template file using the Group Policy Management console. Importing is useful when applying Citrix Workspace app settings to several different user devices throughout the enterprise. To modify on a single user device, import the template file using the local Group Policy Editor on the device.

Citrix recommends using the Windows Group Policy Object (GPO) administrative template to configure Citrix Workspace app.

The installation directory includes CitrixBase.admx and CitrixBase.adml, and, administrative template files (receiver.adml or receiver.admx'receiver.adml').

Note:

The .admx and .adml files are for use with Windows version mentioned in the Compatibility matrix.

If Citrix Workspace app is installed with VDA, the ADMX/ADML files are typically found in the \<installation directory>\Online Plugin\Configuration directory.

If Citrix Workspace app is installed without the VDA, the ADMX/ADML files are typically found in the C:\Program Files\Citrix\ICA Client\Configuration directory.

See the following table for information about Citrix Workspace app template files and their respective locations.

Note:

Citrix recommends that you use the GPO template files provided with latest version of Citrix Workspace app.

File type	File location
receiver.adm	<installation directory="">\ICA Client\Configuration</installation>
receiver.admx	<installation directory="">\ICA Client\Configuration</installation>
receiver.adml	<pre><installation directory="">\ICA Client\Configuration\[MUIculture]</installation></pre>
CitrixBase.admx	<installation directory="">\ICA Client\Configuration</installation>
CitrixBase.adml	<pre><installation directory="">\ICA Client\Configuration\[MUIculture]</installation></pre>

Note:

- If the CitrixBase.admx\admlisn't added to the local GPO, the **Enable ICA File Signing** policy might be lost.
- When upgrading Citrix Workspace app, add the latest template files to local GPO. Earlier settings are retained after import. For more information, see the following procedure:

To add the receiver.admx/adml template files to the local GPO:

You can use .adm template files to configure both the Local and the domain-based GPO. Refer to the Microsoft MSDN article about managing ADMX files here.

After installing Citrix Workspace app, copy the following template files:

File type	Copy from	Copy to
receiver.admx	<pre>Installation Directory \ICA Client\ Configuration\receiver .admx</pre>	<pre>%systemroot%\ policyDefinitions</pre>
CitrixBase.admx	<pre>Installation Directory \ICA Client\ Configuration\ CitrixBase.admx</pre>	%systemroot%\ policyDefinitions

File type	Copy from	Copy to
receiver.adml	<pre>Installation Directory \ICA Client\ Configuration\[MUIculture]receiver. adml</pre>	<pre>%systemroot%\ policyDefinitions\[MUIculture]</pre>
CitrixBase.adml	<pre>Installation Directory \ICA Client\ Configuration\[MUIculture]\CitrixBase .adml</pre>	<pre>%systemroot%\ policyDefinitions\[MUIculture]</pre>

Note:

Add the CitrixBase.admx/CitrixBase.adml to the \PolicyDefinitions folder to view the template files in **Administrative Templates** > **Citrix Components** > **Citrix Workspace**.

Session experience

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Application launch time

Use the session prelaunch feature to reduce application launch time during normal or high traffic periods, thus providing users with a better experience. The prelaunch feature allows to create a prelaunch session. Prelaunch session is created when a user logs on to Citrix Workspace app, or at a scheduled time if the user has signed in.

The prelaunch session reduces the launch time of the first application. When a user adds new account connection to Citrix Workspace app for Windows, session prelaunch doesn't take effect until the next session. The default application ctxprelaunch exe is running in the session, but it is not visible to you.

For more information, see session prelaunch and session linger guidance in the Citrix Virtual Apps and Desktops article titled Manage delivery groups.

Session prelaunch is disabled by default. To enable session prelaunch, specify the ENABLEPRELAUNCH = true parameter on the Workspace command line or set the EnablePreLaunch registry key to true. The default setting, null, means that prelaunch is disabled.

Note:

If the client machine has been configured to support Domain Passthrough (SSON) authentication, prelaunch is automatically enabled. If you want to use Domain Pass-through (SSON) without prelaunch, set the **EnablePreLaunch** registry key value to false.

The registry locations are:

- HKEY_LOCAL_MACHINE\Software\[Wow6432Node\]Citrix\\Dazzle
- HKEY_CURRENT_USER\Software\Citrix\Dazzle

There are two types of prelaunch:

- **Just-in-time prelaunch** prelaunch starts immediately after the user's credentials are authenticated whether it is a high-traffic period. Typically used for normal traffic periods. A user can trigger just-in-time prelaunch by restarting the Citrix Workspace app.
- **Scheduled prelaunch** prelaunch starts at a scheduled time. Scheduled prelaunch starts only when the user device is already running and authenticated. If those two conditions are not met when the scheduled prelaunch time arrives, a session does not launch. To share network and server load, the session launches within a window when it is scheduled. For example, if the scheduled prelaunch is scheduled for 13:45, the session actually launches between 13:15 and 13:45. Typically used for high-traffic periods.

Configuring prelaunch on a Citrix Virtual Apps server consists of:

- creating, modifying, or deleting prelaunch applications, and
- updating user policy settings that control the prelaunch application.

You cannot customize the prelaunch feature using the receiver. admx file. However, you can change the prelaunch configuration by modifying registry values. Registry values can be modified during or after Citrix Workspace app for Windows installation.

- The HKEY_LOCAL_MACHINE values are written during client installation.
- The HKEY_CURRENT_USER values enable you to provide different users on the same machine with different settings. Users can change the HKEY_CURRENT_USER values without administrative permission. You can provide your users with scripts to change the values.

HKEY_LOCAL_MACHINE registry values:

For 64-bit Windows operating systems: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix \ICA Client\Prelaunch

For 32-bit Windows operating systems: HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\
Prelaunch

Name: **UserOverride**Type: REG_DWORD

Values:

- 0 Use the HKEY_LOCAL_MACHINE values even if HKEY_CURRENT_USER values are also present.
- 1 Use the HKEY_CURRENT_USER values if they exist; otherwise, use the HKEY_LOCAL_MACHINE values.

Name: State

Type: REG_DWORD

Values:

- 0 Disable prelaunch.
- 1 Enable just-in-time prelaunch. (prelaunch starts after the user's credentials are authenticated.)
- 2 Enable scheduled prelaunch. (prelaunch starts at the time configured for Schedule.)

Name: **Schedule**Type: REG_DWORD

Value:

The time (24-hour format) and days of a week for the scheduled prelaunch entered in the following format:

HH:MM	M:T:W:TH:F:S:SU where HH 1:0:1:0:1:0:0. The session
	and MM are hours and actually launches between
	minutes. M:T:W:TH:F:S:SU is 13:15 and 13:45.
	the days of the week. For
	example, to enable scheduled
	prelaunch on Monday,
	Wednesday, and Friday at
	13:45, set Schedule as
	Schedule=13:45

HKEY_CURRENT_USER registry values:

HKEY_CURRENT_USER\SOFTWARE\Citrix\ICA Client\Prelaunch

The **State** and **Schedule** keys have the same values as for HKEY_LOCAL_MACHINE.

Desktop Viewer

Different enterprises might have different corporate needs. Your requirements for the way users access virtual desktops might vary from user to user and as your corporate needs evolve. The user experience of connecting to virtual desktops and the extent at which the user can configure the connections

depend Citrix Workspace app for Windows setup.

Use the **desktop viewer** when users need to interact with their virtual desktop. The user's virtual desktop can be a published virtual desktop, or a shared or dedicated desktop. In this access scenario, the **Desktop Viewer** toolbar functionality allows the user to open a virtual desktop in a window and pan and scale that desktop inside their local desktop. Users can set preferences and work on more than one desktop using multiple Citrix Virtual Apps and Desktops and Citrix DaaS connections on the same user device.

Note:

Use Citrix Workspace app to change the screen resolution on their virtual desktops. You can't change Screen Resolution using the Windows Control Panel.

Keyboard input in Desktop Viewer

In Desktop Viewer sessions, the **Windows logo** key+L is directed to the local computer.

Ctrl+Alt+Delete is directed to the local computer.

Key presses that activate certain Microsoft accessibility features, for example, Sticky Keys, Filter Keys, and Toggle Keys are normally directed to the local computer.

As an accessibility feature of the Desktop Viewer, pressing Ctrl+Alt+Break displays the **Desktop Viewer** toolbar buttons in a pop-up window.

Ctrl+Esc is sent to the remote, virtual desktop.

Note:

By default, if the Desktop Viewer is maximized, Alt+Tab switches focus between windows inside the session. If the Desktop Viewer is displayed in a window, Alt+Tab switches focus between windows outside the session.

Hotkey sequences are key combinations designed by Citrix. Hotkey sequences are, for example, the Ctrl+F1 sequence reproduces Ctrl+Alt+Delete, and Shift+F2 switches applications between full-screen and windowed mode.

Note:

You can't use hotkey sequences with virtual desktops displayed in the Desktop Viewer, that is, with virtual apps and desktops sessions. However, you can use them with published applications, that is, with virtual apps sessions.

Status indicator time-out

You can change the amount of time the status indicator displays when a user is launching a session.

To alter the time-out period, do the following steps:

- 1. Launch the Registry Editor.
- 2. Navigate to the following path:
 - On a 64-bit: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\ICA CLIENT\ Engine
 - On a 32-bit: HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA CLIENT\Engine\
- 3. Create a registry key as follows:
 - Type: REG_DWORD
 - Name: SI INACTIVE MS
 - Value: 4, if you want the status indicator to disappear sooner.

When you configure this key, the status indicator might appear and disappear frequently. This behavior is as designed. To suppress the status indicator, do the following:

- 1. Launch the Registry Editor.
- 2. Navigate to the following path:
 - On a 64-bit: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\ICA CLIENT\
 - On a 32-bit: HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA CLIENT\
- 3. Create a registry key as follows:
 - Type: REG_DWORD
 - Name: NotificationDelay
 - Value: Any value in millisecond (for example, 120000)

Improved virtual apps and desktops reconnection experience

Citrix Workspace 2302 release provides an enhanced user experience while reconnecting to virtual apps and desktops from which you got disconnected.

When Citrix Workspace app attempts to refresh the disconnected Citrix Workspace app or start new virtual apps or desktops as a part of the Workspace Control feature, the following prompt appears:

Restore session?

You have one or more apps/desktops running from the previous session in Citrix Workspace app. Would you like to restore them?

Remember my preference



This prompt appears only when the **show reconnection prompt to reconnect sessions** is set to true in the Global App Configuration service.

Click **Restore** to reconnect to open new and disconnected virtual apps and desktops. If you want to start only newly selected apps and desktops, click **Cancel**.

You can also select **Remember my preference** to apply the selected preference for the next login.

The preceding new **Restore session?** prompt appears only if:

- the user tries to start an app belonging to a workspace store,
- admin policies or app config settings are not configured for the Workspace Control feature,
- Workspace Control Reconnect options are set to default on the client.

Note:

Reconnect settings in the **Reconnect Options** takes precedence over the preferences set in the dialog box. For more information, see Configure reconnect options using Advanced Preferences dialog.

Citrix Workspace app Desktop Lock

September 19, 2023

You can use the Citrix Workspace app Desktop Lock when you do not need to interact with the local desktop. You can use the Desktop Viewer (if enabled), however it has only the following set of options on the toolbar:

- Ctrl+Alt+Del
- Preferences
- Devices
- · Disconnect.

Citrix Workspace app for Windows with Desktop Lock works on domain-joined machines that are single sign-on enabled and store configured. It doesn't support PNA sites. Previous versions of Desktop Lock aren't supported when you upgrade to Citrix Receiver for Windows 4.2 or later.

Note:

When using Citrix Workspace app for Windows with Desktop Lock, a user is signed in to the first desktop that is alphabetically sorted with the name of all the desktops that are available to the user. Currently, there is no option to selectively choose which desktop the user must sign in. Also, this feature supports only desktops and doesn't support apps.

Install Citrix Workspace app for Windows with the /includeSSON flag. Configure the store and single sign-on, either using the adm/admx file or command line option. For more information, see Install.

Then, install the Citrix Workspace app Desktop Lock as an administrator using the CitrixWorkspaceDesktopLoc.msi available in the Citrix Downloads page.

System requirements

- Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package. For more information, see the Microsoft Download page.
- Supported on Windows 10 (Anniversary update included), and Windows 11.
- Connects to StoreFront through native protocols only.
- Domain-joined end points.
- User devices must be connected to a LAN or WAN.

Local App Access

Important

Enabling Local App Access might allow local desktop access unless a full lockdown has been applied with the Group Policy Object template or a similar policy. For more information, see the Configure Local App Access and URL redirection section in the Citrix Virtual Apps and Desktops documentation.

Working with Citrix Workspace app Desktop Lock

You can use Citrix Workspace app Desktop Lock with the following Citrix Workspace app features:

- 3Dpro, Flash, USB, HDX Insight, Microsoft Lync 2013 plug-in, and Local App Access
- Domain, two-factor authentication, or smart card authentication only
- Disconnecting the Citrix Workspace app Desktop Lock session logs out the end device.
- Flash redirection is disabled on Windows 8 and later versions. Flash redirection is enabled on Windows 7.
- The Desktop Viewer is optimized for Citrix Workspace app Desktop Lock with no Home, Restore, Maximize, and Display properties.
- Ctrl+Alt+Del is available on the Desktop Viewer toolbar.
- Most windows shortcut keys are passed to the remote session, except for Windows+L.
- Ctrl+F1 triggers Ctrl+Alt+Del when you disable the connection or Desktop Viewer for desktop connections.
- A local user profile is created at the end device when the user logs in to the system. The profile
 is retained at the end device even when the user logs out and based on the profile management
 configurations.

Note:

With the Desktop Lock installed, and LiveInDesktopDisconnectOnLock set to **False** in the registry path HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\Dazzle Or HKEY_LOCAL_MACHINE \SOFTWARE\Wow6432Node\Citrix\Dazzle, the active session gets disconnected when the end-point wakes up from hibernation or standby mode.

Install Citrix Workspace app Desktop Lock

This procedure installs Citrix Workspace app for Window so that virtual desktops appear using Citrix Workspace app Desktop Lock. For deployments that use smart cards, see Smart card.

- 1. Log on using a local administrator account.
- 2. At a command prompt, run the following command:

For example:

```
1 CitrixWorkspaceApp.exe
2    /includeSSON
3 STOREO="DesktopStore;https://my.storefront.server/Citrix/MyStore/
    discovery;on;Desktop Store"
4 <!--NeedCopy-->
```

The command is available in the Citrix Workspace app and **Plug-ins** > **Windows** > **Citrix Workspace app** folder on the installation media. For command details, see the Citrix Workspace app install documentation at Install.

- 3. In the same folder on the installation media, double-click CitrixWorkspaceDesktopLock. msi. The Desktop Lock wizard appears. Follow the prompts.
- 4. When the installation completes, restart the user device. If you have permission to access a desktop and you log on as a domain user, the device appears using Citrix Workspace app Desktop Lock.

You can allow administration of the user device after installation, the account used to install CitrixWorkspaceDesktopLock.msi is excluded from the replacement shell. If that account is later deleted, you can't log on and administer the device.

To run a **silent install** of Citrix Workspace Desktop Lock, use the following command line:

```
msiexec /i CitrixWorkspaceDesktopLock.msi /qn
```

Configure Citrix Workspace app Desktop Lock

When you've logged in as a non-administrator, Desktop Lock automatically launches an assigned desktop session.

Using Active Directory policies prevent users from hibernating virtual desktops.

Use the same administrator account to configure Citrix Workspace app Desktop Lock as you did to install it.

- Check if the receiver.admx (or receiver.adml) and receiver_usb.admx (.adml) files are loaded into Group Policy (where the policies appear in Computer Configuration or User Configuration > Administrative Templates > Classic Administrative Templates (ADMX) > Citrix Components). The .admx files are in %Program Files%\Citrix\ICA Client\Configuration\.
- USB preferences When a user plugs in a USB device, that device is automatically remoted to
 the virtual desktop and no user interaction is required. The virtual desktop controls the USB
 device and displaying it in the user interface.
 - Enable the USB policy rule.
 - In Citrix Workspace app > Remoting client devices > Generic USB Remoting, enable and configure the Existing USB Devices and New USB Devices policies.
- Drive mapping In **Citrix Workspace app > Remoting client devices**, enable, and configure the Client drive mapping policy.
- Microphone In Citrix Workspace app > Remoting client devices, enable, and configure the Client microphone policy.

Configure smart cards for use with Windows Desktop Lock

- 1. Configure StoreFront.
 - a) Configure the XML Service to use DNS Address Resolution for Kerberos support.

- b) Configure StoreFront sites for HTTPS access, create a server certificate signed by your domain certificate authority, and add HTTPS binding to the default website.
- c) Make sure that pass-through authentication with the smart card is enabled (enabled by default).
- d) Enable Kerberos.
- e) Enable Kerberos and pass-through authentication with smart card.
- f) Enable Anonymous access on the IIS Default website and use Integrated Windows Authentication.
- g) Ensure that the IIS Default website doesn't require SSL and ignores client certificates.
- 2. Use the Group Policy Management Console to configure Local Computer Policies on the user device.
 - a) Import the Receiver.admx template from %Program Files%\Citrix\ICA Client\Configuration\.
 - b) Expand Administrative Templates > Classic Administrative Templates (ADMX) > Citrix Components > Citrix Workspace > User authentication.
 - c) Enable Smart card authentication.
 - d) Enable Local user name and password.
- 3. Configure the user device before installing Citrix Workspace app Desktop Lock.
 - a) Add the URL for the Delivery Controller to the Windows Internet Explorer Trusted Sites list.
 - b) Add the URL for the first Delivery Group to the Internet Explorer Trusted Sites list. Add the URL in the form desktop://delivery-group-name.
 - c) Enable Internet Explorer to use automatic logon for Trusted Sites.

When Citrix Workspace app Desktop Lock is installed on the user device, it enforces a consistent smart card removal policy. For example, if the Windows smart card removal policy is set to Force logoff for the desktop, the user must log off from the user device, regardless of the Windows smart card removal policy set on it. Desktop Lock ensures that the user device isn't left in an inconsistent state. This applies only to user devices with the Citrix Workspace app Desktop Lock.

Remove Desktop Lock

Be sure to remove both of the components listed as follows:

- 1. Log on with the same local administrator account that was used to install and configure Citrix Workspace app Desktop Lock.
- 2. From the Windows feature for removing or changing programs:
 - Remove Citrix Workspace app Desktop Lock.
 - Remove Citrix Workspace app for Windows.

Passing Windows shortcut keys to the remote session

Most windows shortcut keys are passed to the remote session. This section highlights some of the common ones.

Windows

- Win+D Minimize all windows on the desktop.
- Alt+Tab Change active window.
- Ctrl+Alt+Delete via Ctrl+F1 and the Desktop Viewer toolbar.
- Alt+Shift+Tab
- Windows+Tab
- · Windows+Shift+Tab
- Windows+All Character keys

Windows 8

- Win+C Open charms.
- Win+Q Search charm.
- Win+H Share charm.
- Win+K Devices charm.
- Win+I Settings charm.
- Win+Q Search apps.
- Win+W Search settings.
- Win+F Search files.

Windows 8 apps

- Win+Z Get to app options.
- Win+. Snap app to the left.
- Win+Shift+. Snap app to the right.
- Ctrl+Tab Cycle through app history.
- Alt+F4 Close an app.

Desktop

- Win+D Open desktop.
- Win+, Peek at desktop.
- Win+B Back to desktop.

Other

- Win+U Open Ease of Access Center.
- Ctrl+Esc Start screen.
- Win+Enter Open Windows Narrator.
- Win+X Open the system utility settings menu.
- Win+PrintScrn Take a screenshot and save to pictures.
- Win+Tab Open switch list.
- Win+T Preview open windows in taskbar.

Software Development Kit (SDK) and API

June 21, 2023

Certificate Identity Declaration SDK

The Certificate Identity Declaration (CID) SDK lets developers create a plug-in. The plug-in lets Citrix Workspace app authenticate to the StoreFront server by using the certificate that is installed on the client machine. CID declares the user's smart card identity to a StoreFront server without performing a smart card-based authentication.

The latest version for Certificate Identity Declaration for Citrix Workspace for Windows is 2212.

For more information, see the Certificate Identity Declaration SDK for Citrix Workspace app for Windows documentation.

Citrix Common Connection Manager SDK

Common Connection Manager (CCM) SDK provides a set of native APIs that enables you to interact and perform basic operations programmatically. This SDK does not require a separate download because it is a part of the Citrix Workspace app for Windows installation package.

Note:

Some of the APIs that are related to launch require the ICA file to initiate the launch process to virtual apps and desktops sessions.

The CCM SDK capabilities include:

- Session launch
 - Allows launching applications and desktops using the generated ICA file.
- Session disconnect

- Similar to the disconnect operation using the Connection Center. The disconnect can be for all the sessions or to a specific user.
- · Session logoff
 - Similar to the logoff operation using the Connection Center. The logoff can be for all the sessions or to a specific user.
- Session information
 - Provides different methods to get connection-related information of the sessions launched. The session includes desktop session, application session, and reverse seamless application session

For more information about the SDK documentation, see Programmers guide to Citrix CCM SDK.

Citrix Virtual Channel SDK

The Citrix Virtual Channel software development kit (SDK) 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.

The latest version for Virtual Channel SDK for Windows is 2302.

For more information, see Citrix Virtual Channel SDK for Citrix Workspace app for Windows documentation.

Fast Connect 3 Credential Insertion API

The Fast Connect 3 Credential Insertion API provides an interface that supplies user credentials to the single sign-on (SSON) feature. This feature is available in Citrix Workspace app for Windows Version 4.2 and later. With this API, Citrix partners can provide authentication and SSO products that use StoreFront to log users on to virtual applications or desktops and then disconnect users from those sessions.

The latest version for Fast Connect API for Citrix Workspace for Windows is **2212**.

For more information, see Fast Connect 3 Credential Insertion API for Citrix Workspace app for Windows documentation.

Scripts for deploying Citrix Workspace for Windows

These are sample scripts to deploy and configure Citrix Workspace app.

The latest version for Scripts for deploying Citrix Workspace for Windows is **2212**.

Storebrowse

September 27, 2023

Note:

This article is applicable to on-premises deployments of Citrix Workspace only. For cloud deployements, see Storebrowse for Workspace documentation.

Storebrowse is a command-line utility that interacts between the client and the server. It's used to authenticate all the operations within StoreFront and with Citrix Gateway.

Using the **Storebrowse** utility, administrators can automate the following operations:

- Add a store.
- List the published apps and desktops from a configured store.
- Generate an ICA file by selecting any published virtual apps and desktops manually.
- Generate an ICA file using the **Storebrowse** command line.
- Launch the published application.

The **Storebrowse** utility is a part of the Authmanager component. When Citrix Workspace app installation is complete, the **Storebrowse** utility is in the AuthManager installation folder.

To confirm that the **Storebrowse** utility is installed along with the Authmanager component, check the following registry path:

When Citrix Workspace app is installed by administrators:

On a 32-bit machine	[HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\Autl	nManager\Inst
On a 64-bit machine	[HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432	Node\Citrix\A

When Citrix Workspace app is installed by users (non-administrators):

On a 32-bit machine	[HKEY_CURRENT_USER\SOFTWARE\Citrix\AuthManager\Inst
On a 64-bit machine	[HKEY_CURRENT_USER\SOFTWARE\WOW6432Node\Citrix\A

Requirements

- Citrix Workspace app Version 1808 for Windows or later.
- Minimum of 530 MB of free disk space.
- 2 GB RAM.

Compatibility Matrix

Storebrowse utility is compatible with the following Operating systems:

Operating system

Windows 10 32-bit and 64-bit editions

Windows Server 2022

Windows Server 2016

Windows Server 2008 R2, 64-bit edition

Windows Server 2008 R2, 64-bit edition

Connections

Storebrowse utility supports the following types of connections:

- HTTP store
- HTTPS store
- Citrix Gateway 11.0 and later

Note

On an HTTP store, the **Storebrowse** utility does not accept credentials using the command-line.

Authentication methods

StoreFront servers

StoreFront supports different authentication methods to access stores, however, not all are recommended. For security purposes, some of the authentication methods are disabled by default while creating a store.

- **Username and Password**: Enter the credentials to be authenticated to access stores. By default, Explicit authentication is enabled when you create your first store.
- **Domain Pass-through**: After authenticating to the domain-joined windows computers, you're automatically logged on to stores. To use this option, enable pass-through authentication when installing the Citrix Workspace app. For more information on domain pass-through, see Configuring Pass-through authentication.
- HTTP Basic: This method is used by third-party client integrations and web portals, where an
 external user interface has been used to capture a domain-qualified user name and password.
 StoreFront uses the Basic Authentication feature in IIS to transport the credentials to the StoreFront server. StoreFront then uses either the Domain Services, or the Broker XML Service authentication to validate the credentials and to obtain the group information. For information on
 how to enable HTTP Basic authentication, see HTTP Basic in the Manage authentication methods documentation.

Storebrowse utility supports authentication methods in any of the following methods:

- Using the AuthManager that is in-built along with the Storebrowse utility. Note: Enable the
 HTTP Basic authentication method on the StoreFront while working with the Storebrowse utility. This method applies when the user provides the credentials using the Storebrowse commands.
- Use the Authmanager that is included with Citrix Workspace app for Windows. You can use this method, when you use domain pass-through authentication. For more information, see Domain pass-through authentication documentation.

Launch published desktop or application

You can now launch a resource directly from the store without having to use an ICA file.

Note:

You can't open SaaS apps or published content using Storebrowse commands.

Command usage

The following section provides detailed information about the commands that you can use from the **Storebrowse** utility.

Add a store

```
-a, --addstore
```

Description:

Adds new store. Returns the full URL of the store. If the return fails, an error is reported.

Note:

Multi-store configuration is supported on the **Storebrowse** utility.

Command example on StoreFront:

Command:

```
storebrowse.exe -U *username* -P *password* -D *domain* -a *URL of Storefront
*
```

Example:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -a [https://
my.firstexamplestore.net](https://my.firstexamplestore.net)
```

Command example on Citrix Gateway:

Command:

```
storebrowse.exe -U *username* -P *password* -D *domain* -a *URL of CitrixGateway
*
```

Example:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -a <https://
mysecondexample.com>
```

Help

/?

Description:

Provides details on **Storebrowse** utility usage.

List store

```
(-l), --liststore
```

Description:

Lists the stores that are added by the user.

Command Example on StoreFront:

```
.\storebrowse.exe -l
```

Command Example on Citrix Gateway:

```
.\storebrowse.exe -l
```

Enumerate

```
(-M \ 0x2000 \ -E)
```

Description:

Enumerates resources.

Command example on StoreFront:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -M 0x2000 -E
<https://my.firstexamplestore.net/Citrix/Store/discovery>
```

Command example on Citrix Gateway:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -M 0x2000 -E
<https://my.secondexample.net>
```

Quick launch

```
-q,--quicklaunch
```

Description:

Generates the ICA file for published apps and desktops using the **Storebrowse** utility. The quicklaunch option requires a launch URL as an input along with the Store URL. The launch URL which can either be the StoreFront server or the Citrix Gateway URL. The ICA file is generated in the %LocalAppData%\Citrix\Storebrowse\cache directory.

You can get the launch URL for any published apps and desktops by running the following command:

```
.\storebrowse -M 0X2000 -E https://myfirstexamplestore.net/Citrix/Second/
discovery
```

A typical launch URL is as follows:

```
'Controller.Calculator''\' ''http://abc-sf.xyz.com/Citrix/
Stress/resources/v2/Q29udHJvbGxlci5DYWxjdWxhdG9y/launch/ica
```

Command example on StoreFront:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -q { Launch_URL_of_publa
apps and desktops } <https://my.firstexamplestore.net/Citrix/Store/resources
/v2/Q2hJkOlmNoPQrSTV9y/launch/ica> <https://my.firstexamplestore.net/Citrix
/Store/discovery>
```

Command example on Citrix Gateway:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -q { Launch_URL_of_pub?
apps and desktops } <https://my.secondexmaplestore.com>
```

Launch

```
-L, --launch
```

Description:

Generates the required ICA file for published apps and desktops using the **Storebrowse** utility. The launch option requires the name of the resource along with the Store URL. The name which can either be the StoreFront server or the Citrix Gateway URL. The ICA file is generated in the %LocalAppData %\Citrix\Storebrowse\cache directory.

Run the following command to get the display name of the published apps and desktops:

```
.\storebrowse -M 0X2000 -E https://myfirstexamplestore.net/Citrix/Second/
discovery
```

This command results in the following output:

```
'Controller.Calculator''Calculator''\' ''http://abc-sf.xyz.com/Citrix/Stress/resources/v2/Q29udHJvbGxlci5DYWxjdWxhdG9y/launch/ica
```

The name that is in bold in the previous output is used as an input parameter to the launch option.

Command example on StoreFront:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -L "{
Resource_Name } <a href="https://my.firstexamplestore.net/Citrix/Store/discovery">https://my.firstexamplestore.net/Citrix/Store/discovery</a>
```

Command example on Citrix Gateway:

```
<.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -L { Resource_Name } https://my.secondexamplestore.com>
```

Session launch

```
-S, --sessionlaunch
```

Description:

With this command, you can add a store, verify, and launch the published resources. This option takes the following as parameters:

- User name
- Password
- Domain
- · Name of the resource to be launched
- Store URL

However, if the user does not provide the credentials, the AuthManager prompts to enter the credentials and then the resource is launched.

You can get the name of the resource of published apps and desktops by running the following command:

```
.\storebrowse -M 0X2000 -E https://myfirstexamplestore.net/Citrix/Second/
discovery
```

This command results in the following output:

```
'Controller.Calculator''Calculator''\' ''http://abc-sf.xyz.com/Citrix/
Stress/resources/v2/Q29udHJvbGxlci5DYWxjdWxhdG9y/launch/ica
```

The name that is in bold in the previous output is used as the input parameter to the -S option.

Command example on StoreFront:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -S "{
Friendly_Resource_Name } <a href="https://my.firstexamplestore.net/Citrix/Store/discovery">https://my.firstexamplestore.net/Citrix/Store/discovery</a>>
```

Command example on Citrix Gateway:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -S { Friendly_Resource_
} <a href="https://my.secondexamplestore.com">https://my.secondexamplestore.com</a>
```

File folder

```
-f,--filefolder
```

Description:

Generates the ICA file in the custom path for the published apps and desktops.

The launch option requires a folder name and the name of the resource as the input with the Store URL. The Store URL can either be the StoreFront server or the Citrix Gateway URL.

Command example on StoreFront:

```
.\storebrowse.exe -f "C:\Temp\Launch.ica" -L "Resource_Name" { Store }
```

Command example on the Citrix Gateway:

```
.\storebrowse.exe -f "C:\Temp\Launch.ica" -L "Resource_Name" { NSG_URL }
```

Trace authentication

```
-t, --traceauthentication
```

Description:

Generates logs for the AuthManager component. Logs are generated only if the **Storebrowse** utility is using an in-built AuthManager. Logs are generated in the localappdata%\Citrix\Storebrowse \logs directory.

Note:

This option must not be the last parameter listed in the user's command line.

Command example on StoreFront:

```
.\storebrowse.exe -t -U { UserName } -P { Password } -D { Domain } -a {
StoreURL }
```

Command example on Citrix Gateway:

```
.\storebrowse.exe -t -U { UserName } -P { Password } -D { Domain } -a { NSG\_URL }
```

Delete a store

```
-d, --deletestore
```

Description:

Deletes existing StoreFront or Citrix Gateway store.

Command example on StoreFront:

```
.\storebrowse.exe -d https://my.firstexamplestore.net/Citrix/Store/discovery
```

Command example on Citrix Gateway:

```
.\storebrowse.exe -d https://my.secondexmaplestore.com
```

Tracking Storebrowse command status

Starting with 2305.1 release, you can track the execution status of a Storebrowse command in a file. To track the success status, provide a unique file name with the -f launch command. This command generates a file with the name that you have provided. The failure status is present in the ica.error file, which is created automatically.

Note:

Ensure that you add an .ica extension to the file name with -f launch command. Otherwise, the file isn't generated.

The files to track both success and failure are present at %LOCALAPPDATA%\citrix\selfservice \cache and you can monitor these files as needed.

This enhancement is enabled by default.

Following is an example to use the launch command with -f option:

Single sign-on support with Citrix Gateway

Single sign-on lets you authenticate to a domain and use the Citrix Virtual Apps and Desktops and Citrix DaaS (formerly Citrix Virtual Apps and Desktops service) that the domain provides. You can sign in without having to reauthenticate to each app or desktop. When you add a store, your credentials pass through the Citrix Gateway server, along with the Citrix Virtual Apps and Desktops and Citrix DaaS, and Start menu settings.

This feature is supported on Citrix Gateway Version 11 and later.

Prerequisites:

For the prerequisites on how to configure Single Sign-On for the Citrix Gateway, see Configure domain pass-through authentication.

The single sign-on feature with Citrix Gateway can be enabled using the Group Policy Object (GPO) administrative template.

- 1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc
- 2. Under the Computer Configuration node, go to Administrative Template > Citrix Component > Citrix Workspace > User Authentication > Single Sign-on for Citrix Gateway.
- 3. Use the toggle options to Enable or Disable the Single Sign-On option.
- 4. Click Apply and OK.

5. Restart the Citrix Workspace app session for the changes to take effect.

Limitations:

- Enable the **HTTP Basic Authentication** method on the StoreFront server for credential injection operations with the **Storebrowse** utility.
- If you have an HTTP store and try to connect to the store using the utility to check or launch the
 published virtual apps and desktops, the credential injection using the command-line option is
 unsupported. As a workaround, use the external AuthManager module if you do not provide
 credential using the command line.
- **Storebrowse** utility currently supports only single store configured the Citrix Gateway on the StoreFront server.
- Credential Injection in the **Storebrowse** utility works only if the Citrix Gateway is configured with Single-Factor Authentication.
- The command-line options Username (-U), Password (-P) and Domain (-D) of the **Store-browse** utility are case-sensitive and must be in upper case only.

To enable SSON for third-party applications that uses ICOSDK, create the following registry:

- Registry Key: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\ICA Client\NonIEAppsWithSson
- Registry Value: full path of the third-party applications
- Registry Type: reg_multi_sz

Example:

- Registry Key: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\ICA Client\NonIEAppsWithSson
- Registry Value: C:\temp1\abc.exe;C:\temp2\xyz.exe
- Registry Type: reg_multi_sz

Note:

- You can provide multiple third-party applications separated by semicolon.
- This feature is supported on Version 2107 onwards.

Storebrowse for Workspace

September 27, 2023

Citrix Workspace app for Windows provides **Storebrowse** support on self-service and on-premises deployment of Citrix Workspace app. It also enables **Storebrowse** users to access Cloud and Workspace features.

Note:

- This article is applicable to cloud deployments of Citrix Workspace only. For on-premises deployements, see Storebrowse documentation.
- This feature provides **Storebrowse** support with Single sign-on only.
- The prerequisites mentioned in System requirements and compatibility must be available to use this feature.
- You can't open SaaS apps or published content using Storebrowse commands.

Command usage

The following section provides detailed information about the commands that you can use from the **Storebrowse** utility.

Note:

- This feature also supports other self-service plug-in commands as mentioned in the CTX200337.
- You can execute the following commands in the command prompt.
- -a "discoveryurl": Adds a store via command line. This command doesn't show the Authentication prompt where SSO is enabled. For example, AAD domains join devices where authentication happens through webview. On other devices, the Authentication prompt appears.
 - Example: SelfService.exe storebrowse -a "https://cwawiniwstest. cloudburrito.com/citrix/store/discovery"
- -d "discoveryurl": Deletes the store.
 - Example: SelfService.exe storebrowse -d "https://cwawiniwstest. cloudburrito.com/citrix/store/discovery"
- -e "discoveryurl": Exports the resource details in the JSON format. This command stores the resource.json file in the %LOCALAPPDATA%\citrix\selfservice default location. Citrix workspace app must be active to run this command and user must be signed in.
 - Example: SelfService.exe storebrowse -e "https://cwawiniwstest. cloudburrito.com/citrix/store/discovery"

You can also specify your own path if you don't want to store the resource.json in the default location.

- Example: .\SelfService.exe storebrowse -e "https://cwawiniwstest .cloudburrito.com/citrix/store/discovery""C:\Users\<username>\ Documents\Fiddler2". This stores the resource.json file in the C:\Users\<username >\Documents\Fiddler2.

- -q "FriendlyName""discoveryurl": Use this command to perform quick launch of the specified resource.
 - Example: SelfService.exe storebrowse -q "Excel 2016""https://cwawiniwstest.cloudburrito.com/citrix/store/discovery"
- -launch "launchcommandline": Launch of resources using "launchcommandline" from resource.json.

Note:

- Copy the "launchcommandline" from the resource.json.
- Remove / from the "launchcommandline" specified in the resource.json file before executing the command.
- Example: SelfService.exe storebrowse -launch -s store0-5c3ec017 CitrixID store0-5c3ec017@@a9a8e3ac-099d-4577-b84e-e33d0695df39.
 Notepad -ica "https://cwawiniwstest.cloudburrito.com/Citrix/Store/
 resources/v2/YTlh0GUzYWMtMDk5ZC00NTc3LWI4NGUtZTMzZDA20TVkZjM5Lk5vdGVwYWQ
 -/launch/ica"-cmdline

After executing the -launch "launchcommandline", the ica file will be stored in the % LOCALAPPDATA%\citrix\selfservice\cache directory. Double-click the ica file to launch the resource.

- -liststore: Lists the stores that are added inside SSP. Store list to include storeID, discovery
 url for each store.
 - Example: SelfService.exe storebrowse -liststore

Note:

Citrix Workspace app must be active to execute the -liststore command.

Selfservice.exe storebrowse -liststore command stores the storedetails.json file in the AppData\Local\Citrix\SelfService.

Troubleshoot

September 26, 2023

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, provides support.

You can collect logs using the GUI.

Collecting logs:

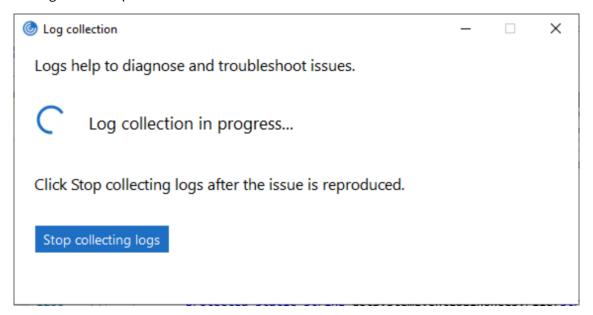
- 1. Right-click the Citrix Workspace app icon in the notification area and select **Advanced Preferences**.
- 2. Select Log collection.

The Log collection dialog appears.



- 3. Select one of the following log levels:
 - Low
 - Medium
 - Verbose
- 4. Click **Start collecting logs** to reproduce the issue and collect the latest logs.

The log collection process starts.



- 5. Click **Stop collecting logs** after the issue is reproduced.
- 6. Click **Save log** to save the logs to a desired location.

Data collected through logs

Hardware

- Attached monitors information
- · Memory information
- Network adapters
- Processor
- Direct X diagnostics information

Software

- · Citrix Workspace app version
- OS information (version, service pack, and architecture)
- Internet Explorer version
- Default browser
- · ActiveX Flash version
- · NPAPI Flash version

Registry

- HKLM\Software\Citrix\AuthManager
- HKLM\Software\Citrix\CitrixCAB
- HKLM\Software\Citrix\Dazzle
- HKLM\Software\Citrix\ICA Client
- HKLM\Software\Citrix\Install
- HKLM\Software\Citrix\InstallDetect
- HKLM\Software\Citrix\PluginPackages
- HKLM\Software\Citrix\Receiver
- HKLM\Software\Citrix\ReceiverInside
- HKLM\Software\Citrix\XenDesktop
- HKLM\Software\Policies\Citrix
- HKLM\Software\Microsoft\Windows\CurrentVersion\Internet Settings\Zones
- HKLM\Software\Microsoft\Windows\CurrentVersion\Internet Settings\ZoneMap\Domains
- HKLM\System\CurrentControlSet\Control\NetworkProvider\Order
- HKCU\Software\Citrix\AuthManager
- HKCU\Software\Citrix\CitrixCAB
- HKCU\Software\Citrix\Dazzle
- HKCU\Software\Citrix\ICA Client
- HKCU\Software\Citrix\Install
- HKCU\Software\Citrix\InstallDetect
- HKCU\Software\Citrix\PluginPackages
- HKCU\Software\Citrix\Receiver
- HKCU\Software\Citrix\ReceiverInside

- HKCU\Software\Citrix\XenDesktop
- HKCU\Software\Policies\Citrix
- $\bullet \ \ HKCU \backslash Software \backslash Microsoft \backslash Windows \backslash Current Version \backslash Explorer \backslash Visual Effects$
- HKCU\Software\Microsoft\Windows\CurrentVersion\Internet Settings\Zones
- $\bullet \ \ HKCU \backslash Software \backslash Microsoft \backslash Windows \backslash Current Version \backslash Internet\ Settings \backslash Zone Map \backslash Domains$

Event Logs

- · Application Event log
- System Event log

Tracing

- HDX
- Receiver shell, Auth Manager, and Self-Service plug-in
- Install logs
- Always-On logs

