Citrix Workspace app for Windows

Contents

About this release

June 21, 2022

What's new in 2205

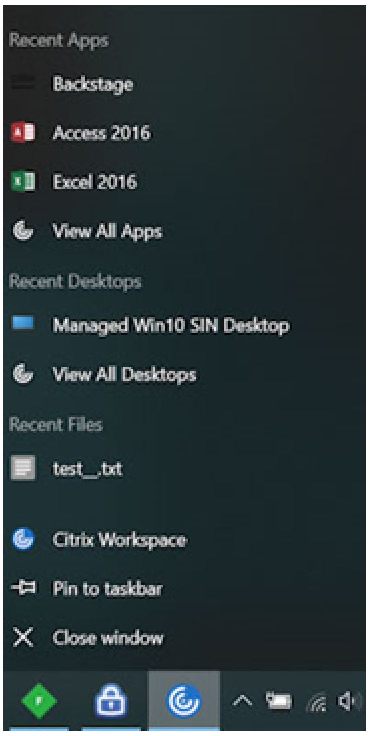
> **Note:**
>
> From this release onward, ensure that Microsoft Edge WebView2 Runtime version is 99 or later. For more information, see System requirements and compatibility.

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, desktops, and files. 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 CWA exit

When the `signoutCustomWebstoreOnExit` attribute is to True, closing the Citrix Workspace app signs you out of custom webstores. You can configure `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

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.

Citrix Workspace Browser

This release includes Citrix Workspace Browser version 99.1.1.8, based on Chromium version 99. For features or bugs fixes in the Citrix Workspace Browser, see What's new in the Citrix Workspace browser documentation.

Fixed issues in 2205

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` is not preserved on a 32-bit machine.

  [CVADHELP-19625]

Known issues in 2205

- In Citrix Workspace app for Windows, the Advanced Audio Coding (AAC) supports only a maximum of 6 channels. [CTXBR-2941]
- 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]
- When you plug-in an USB device or access files, Citrix Workspace app might show legacy **Citrix Workspace - Security Warning** dialog. [LCM-10369]

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.

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.

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

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.

> **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 Workspace Browser

This release includes Citrix Workspace Browser version 98.1.2.20, based on Chromium version 98. For features or bugs fixes in the Citrix Workspace Browser, see What's new in the Citrix Workspace browser documentation.

Microsoft Teams optimization

- **Support for secondary ringer**: You can use the **Secondary ringer** feature to select a secondary device on which you want to get the incoming call notification when Microsoft Teams is optimized (Citrix HDX optimized in About/Version). For example, if you have set a speaker as the **Secondary ringer** and your endpoint is connected to headphones, Microsoft Teams sends the incoming call signal to the speaker even though your headphones are the primary peripheral for the audio call itself. If you aren't connected to more than one audio device, or if the peripheral is not available (for example, Bluetooth headset), you can't set a secondary ringer.

  > **Note:**
  >
  > This feature is available only after the roll-out of a future update from Microsoft Teams. To know when the update is rolled-out by Microsoft, see the Microsoft 365 roadmap. You can also refer to CTX253754 for the documentation update and the announcement.

- **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.

Fixed issues

Session/Connection

- Citrix ADC appliance might crash when certain conditions are triggered from Citrix Workspace app for Windows. [HDX-39496]
- 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** under the HKEY_LOCAL_MACHINE root registry tree, instead of setting it under both `HKEY_CURRENT_USER` and `HKEY_LOCAL_MACHINE` . The **TWITaskbarGroupingMode** key is available under 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 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.

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Citrix Workspace Browser

For features or bugs fixes in the Citrix Workspace browser, see What's new in the Citrix Workspace 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 Version 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 CTX253754 for the documentation update and the announcement.

- **Multi-window chat and meetings for Microsoft Teams**

  With this release, 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 will 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 Workspace Browser

This release of the Workspace 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 404-error 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 Citrix 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 Workspace 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

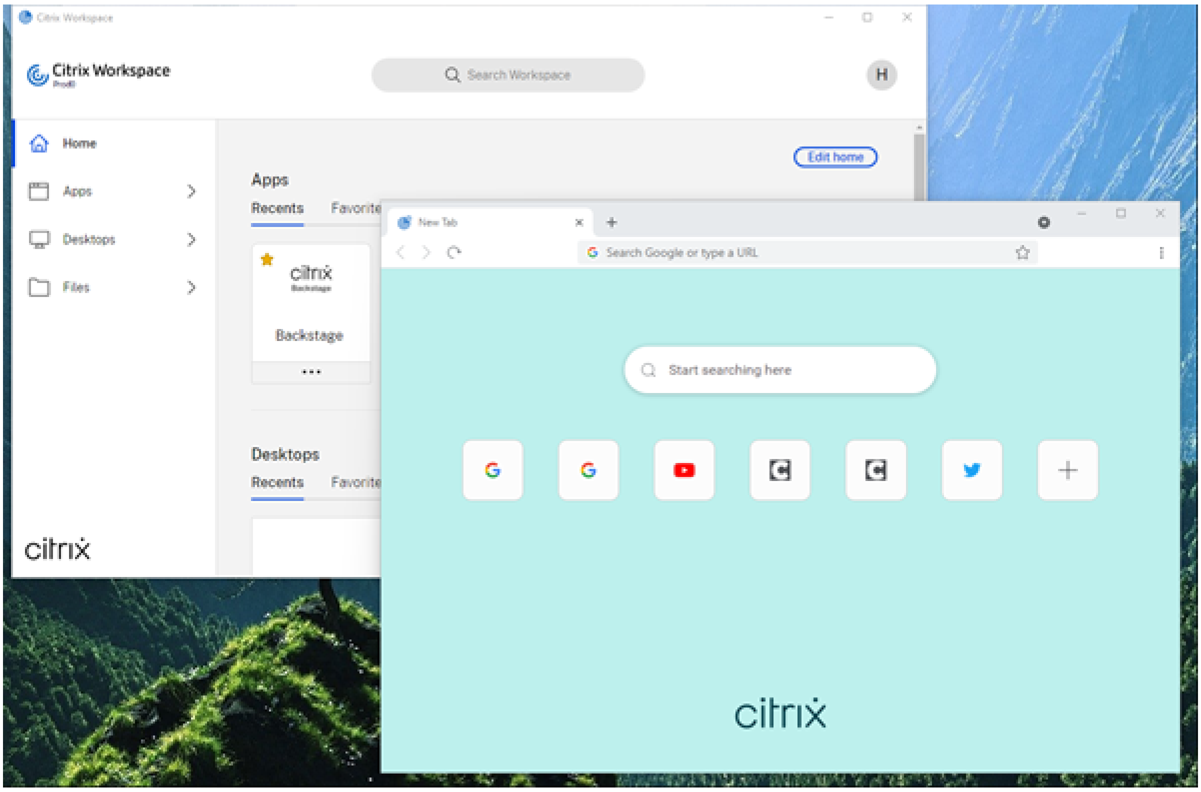
With Adaptive audio, you don't need to configure the audio quality policies on the VDA. Adaptive audio optimizes settings for your environment and replaces deprecated audio compression formats to provide an excellent user experience.

> **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 Workspace Browser

The Citrix Workspace 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 Workspace 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]

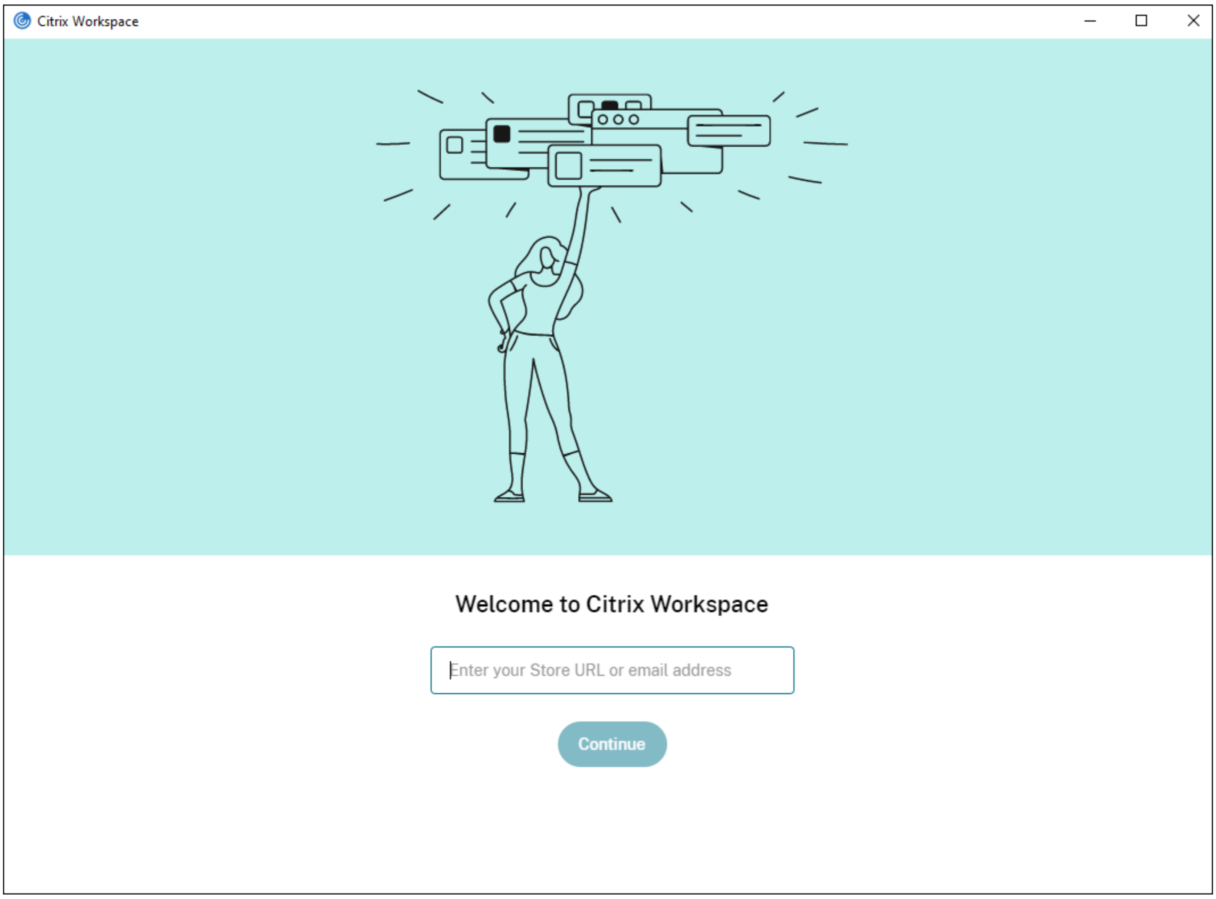
To know the existing issues within the product, see Known issues.

2108

What's new

Revamped Add Account Screen

This release introduces a revamped Add Account screen.


Citrix Workspace
Welcome to Citrix Workspace
Enter your Store URL or email address
Continue

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

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StoreFront to Workspace URL Migration [Technical preview]

When 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 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]

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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.

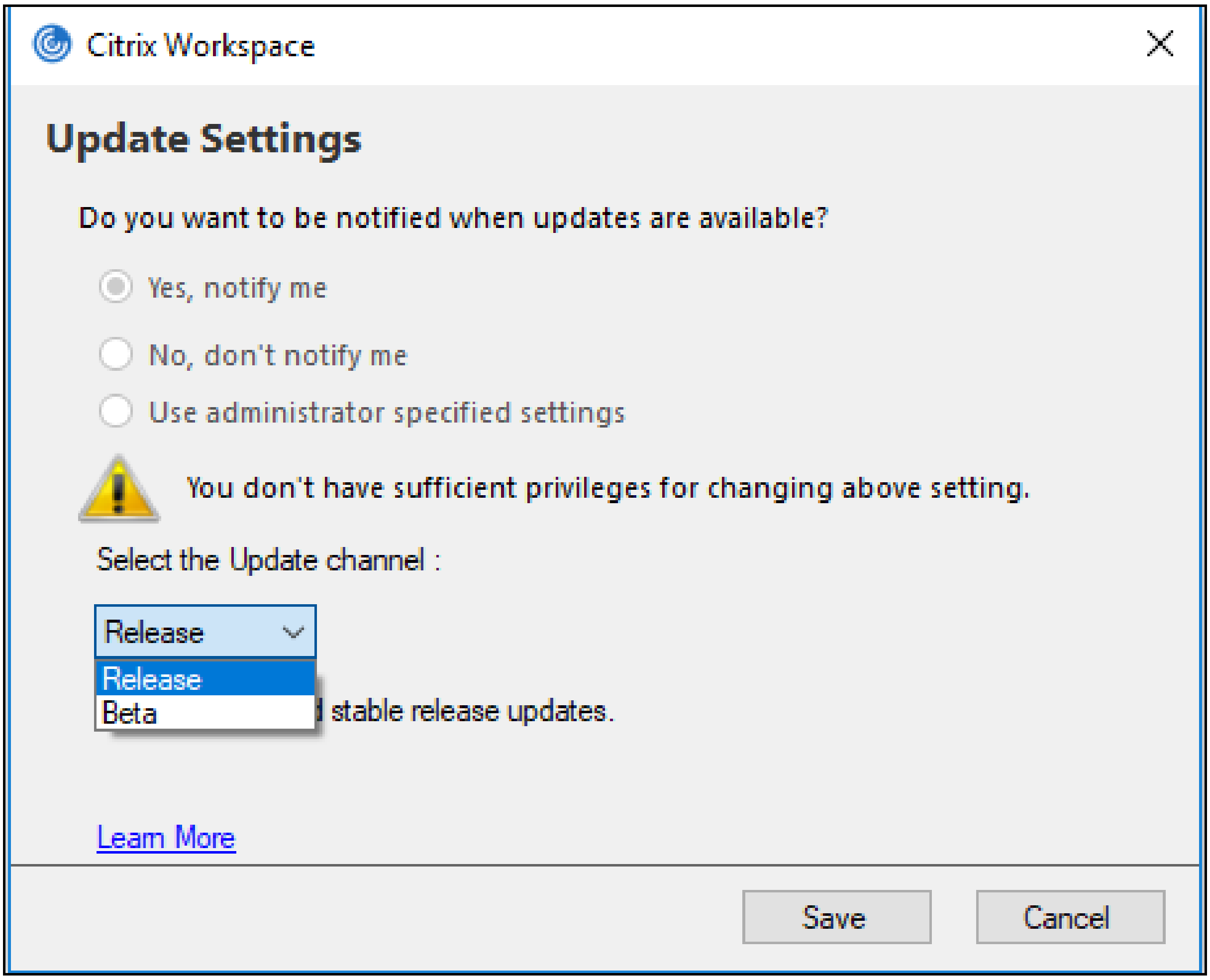
For more information on the EPA scan, see Advanced Endpoint Analysis scans.

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



Citrix Workspace

Update Settings

Do you want to be notified when updates are available?

● Yes, notify me

○ No, don't notify me

○ Use administrator specified settings

You don't have sufficient privileges for changing above setting.

Select the Update channel :

Release

stable release updates.

> **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 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 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 key 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 key 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:

```
%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:

```
%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]
- Attempting to download a file using the Microapps might fail. [CVADHELP-17438]

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]
- When you download a file from Citrix Files, some non-English file names might appear garbled. [RFWIN-22516]
- 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 Citrix 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.

2010

What's new

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

Fixed issues

Keyboard

- When you use a Japanese language keyboard, **Full-width** input mode might fail to work with Microsoft Excel launched on the local device. The issue occurs when the app protection feature is enabled. [CVADHELP-15410]

Session/Connection

- Attempts to launch applications might fail after you upgrade Citrix Workspace app for Windows from version 2006 to version 2008 or later. The issue occurs with machines running non-English (such as Swedish) number formats. [CVADHELP-15988]
- When you enable the app protection feature, the **Pause/Break** and **Num Lock** keys might be mapped incorrectly. [RFWIN-20083]
- On Citrix Workspace app for Windows, when you add a cloud account using a store URL, this error message might appear:

  "Cannot connect to server."

  The issue occurs when the URL contains an uppercase letter.

[RFWIN-20907]

- Microsoft Teams optimization: In a multi-monitor setup or a single monitor with high DPI, outgoing screen sharing might not function properly. The other peer might view a black window instead. [RFWIN-20854]

- When you click **Help** in the notification area of Citrix Workspace app for Windows, the **Help** page appears in Traditional Chinese instead of English. [RFWIN-21069]

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

2009.6

What's new

Support for FIDO2 authentication

FIDO2 authentication lets users take advantage of the local endpoint FIDO2 components. Users can now authenticate using FIDO2 security keys or integrated biometrics. Devices must have Trusted Platform Module (TPM) 2.0 and Windows Hello. For more information, see FIDO2: WebAuthn & CTAP.

Microsoft Teams enhancements

- Microsoft Teams now 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 now 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 - Now 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.

Fixed issues

- When you connect to Citrix Workspace app using a VPN and select the **Refresh apps** option, the refresh action might fail. [CVADHELP-14418]

- If you attempt to install Citrix Workspace app without configuring self-service mode, an exception might occur. The issue occurs when you open the **Shortcuts and Reconnect** menu from the **Advanced Preferences** sheet. The issue occurs with Citrix Workspace app versions 1907 through 2002. [CVADHELP-14940]

- With the registry editing tool disabled, registry keys from the previous installation might not be preserved after you perform an upgrade. As a result, attempts to launch a desktop fail. [CVADHELP-15104]
- Attempts to maximize the screen in a session that has a published instance of Microsoft Teams running might fail. [RFWIN-20051]
- Desktop sessions might turn unresponsive intermittently or get disconnected. The issue occurs when you set the **Audio Quality** option to **Medium** and enable the echo cancellation feature on the Delivery Controller. [RFWIN-20557]
- After you upgrade Citrix Workspace app, multiple Workspace app icons might appear in the notification area. [RFWIN-20589]
- When you try to access shared folders on a network, the **Windows Security** authentication prompt might not appear. [RFWIN-20599]
- In a cloud deployment, attempts to connect to a store using proxy authentication might not work. [RFWIN-20673]
- In cloud deployments, attempts to connect to an existing store might fail with the following error message:

  "Cannot Connect to Server."

  The issue occurs after you upgrade Citrix Workspace app. As a workaround, reset Citrix Workspace app or remove the store account and add it again. [RFWIN-20834]

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

2009

What's new

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

Fixed issues

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

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

2008

What's new

Group Policy Object (GPO) administrative template configuration for keyboard layout and language bar

In addition to the existing GUI method, you can now configure the keyboard layout and language bar using the Group Policy Object (GPO) administrative template.

For more information, see Keyboard layout and language bar.

CryptoKit update

Citrix Workspace app now supports Version 14.2.1 of the CryptoKit.

Language support

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

Authentication enhancement

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

> **Note:**
>
> This authentication enhancement is applicable only in cloud deployments.

Enhancement to app protection

Previously, when you try to take a screenshot of a protected window, the entire screen, including the non-protected apps in the background used to black out.

Now, when you are taking a screenshot using a snipping tool, only the protected window is blacked out. You can take a screenshot of the area outside the protected window.

However, if you're using the **PrtScr** key to capture a screenshot on a Windows 10 device, you must minimize the protected window.

This release also addresses issues to improve the app protection feature.

Enhancement to Browser Content Redirection

- Cookies are now 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.

Fixed issues

Installing, Uninstalling, Upgrading

- Attempts to use the auto-update functionality to automatically update the HDX RealTime Media Engine (RTME) along with Citrix Workspace app might fail. The RTME fails to upgrade to the latest version. [CVADHELP-15047]

Logon/Authentication

- When you configure Citrix Gateway to support single sign-on (SSO) through the Citrix Workspace app, SSO might fail. The issue occurs when a user name or password contains special characters such as %, =, and &. [CVADHELP-14564]

Session/Connection

- When you launch a published application from the Start menu without logging on to Citrix Workspace app, two windows might appear, and prompt you to log on to Citrix Workspace app. The issue occurs if you configure the PNA address as STORE0 using the CitrixReceiver.exe command. [CVADHELP-13916]
- With the **vPrefer** option enabled in Citrix Workspace app, attempts to launch an App-V application might fail with the following error message:

  Cannot start

  [CVADHELP-14039]
- The registry values related to the deprecated feature, HDX MediaStream for Flash, for example, Flash and Flash2 might exist in the registry setting, `HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\ICA 3.0\VirtualDriver`. The deprecated feature might exist after you upgrade the Citrix Workspace app. This issue can cause a connection failure. [CVADHELP-14850]
- When you use Citrix Workspace app, the self-service window might intermittently display a blank screen. [RFWIN-17563]

User Experience

- When you add an account using a store URL on Citrix Workspace app for Windows, it might take a long time to complete. The issue occurs when the URL contains a port number. [CVADHELP-14051]

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

Known issues

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]

- 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 2202

- Fresh install or update operation of Citrix Workspace app might result in delay for about 10–30 mins. For more information, see Citrix 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 Citrix 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 Workspace 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 key 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 Workspace 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 download a .txt file from Citrix Files, the Japanese file name can appear garbled. [RFWIN-22516]
- 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]

Known issues in 2010

No new issues have been observed in this release.

Known issues in 2009.6

- Attempts to minimize or maximize the Citrix Workspace app screen might distort the screen momentarily. [RFWIN-20692]

Known issues in 2009

No new issues have been observed in this release.

Known issues in 2008

- The **Print Screen** key might not capture screenshots even if/when the protected windows are minimized. When this issue occurs, exit and restart the Citrix Workspace app. [RFWIN-16777]
- When a non-administrator logs in with the FastConnect API, the Self-Service window is blank. As a workaround, restart the client device. [RFWIN-19804]
- When you launch a protected VDA session, attempts to capture a screenshot on a non-protected VDA are blocked. [RFWIN-19823]

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)

System requirements and compatibility

May 19, 2022

Requirements

- Minimum 1 GB RAM.
- Microsoft Edge WebView2 Runtime version 99 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.
  >
  > 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 Webview2 Runtime'

- Self-Service plug-in 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. For more information, see Using command-line parameters.

  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.

- 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.

> **Note:**
>
> You must be connected to the internet to download and install Microsoft Edge WebView2 Runtime, .NET Framework, and Microsoft Visual C++ Redistributable. If not, the administrator can install these requirements using a deployment method, for example, SCCM.

Compatibility matrix

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

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

> **Note:**
>
> - Citrix Workspace app 2204.1 for Windows is the last release to support the following operating systems:
>   - Windows 8.1
>   - Windows Server 2012 R2
> - Citrix Workspace app 2009.5 and later prevents installation on unsupported operating systems.
> - Support for Windows 7 has been stopped from Version 2006 onwards.
> - 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 not supported on the Windows ARM64 operating system.

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.

Operating system
Windows 10 Enterprise (2016 LTSB 1607, LTSC 2019)
Windows 10 (IoT Enterprise*, Home edition**, Pro)
Windows Server 2022
Windows Server 2019
Windows Server 2016

*Supports Windows 10 IoT Enterprise 2015 LTSB, Windows 10 IoT Enterprise 2016 LTSB, Anniversary Update, Creators Update, Falls Creators Update.
**No support for domain pass-through authentication, Desktop Lock, FastConnect API, and configurations that require domain-joined Windows machine.

Windows 10 Compatibility with Citrix Workspace app for Windows

With the Windows 10 Operating System, Microsoft introduced a new way to build, deploy, and service Windows: Windows as a service. New features are packaged into Feature Updates (major versions like 1703, 1709, 1803). Bug fixes and security fixes are packaged into Quality Updates. These updates that can be deployed using existing management tools like SCCM.

> **Note:**
>
> - We don't recommend installing Citrix software versions that are earlier to the Semi-Annual Channel version.
> - 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.

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
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
1909	18363.418	1911 and later

Windows 10 Version number	Build number	Citrix Workspace app Version
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.

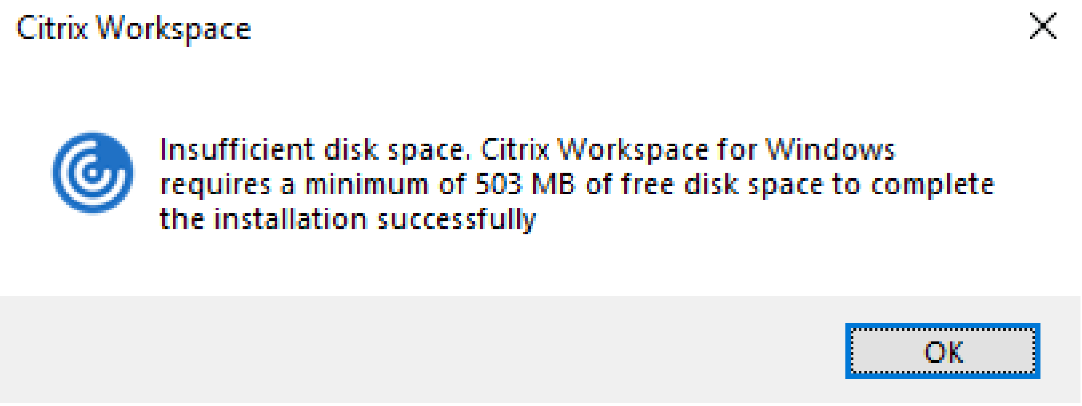
Validating free disk space

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

Citrix Workspace app does a check for the required disk space to complete the installation. The verification is done both during a fresh installation and an upgrade.

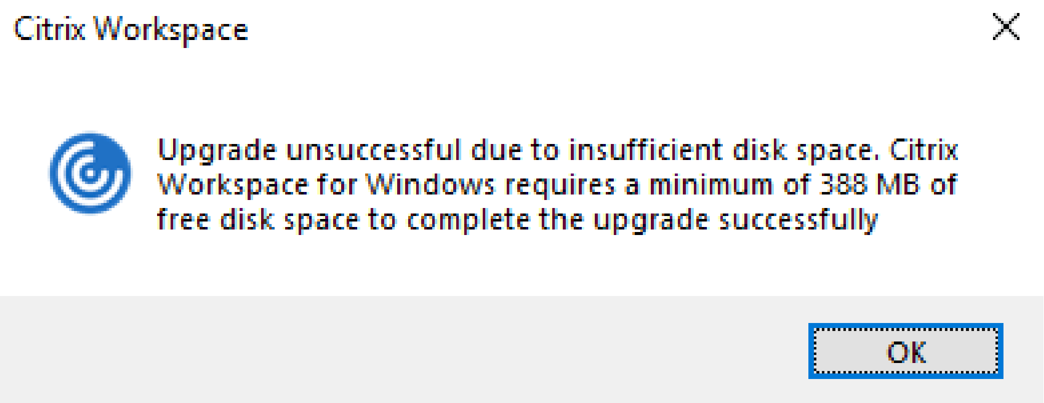
During a fresh installation, the installation stops and the following dialog appears when there's insufficient disk space:



Citrix Workspace

Insufficient disk space. Citrix Workspace for Windows requires a minimum of 503 MB of free disk space to complete the installation successfully

When you're upgrading Citrix Workspace app, the installation ends and the following dialog box appears when there's insufficient disk space.



Citrix Workspace

Upgrade unsuccessful due to insufficient disk space. Citrix Workspace for Windows requires a minimum of 388 MB of free disk space to complete the upgrade successfully

> **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 silent installation, the dialog does not appear but the error message is recorded in the `CTXInstall\\_TrolleyExpress-\*.log`.

Connections, Certificates, and Authentication

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.

Authentication

Authentication to StoreFront

	Workspace for web	StoreFront Services site (native)	StoreFront, Citrix Virtual Apps and Desktops (native), Citrix DaaS	Citrix Gateway to Workspace for web	Citrix Gateway to StoreFront Services site (native)
Anonymous	Yes	Yes			

	Workspace for web	StoreFront Services site (native)	StoreFront, Citrix Virtual Apps and Desktops (native), Citrix DaaS	Citrix Gateway to Workspace for web	Citrix Gateway to StoreFront Services site (native)
Domain	Yes	Yes	Yes	Yes*	Yes*
Domain pass-through	Yes	Yes	Yes		
Security token				Yes*	Yes*
Two-factor authentication (domain with security token)				Yes*	Yes*
SMS				Yes*	Yes*
Smart card	Yes	Yes		Yes	Yes
User certificate				Yes (Citrix Gateway plug-in)	Yes (Citrix Gateway plug-in)

* With or without the Citrix Gateway plug-in installed on the device.

> **Note:**
>
> Citrix Workspace app supports two-factor authentication (domain plus security token) using Citrix Gateway to the StoreFront native service.

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.

Install and Uninstall

June 21, 2022

You can install the Citrix Workspace app either by:

- Downloading the `CitrixWorkspaceApp.exe` installation package from the Download page 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.

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 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	C:\Program Files (x86)\Citrix\ICA Client	Per-system installation
User	%USERPROFILE%\AppData\Local\Citrix\ICA Client	Per-user installation

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

Using a Windows-based installer

You can install Citrix Workspace app for Windows by manually running the `CitrixWorkspaceApp.exe` installer package, using the following methods:

- Installation media
- Network share
- Windows Explorer
- Command-line interface

By default, the installer logs are at `%temp%\CTXReceiverInstallLogs*.logs`.

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. See Domain pass-through authentication for more information.
4. Follow the Windows-based installer to complete the installation.

When the installation is complete, Citrix Workspace app requests that you add an account. For information on how to add an account, see Add accounts or switch servers.

Using command-line parameters

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
- Install parameters
- HDX features parameters

- Preferences and user interface parameters
- Authentication parameters

Common parameters

- `/?` 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.
- `/includeSSON` - 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.
- `/forceinstall` - This switch is effective when cleaning up any existing configuration or entries of Citrix Workspace app in the system. Use this switch in the following scenarios:
  - Upgrading from an unsupported version of Citrix Workspace app version.
  - The installation or upgrade is unsuccessful.

  > **Note:**
  >
  > The `/forceinstall` switch is the replacement for `/rcu` switch. The `/rcu` switch is deprecated as of Version 1909. For more information, see Deprecation.

Install parameters

`/AutoUpdateCheck`

Indicates that Citrix Workspace app detects when an update is available.

> **Note:**
>
> The `/AutoUpdateCheck` is a mandatory parameter that you must set to configure other parameters like `/AutoUpdateStream`, `/DeferUpdateCount`, `/AURolloutPriority`.

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

`/AutoUpdateStream`

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

- LTSR - Auto-updates to Long Term Service Release cumulative updates only. Example, `CitrixWorkspaceApp.exe /AutoUpdateStream=LTSR`.
- Current - Auto-updates to the latest version of Citrix Workspace app. Example, `CitrixWorkspaceApp.exe /AutoUpdateStream=Current`.

`/DeferUpdateCount`

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

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

`/AURolloutPriority`

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.

- Auto (default) - You receive the updates during the delivery period as configured by Citrix. Example, `CitrixWorkspaceApp.exe /AURolloutPriority=Auto`.
- Fast - You receive the updates at the beginning of the delivery period. Example, `CitrixWorkspaceApp.exe /AURolloutPriority=Fast`.
- Medium - You receive the updates at the mid-delivery period. Example, `CitrixWorkspaceApp.exe /AURolloutPriority=Medium`.
- Slow - You receive the updates at the end of the delivery period. Example, `CitrixWorkspaceApp.exe /AURolloutPriority=Slow`.

`/includeappprotection`

Provides enhanced security by restricting the ability of clients to be compromised by keylogging and screen-capturing malware.

- `CitrixWorkspaceApp.exe /includeappprotection`

See App protection for more information.

`/InstallEmbeddedBrowser`

Excludes the Citrix Embedded Browser binaries. 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.

`INSTALLDIR`

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

`/IncludeCitrixCasting`

Installs Citrix Casting during installation.

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

`ADDLOCAL`

Installs one or more of the specified components. For example, `CitrixWorkspaceapp.exe ADDLOCAL=ReceiverInside,ICA_Client,USB,DesktopViewer,AM,SSON,SelfService,WebHelper,WorkspaceHub,AppProtection,CitrixWorkspaceBrowser`.

> **Note:**
>
> By default, `ReceiverInside`, `ICA_Client`, and `AM` are installed when installing the Citrix Workspace app.

HDX features parameters

`ALLOW_BIDIRCONTENTREDIRECTION`

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.

- 0 (default) – Indicates that the bidirectional content redirection is disabled. Example, `CitrixWorkspaceApp.exe ALLOW_BIDIRCONTENTREDIRECTION=0`.
- 1 - Indicates that the bidirectional content redirection is enabled. Example, `CitrixWorkspaceApp.exe ALLOW_BIDIRCONTENTREDIRECTION=1`.

`FORCE_LAA`

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. See the Local App Access section in the Citrix Virtual Apps and Desktops documentation for more information.

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

`LEGACYFTAICONS`

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

- 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. Example, `CitrixWorkspaceApp.exe LEGACYFTAICONS=False`.
- True - Doesn't display icons for documents or files that have file type associations with subscribed applications. Example, `CitrixWorkspaceApp.exe LEGACYFTAICONS=True`.

`ALLOW_CLIENTHOSTEDAPPSURL`

Enables the URL redirection feature on the user device. See the Local App Access section in the Citrix Virtual Apps and Desktops documentation for more information.

- 0 (default)- Disables the URL redirection feature on the user device. Example, `CitrixWorkspaceApp.exe ALLOW_CLIENTHOSTEDAPPSURL=0`.

- 1- Enables the URL redirection feature on the user devices. Example, `CitrixWorkspaceApp.exe ALLOW_CLIENTHOSTEDAPPSURL=1`.

Preference and user interface parameters

`ALLOWADDSTORE`

Allows you to configure the stores (HTTP or https) based on the specified parameter.

- S(default)- Allows you to add or remove secure stores only (configured with HTTPS). Example, `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. Example, `CitrixWorkspaceApp.exe ALLOWADDSTORE=A`.
- N – Never allow users to add or remove their own store. Example, `CitrixWorkspaceApp.exe ALLOWADDSTORE=N`.

`ALLOWSAVEPWD`

Allows you to save the store credentials locally. This parameter applies only to stores using the Citrix Workspace app protocol.

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

`STARTMENUDIR`

Specifies the directory for the shortcuts in the Start menu.

- `<Directory Name>` - By default, applications appear under **Start** > **All Programs**. You can specify the relative path of the shortcuts in the `\Programs` folder. For example, to place shortcuts under **Start** > **All Programs** > **Workspace**, specify `STARTMENUDIR=\Workspace`.

`DESKTOPDIR`

Specifies the directory for shortcuts on the Desktop.

> **Note:**
>
> When using the DESKTOPDIR option, set the `PutShortcutsOnDesktop` key to `True`.

- `<Directory Name>` - You can specify the relative path of the shortcuts. For example, to place shortcuts under **Start > All Programs > Workspace**, specify `DESKTOPDIR=\Workspace`.

`SELFSERVICEMODE`

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

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

`ENABLEPRELAUNCH`

Controls session pre-launch. See Application launch time for more information.

- True - Indicates that session pre-launch is enabled. Example, `CitrixWorkspaceApp.exe ENABLEPRELAUNCH=True`.
- False - Indicates that session pre-launch is disabled. Example, `CitrixWorkspaceApp.exe ENABLEPRELAUNCH=False`.

`DisableSetting`

Hides the **Shortcuts and Reconnect** option from being displayed in the **Advanced Preferences** sheet. See Hiding specific settings from the Advanced Preferences sheet for more information.

- 0 (default) – Displays both **Shortcuts** and **Reconnect** options in the Advanced Preferences sheet. Example, `CitrixWorkspaceApp.exe DisableSetting=0`.
- 1 – Displays only the **Reconnect** option in the Advanced Preferences sheet. Example, `CitrixWorkspaceApp.exe DisableSetting=1`.
- 2 – Displays only the **Shortcuts** option in the Advanced Preferences sheet. Example, `CitrixWorkspaceApp.exe DisableSetting=2`.
- 3 – Both **Shortcuts** and **Reconnect** options are hidden from the Advanced Preferences sheet. Example, `CitrixWorkspaceApp.exe DisableSetting=3`.

`EnableCEIP`

Indicates your participation in the Customer Experience Improvement Program. See CEIP for more information.

- True (default)- Opt in to the Citrix Customer Improvement Program (CEIP). Example, `CitrixWorkspaceApp.exe EnableCEIP=True`.
- False - Opt out of the Citrix Customer Improvement Program (CEIP). Example, `CitrixWorkspaceApp.exe EnableCEIP=False`.

`EnableTracing`

Controls the **Always-on tracing** feature.

- True (default)- Enables the **Always-on tracing** feature. Example. `CitrixWorkspaceApp.exe EnableTracing=true`.
- False - Disables the **Always-on tracing** feature. Example, `CitrixWorkspaceApp.exe EnableTracing=false`.

`CLIENT_NAME`

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%`.

`ENABLE_DYNAMIC_CLIENT_NAME`

Allows the client name to be the same as the computer name. When you change the computer name, the client name changes too.

- Yes (default) – Allows the client name to be the same as the computer name. Example, `CitrixWorkspaceApp.exe ENABLE_DYNAMIC_CLIENT_NAME=Yes`.
- No - Does not allow the client name to be the same as the computer name. Specify a value for the `CLIENT_NAME` property. Example, `CitrixWorkspaceApp.exe ENABLE_DYNAMIC_CLIENT_NAME=No`.

Authentication parameters

`ENABLE_SSON`

Enables single sign-on when the Workspace app is installed with the `/includeSSON` command. See Domain pass-through authentication for more information.

- Yes (default) - Indicates that single sign-on is enabled. Example, `CitrixWorkspaceApp.exe ENABLE_SSON=Yes`.

- No - Indicates that single sign-on is disabled. Example, `CitrixWorkspaceApp.exe ENABLE_SSON=No`.

ENABLE_KERBEROS

Specifies whether the HDX engine must use Kerberos authentication, required only when you enable single sign-on authentication. For more information, see Domain pass-through authentication with Kerberos.

- Yes - Indicates that the HDX engine must use Kerberos authentication. Example, `CitrixWorkspaceApp.exe ENABLE_KERBEROS=Yes`.
- No - Indicates that the HDX engine doesn't use Kerberos authentication. Example, `CitrixWorkspaceApp.exe ENABLE_KERBEROS=No`.

In addition to the above properties, you can also specify the store URL that is used with the Workspace app. You can add up to 10 stores. Use the following property to do so:

`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 StoreFront 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`.

Examples of a command-line installation

To specify the Citrix Gateway store URL:

`CitrixWorkspaceApp.exe STORE0= HRStore;https://ag.mycompany.com##Storename;On;Store`

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

> **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.

To install all components silently and specify two application stores:

```
CitrixWorkspaceApp.exe /silent
STORE0=”AppStore;https://testserver.net/Citrix/MyStore/discovery;on;HR App
Store”
STORE1=”BackUpAppStore;https://testserver.net/Citrix/MyBackupStore/discovery
;on;Backup HR App Store”
```

> **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.

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:

```
C:\Program Files (x86)\Citrix\ICA Client\SelfServicePlugin\CleanUp.exe”-
cleanUser
```

For silent reset, use the following command:

```
C:\Program Files (x86)\Citrix\ICA Client\SelfServicePlugin\CleanUp.exe”/
silent -cleanUser
```

> **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.

Uninstall

Using Windows-based uninstaller:

You can uninstall Citrix Workspace app using the Windows Programs and Features utility (Add or Remove Programs).

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

Using the command-line interface:

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

```
CitrixWorkspaceApp.exe /uninstall
```

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

```
CitrixWorkspaceApp.exe /silent /uninstall
```

> **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.

Deploy

February 22, 2022

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.

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	`CheckAndDeployWorkspaceF .bat`	`CheckAndRemoveWorkspacePerMachineS .bat`
Per-user	`CheckAndDeployWorkspacePerUserLogonScript .bat`	`CheckAndRemoveWorkspacePerUserLogo .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.exe`to `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 pass-through.
      - `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 deployment 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 **4.3.0.65534**

    > **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

1. 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

1. 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

1. 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** for 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 **MSIRESTARTMANAGERCONTROL** 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 Operation System Architecture list. Operation 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.

Update

February 22, 2022

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

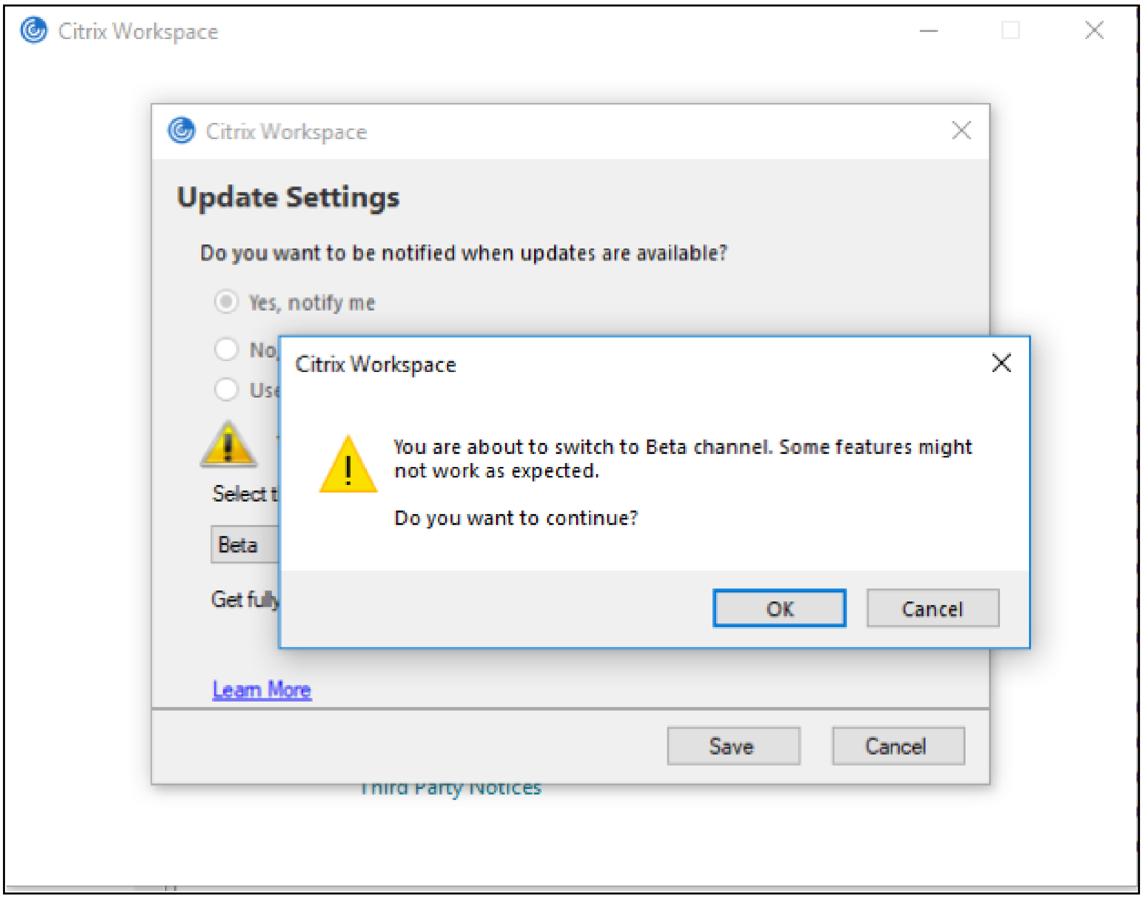
> Workspace auto-update signature service `https://citrixupdates.cloud.com/` and the download location `https://downloadplugins.citrix.com/` to receive updates from Citrix.
>
> - Your system must have an internet connection to receive updates.
> - By default, Citrix Workspace updates are disabled on 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 user-installed and the admin-installed instances of Citrix Workspace app.

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

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.



Update Settings

Do you want to be notified when updates are available?

○ Yes, notify me

You are about to switch to Beta channel. Some features might not work as expected.

Do you want to continue?

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.

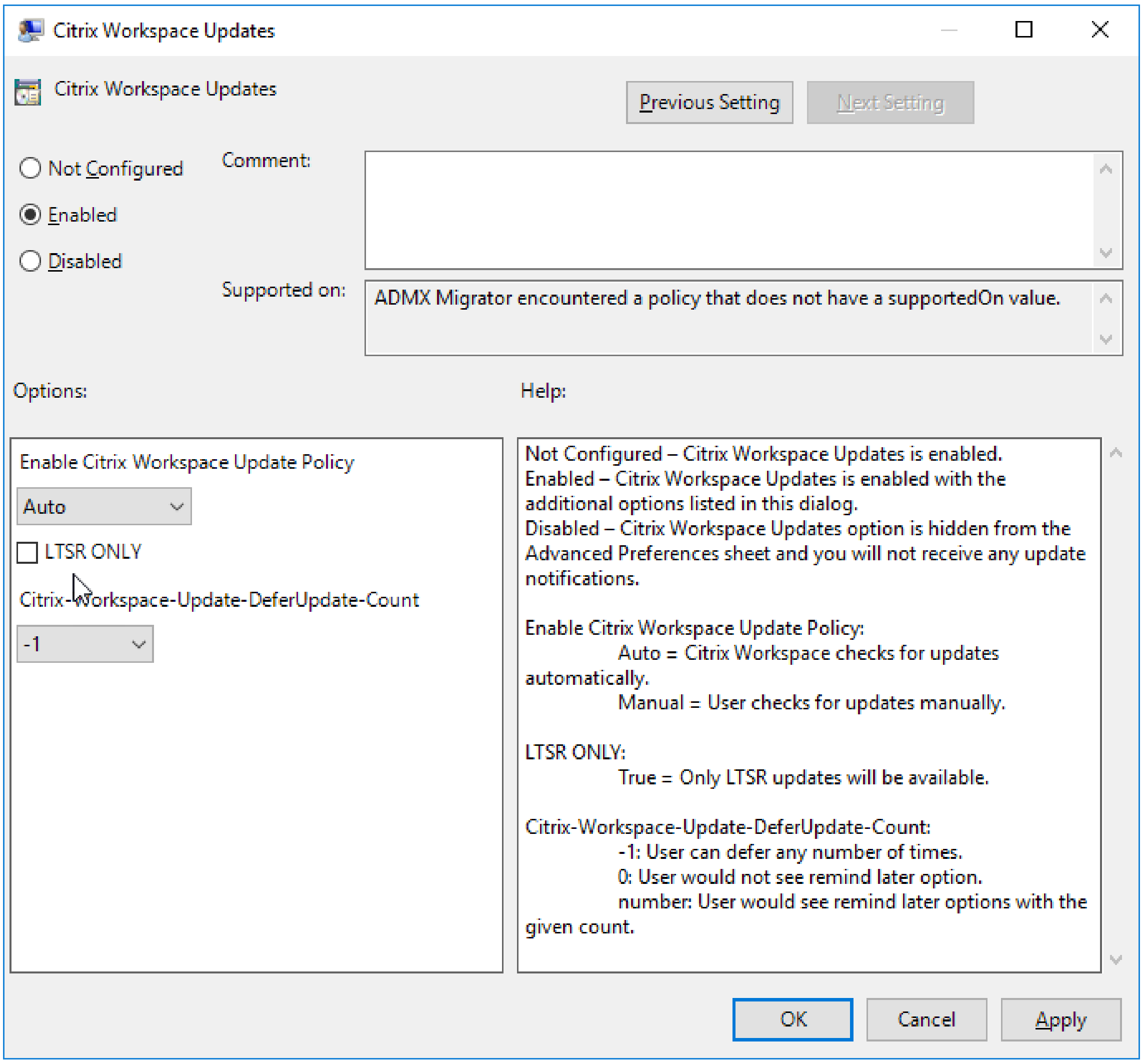
Advanced configuration for automatic updates (Citrix Workspace Updates)

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**.



○ Not Configured
● Enabled
○ Disabled

Supported on: ADMX Migrator encountered a policy that does not have a supportedOn value.

Enable Citrix Workspace Update Policy: Auto

□ LTSR ONLY

Citrix-Workspace-Update-DeferUpdate-Count: -1

Not Configured – Citrix Workspace Updates is enabled.
Enabled – Citrix Workspace Updates is enabled with the additional options listed in this dialog.
Disabled – Citrix Workspace Updates option is hidden from the Advanced Preferences sheet and you will not receive any update notifications.

Enable Citrix Workspace Update Policy:
Auto = Citrix Workspace checks for updates automatically.
Manual = User checks for updates manually.

LTSR ONLY:
True = Only LTSR updates will be available.

Citrix-Workspace-Update-DeferUpdate-Count:
-1: User can defer any number of times.
0: User would not see remind later option.
number: User would see remind later options with the given count.

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

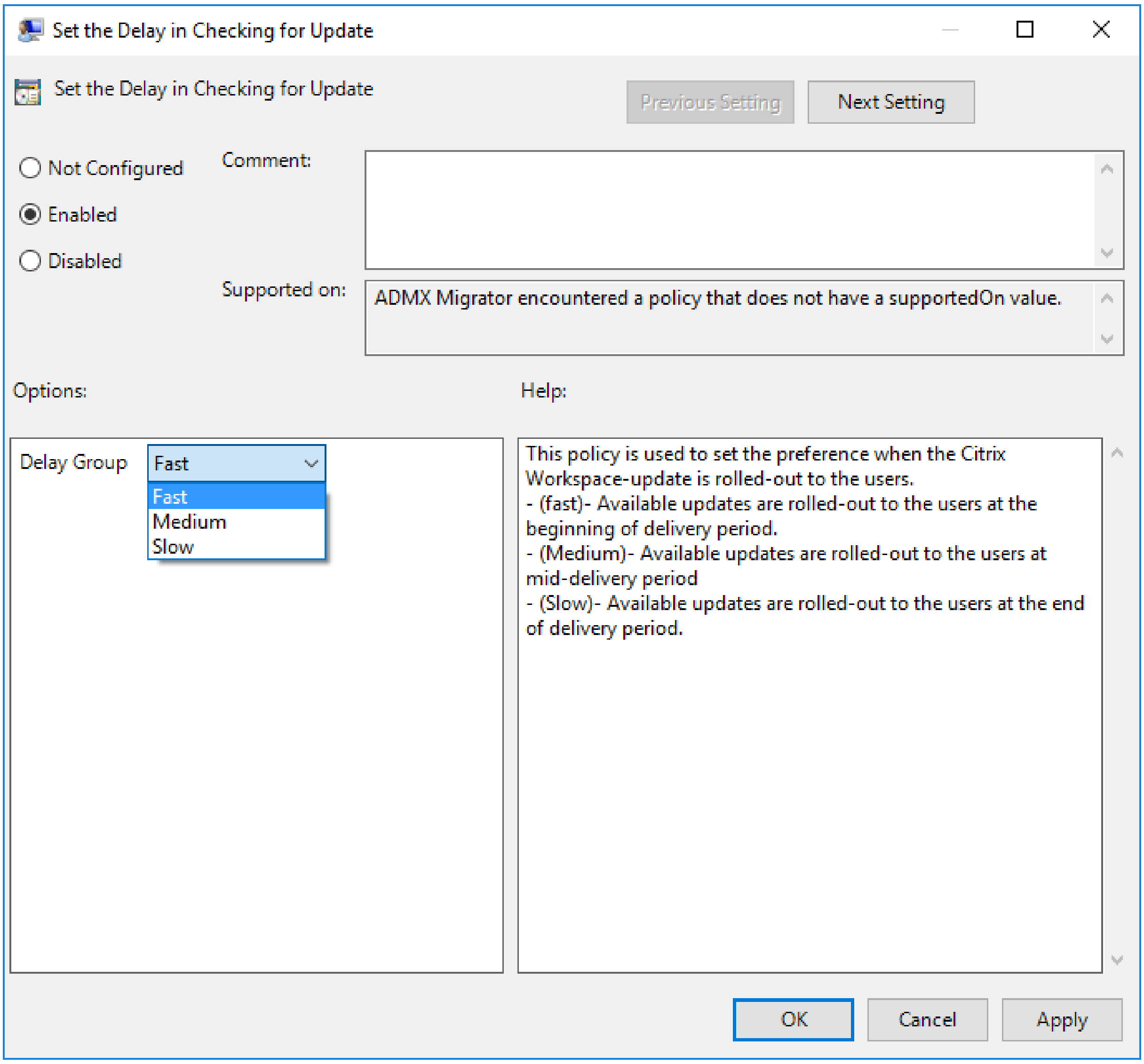
> **Note:**
>
> When you select **Disabled**, you aren't notified of new updates. **Disabled** option also hides the Workspace Updates option from the Advanced Preferences sheet.

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).
   - 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 then the **Remind Me Later** option appears. **Update available** prompt is shown on every periodic automatic check for update.
   - If the value is -1 then 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.

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**.



Set the Delay in Checking for Update

○ Not Configured
● Enabled
○ Disabled

Comment:

Supported on: ADMX Migrator encountered a policy that does not have a supportedOn value.

Options:

Delay Group: Fast

Help:

This policy is used to set the preference when the Citrix Workspace-update is rolled-out to the users.
- (fast)- Available updates are rolled-out to the users at the beginning of delivery period.
- (Medium)- Available updates are rolled-out to the users at mid-delivery period
- (Slow)- Available updates are rolled-out to the users at the end of delivery period.

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,

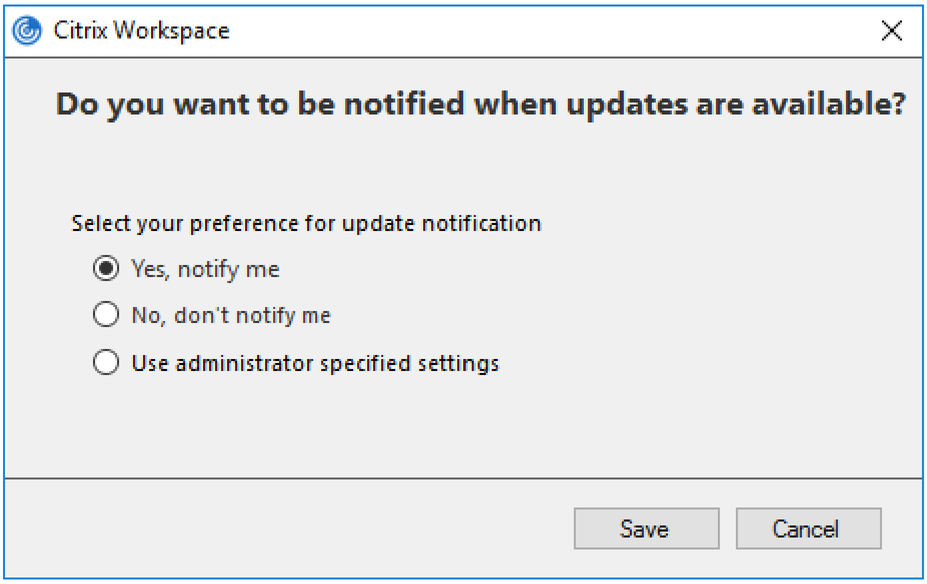
```
CitrixReceiverUpdater.exe /AutoUpdateCheck=auto /AutoUpdateStream=Current /
DeferUpdateCount=-1 /AURolloutPriority= fast
```

> **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 the notification preference and click **Save**.



Citrix Workspace

Do you want to be notified when updates are available?

Select your preference for update notification

● Yes, notify me

○ No, don't notify me

○ Use administrator specified settings

> **Note:**
>
> 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:

   ```
   <properties>
          <clear/>
    </properties>
    <!--NeedCopy-->
   ```

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

   ```
   <account>

       <clear />

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

         description=”” published=”true” updaterType=”Citrix” remoteAccessType=”None”>

         <annotatedServices>

           <clear />

           <annotatedServiceRecord serviceRef=”1__Citrix_F84Store”>

             <metadata>

               <plugins>

   ```

```
            <clear />

          </plugins>

          <trustSettings>

            <clear />

          </trustSettings>

          <properties>

            <property name=”Auto-Update-Check” value=”auto” />

            <property name=”Auto-Update-DeferUpdate-Count” value=”1” />

                    <property name=”Auto-Update-LTSR-Only” value=”FALSE” />

            <property name=”Auto-Update-Rollout-Priority” value=”fast” />

                  </properties>

        </metadata>

      </annotatedServiceRecord>

    </annotatedServices>

    <metadata>

      <plugins>

        <clear />

      </plugins>

      <trustSettings>

        <clear />

      </trustSettings>

```

```
        <properties>

          <clear />

        </properties>

      </metadata>

    </account>

<!--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-update-LTSR-Only:** Indicates that the update is for LTSR only.
- **Auto-update-Rollout-Priority:** Indicates the delivery period in which you can receive the update.
- **Auto-update-DeferUpdate-Count:** Indicates the number of counts that you can defer the notifications for the updates.

Get started

June 15, 2022

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

Prerequisites:

Verify that all the requirements are met as listed in the System requirements section.

Configure the following before using the Citrix Workspace app:

- StoreFront
- Citrix Gateway Store
- User accounts
- Client drive mapping
- Domain Name Service name resolution

StoreFront

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.

> **Note:**
>
> You might see the old StoreFront user interface if you select The **Show all Stores** option.

To configure StoreFront:

Install and configure StoreFront as described in the StoreFront documentation. Citrix Workspace app requires an HTTPS connection. On an HTTP configured StoreFront, set the registry key as described in Using command-line parameters.

> **Note:**
>
> Citrix provides a template you can use to create a download site for Citrix Workspace app for Windows.

Citrix Gateway Store

To add or specify a Citrix Gateway using the 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** > **Classic Administrative Templates (ADM)** > **Citrix Components** > **Citrix Workspace** > **StoreFront**.
3. Select **Citrix Gateway URL/StoreFront Accounts List**.
4. Edit the settings.
   - Store name – Indicates the displayed store name
   - Store URL – Indicates the URL of the store
   - #Store name – Indicates the name of the store behind Citrix Gateway
   - Store enabled state –Indicates the state of the store, On or Off
   - Store Description – Provides description of the store
5. Add or specify the Citrix Gateway URL. Enter the name of the URL, delimited by a semi-colon:

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

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 as first followed by StoreFront URLs.
- No support for Multiple Citrix Gateway URLs.
- Citrix Gateway URL configured using this method does not support the PNA Services site behind Citrix Gateway.

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`

> **Note:**
>
> You can also set the **WSCReconnectAll** key to false if you don't want to create a key.

Changing the status indicator timeout

You can change the amount of time the status indicator displays when a user is launching a session. To alter the time-out period, create a REG_DWORD value `SI INACTIVE MS` in `HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA CLIENT\Engine\`. The REG_DWORD value can be set to `4` if you want the status indicator to disappear sooner.

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 **SelfServiceMode** 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, UseCategoryAsStartMenuPath.

> **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.

Registry keys for 32-bit machines

Registry key: WSCSupported

Value: `True`

Key path:

```
- HKEY_CURRENT_USER\Software\Citrix\Dazzle
- HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store” + primaryStoreID +\Properties
- HKEY_LOCAL_MACHINE\Software\Policies\Citrix\Dazzle
- HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle
```

Registry key: WSCReconnectAll

Value: `True`

Key path:

```
- `HKEY_CURRENT_USER\Software\Citrix\Dazzle`
- `HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store” + primaryStoreID + \Properties`
- `HKEY_LOCAL_MACHINE\Software\Policies\Citrix\Dazzle`
- `HKEY_LOCAL_MACHINe\Software\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\Policies\Citrix\Dazzle
- HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle
```

Registry key: WSCReconnectModeUser

Value: Registry isn’t created during installation.

Key path:

```
- HKEY_CURRENT_USER\Software\Citrix\Dazzle
- HKEY_CURRENT_USER\Software\Citrix\Receiver\SR\Store” + primaryStoreID
   +\Properties
- HKEY_LOCAL_MACHINE\Software\Policies\Citrix\Dazzle
- HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle
```

Registry keys for 64-bit machines:

Registry key: WSCSupported

Value: `True`

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: `WSCReconnectAll`

Value: `True`

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: 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:

```
- 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
```

User accounts

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

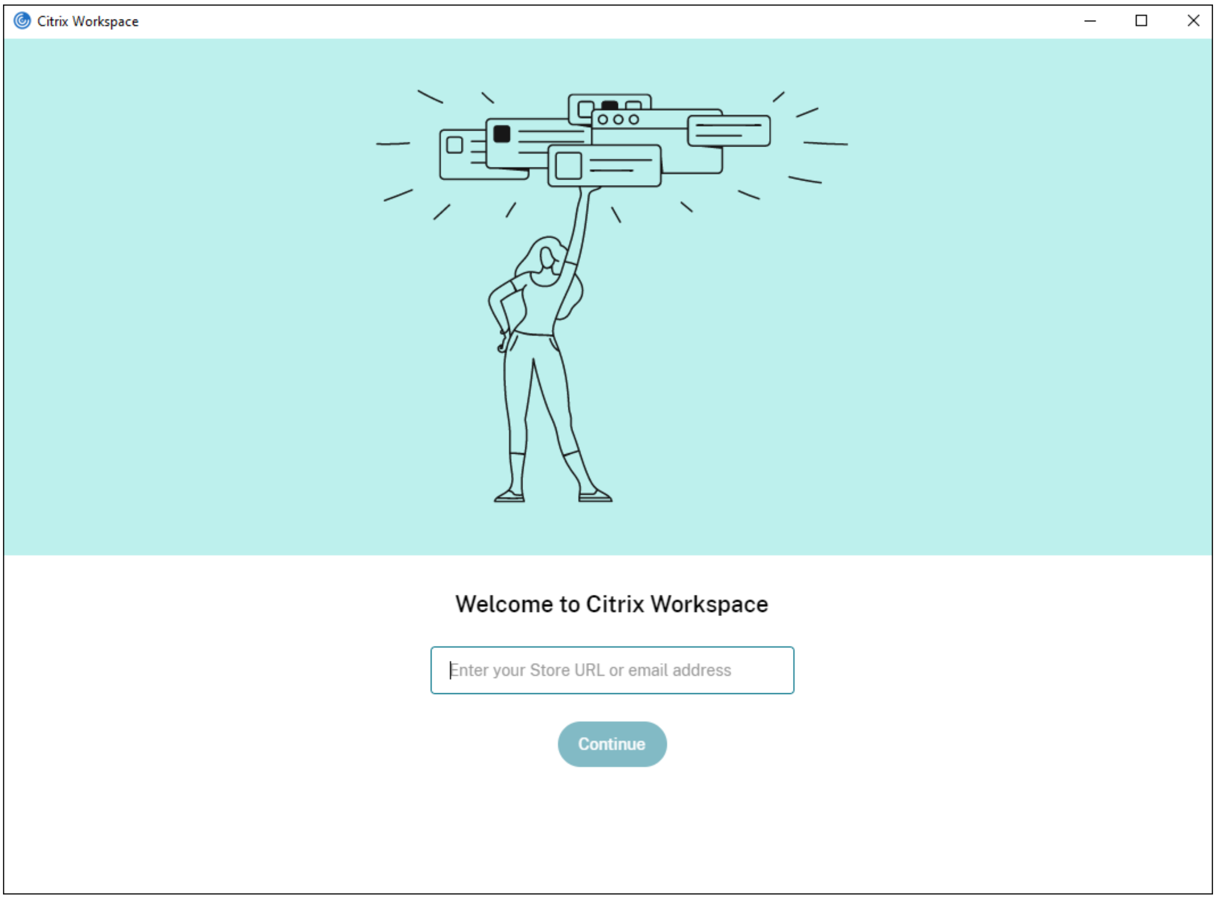
- Configuring email-based account discovery
- Provisioning file
- Providing users with account information to enter manually

> **Important:**
>
> Citrix recommends that you restart Citrix Workspace app after the installation to ensure that:
>
> - Restart ensures that users can add accounts and
> - Citrix Workspace app can discover USB devices that were in a suspended state during installation.

A dialog appears to indicate a successful installation, followed by the **Add Account** dialog. For a first time user, the **Add Account** dialog requires you to enter an email or server address to set up an account.

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.


Citrix Workspace
Welcome to Citrix Workspace
Enter your Store URL or email address
Continue

To enable users to set up accounts manually, be sure to distribute the information they need 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:

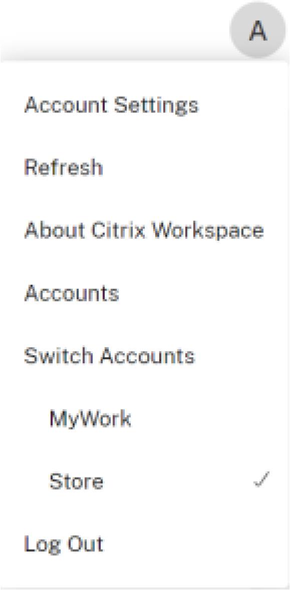
CitrixGatewayFQDN?MyStoreName:

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.



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.

For more information, see Configuring email based account discovery.

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.

Sharing multiple stores accounts automatically

> **Warning:**
>
> Using the Registry Editor incorrectly can cause serious problems that 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. Back up the registry before you edit it.

If you've more than one store account, you can configure Citrix Workspace app for Windows to automatically connect to all accounts when establishing a session. To automatically view all accounts when opening Citrix Workspace app:

For 32-bit systems:

Key path: `HKEY_LOCAL_MACHINE\Software\Citrix\Dazzle`

KeyName: `CurrentAccount`

Value: `AllAccount`

Type: REG_SZ

For 64-bit systems:

Key path: `HKEY_LOCAL_MACHINE\\Software\\Wow6432Node\\Citrix\\Dazzle`

KeyName: CurrentAccount

Value: AllAccount

Type: REG_SZ

Client drive-mapping

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:
A	A
B	B
C	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
B	B
C	C
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.

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.

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 incorrect use of the Registry Editor can be solved. Use the Registry Editor at your own risk. Back up of the registry before you edit it.

1. 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.

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 now 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**.

Configure

June 21, 2022

When using the Citrix Workspace app for Windows, the following configurations allow you to access their hosted applications and desktops.

Administrator tasks and considerations

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

Feature flag management

If an issue occurs with Citrix Workspace app in production, we can disable an affected feature dynamically in Citrix Workspace app even after the feature is shipped.

To do so, we use feature flags and a third-party service called LaunchDarkly. You do not need to make any configurations to enable traffic to LaunchDarkly, except when you have a firewall or proxy blocking outbound traffic. In that case, you enable traffic to LaunchDarkly via specific URLs or IP addresses, depending on your policy requirements.

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

Enable traffic to the following URLs

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

List IP addresses in an allow list

If you must list IP addresses in an allow list, for a list of all current IP address ranges, see LaunchDarkly public IP list. You can use this list to 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

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 Vista, Windows Server 2008, and other later versions of Windows.

For example: `\<installation directory\>\Online Plugin\Configuration`.

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
receiver.admx	<Installation Directory>\ICA Client\Configuration
receiver.adml	<Installation Directory>\ICA Client\Configuration\[MUIculture]
CitrixBase.admx	<Installation Directory>\ICA Client\Configuration
CitrixBase.adml	<Installation Directory>\ICA Client\Configuration\[MUIculture]

> **Note:**
>
> - If the CitrixBase.admx\adml isn'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	`Installation Directory\ICA Client\Configuration\receiver.admx`	`%systemroot%\policyDefinitions`
CitrixBase.admx	`Installation Directory\ICA Client\Configuration\CitrixBase.admx`	`%systemroot%\policyDefinitions`

File type	Copy from	Copy to
receiver.adml	`Installation Directory\ICA Client\Configuration\[MUIculture]receiver.adml`	`%systemroot%\policyDefinitions\[MUIculture]`
CitrixBase.adml	`Installation Directory\ICA Client\Configuration\[MUIculture]\CitrixBase.adml`	`%systemroot%\policyDefinitions\[MUIculture]`

> **Note:**
>
> Add the CitrixBase.admx/CitrixBase.adml to the `\PolicyDefinitions` folder to view the template files in **Administrative Templates** > **Citrix Components** > **Citrix Workspace**.

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.

App protection 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.

App protection requires that you install an add-on license on your License Server. A Citrix Virtual Desktops license must also be present. For information on Licensing, see the Configure section in the Citrix Virtual Apps and Desktops documentation.

Requirements:

- Citrix Virtual Apps and Desktops Version 1912 or later.

- StoreFront version 1912 or Workspace.
- Citrix Workspace app Version 1912 or later.

Prerequisites:

- The app protection feature must be enabled on the Controller. For more information, see App protection in Citrix Virtual Apps and Desktops documentation.

You can include the app protection component with Citrix Workspace app either:

- During Citrix Workspace app installation using the command-line interface or the GUI OR
- During an app launch (on-demand installation).

> **Note:**
>
> - This feature is supported only on desktop operating systems such as Windows 10, Windows 8.1.
> - Starting with Version 2006.1, Citrix Workspace app isn't supported on Windows 7. So, app protection doesn't work on Windows 7. For more information, see Deprecation.
> - This feature isn't supported over Remote Desktop Protocol (RDP).

On-premises HDX session protection:

Two policies provide anti-keylogging and anti-screen-capturing functionality in a session. These policies must be configured through PowerShell. No GUI is available for the purpose.

> **Note:**
>
> Starting with Version 2103, Citrix DaaS supports app protection with StoreFront and Workspace.

For information on app protection configuration on Citrix Virtual Apps and Desktops and Citrix DaaS, see App protection.

App protection - Configuration in Citrix Workspace app

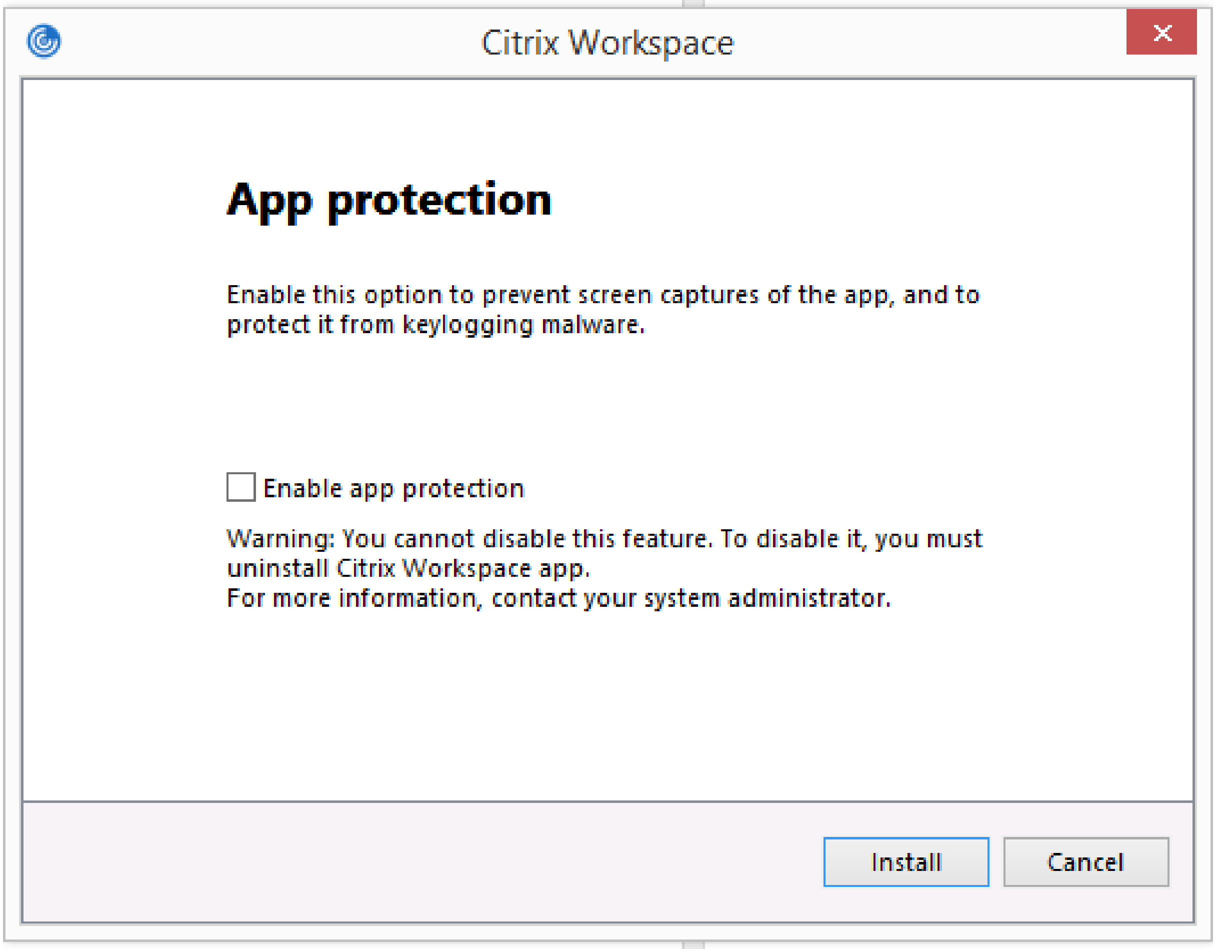
> **Note:**
>
> - Include the app protection component with Citrix Workspace app only if your administrator has instructed you to do so.
> - Adding the app protection component might impact the screen-capturing capabilities on your device.

During the Citrix Workspace app installation, you can include app protection using one of the following methods:

- GUI
- Command-line interface

GUI

During the Citrix Workspace app installation, use the following dialog to include the app protection component. Select **Enable app protection** and then click **Install** to continue with the installation.



Citrix Workspace

App protection

Enable this option to prevent screen captures of the app, and to protect it from keylogging malware.

□ Enable app protection

Warning: You cannot disable this feature. To disable it, you must uninstall Citrix Workspace app.
For more information, contact your system administrator.

> **Note:**
>
> Not enabling app protection during installation causes a prompt to appear when you launch a protected app. Follow the prompt to install the app protection component.

Command-line interface

Use the command-line switch /`includeappprotection` during Citrix Workspace app installation to add the app protection component.

The following table provides information on screens protected depending on deployment:

App protection deployment	Screens protected	Screens not protected
Included in Citrix Workspace app	Self-Service plug-in and Auth manager / User credentials dialog	Connection Center, Devices, Any Citrix Workspace app error messages, Auto client reconnect, Add account
Configured on the Controller	ICA session screen (both apps and desktops)	Connection Center, Devices, Any Citrix Workspace app error messages, Auto client reconnect, Add account

In earlier releases, the entire screen including the non-protected apps in the background used to black out, when taking a screenshot of a protected window.

Starting with Version 2008, when you're taking a screenshot, only the protected window is blacked out. You can take a screenshot of the area outside the protected window.

Expected Behavior:

The expected behavior depends upon the method by which users access the StoreFront that has the protected resources.

> **Note:**
>
> - Citrix recommends that you only use the native Citrix Workspace app to launch a protected session.

- **Behavior on the workspace for web:**

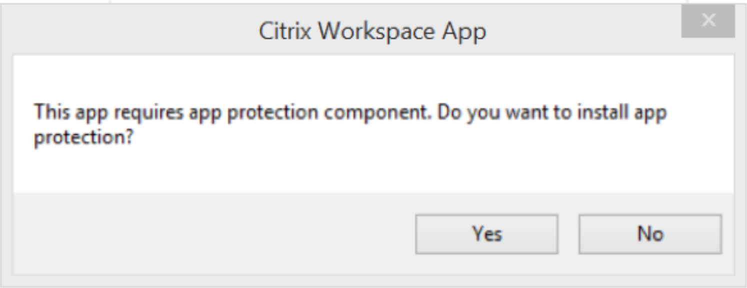
  The app protection component isn't supported on the workspace for web configurations. Applications that are protected by app protection policies aren't enumerated. For more information about the resources assigned, contact your system administrator.

- **Behavior on Citrix Workspace app versions that do not support app protection:**

  On Citrix Workspace app Version 1911 and earlier, applications that are protected by app protection policies aren't enumerated on StoreFront.

- **Behavior of apps that have the app protection feature configured on the Controller:**

  On an app protection configured-Controller, if you try to launch an application that is protected, the app protection is installed on-demand. The following dialog appears:



Citrix Workspace App

This app requires app protection component. Do you want to install app protection?

Click **Yes** to install the app protection component. You can then launch the protected app.

- **Behavior of protected session in case of Remote Desktop Protocol(RDP)**
  - Your active protected session disconnects, if you launch a Remote Desktop Protocol(RDP) session.
  - You can't launch a protected session in a Remote Desktop Protocol(RDP) session.

Enhancement to app protection configuration

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

Starting with Version 2012, you can configure the anti-keylogging and anti-screen-capturing functionalities separately for both the authentication manager and Self-Service plug-in interfaces. You can configure the functionalities by using a Group Policy Object (GPO) policy.

> **Note:**
>
> This GPO policy isn't applicable for ICA and SaaS sessions. The ICA and SaaS sessions continue to be controlled using the Delivery Controller and Citrix Secure Private Access.

Configuring app protection for the Self-Service plug-in interface:

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**.
3. To configure anti-keylogging and anti-screen-capturing for the Self-Service plug-in dialog, select **Self Service** > **Manage app protection** policy.
4. Select one or both the following options:
   - **Anti-key logging**: Prevents keyloggers from capturing keystrokes.
   - **Anti-screen-capturing**: Prevents users from taking screenshots and sharing their screen.
5. Click **Apply** and **OK**.

Configuring app protection for authentication manager:

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**.
3. To configure anti-keylogging and anti-screen-capturing for the authentication manager, select **User authentication** > **Manage app protection** policy.
4. Select one or both the following options:
   - **Anti-key logging**: Prevents keyloggers from capturing keystrokes.
   - **Anti-screen-capturing**: Prevents users from taking screenshots and sharing their screen.
5. Click **Apply** and **OK**.

App protection error logs:

Starting with Version 2103, the app protection logs are collected as part of Citrix Workspace app logs. For more information about log collection, see Log collection.

You do not need to install or use a third-party app to collect the app protection logs specifically. However, DebugView can still be continued to be used for log collection.

The app protection logs are registered to the debug output. To collect these logs, do the following:

1. Download and install the DebugView app from the Microsoft website.

2. Launch the command prompt and run the following command:

   ```
   Dbgview.exe /t /k /v /l C:\logs.txt
   ```

   From the example above, you can view the logs in `log.txt` file.

The command indicates the following:

- `/t` – The DebugView app starts minimized in the notification area.
- `/k` – Enable kernel capture.
- `/v` – Enable verbose kernel capture.
- `/l` – Log the output to a specific file.

Uninstalling the app protection component:

To uninstall the app protection component, you must uninstall Citrix Workspace app from your system. Restart the system for the changes to take effect.

> **Note:**
>
> App protection is supported only on upgrade from Version 1912 onwards.

Known issues or limitations:

- This feature isn't supported on Microsoft Server operating systems such as Windows Server 2012 R2 and Windows Server 2016.

- This feature isn't supported in double-hop scenarios.
- For this feature to function properly, disable the **Client clipboard redirection** policy on the VDA.

Application Categories

Application Categories allow users to manage collections of applications in Citrix Workspace app. You can create application groups for applications shared across different delivery groups or used by a subset of users within delivery groups.

For more information, see Create application groups in the Citrix Virtual Apps and Desktops documentation.

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.

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.

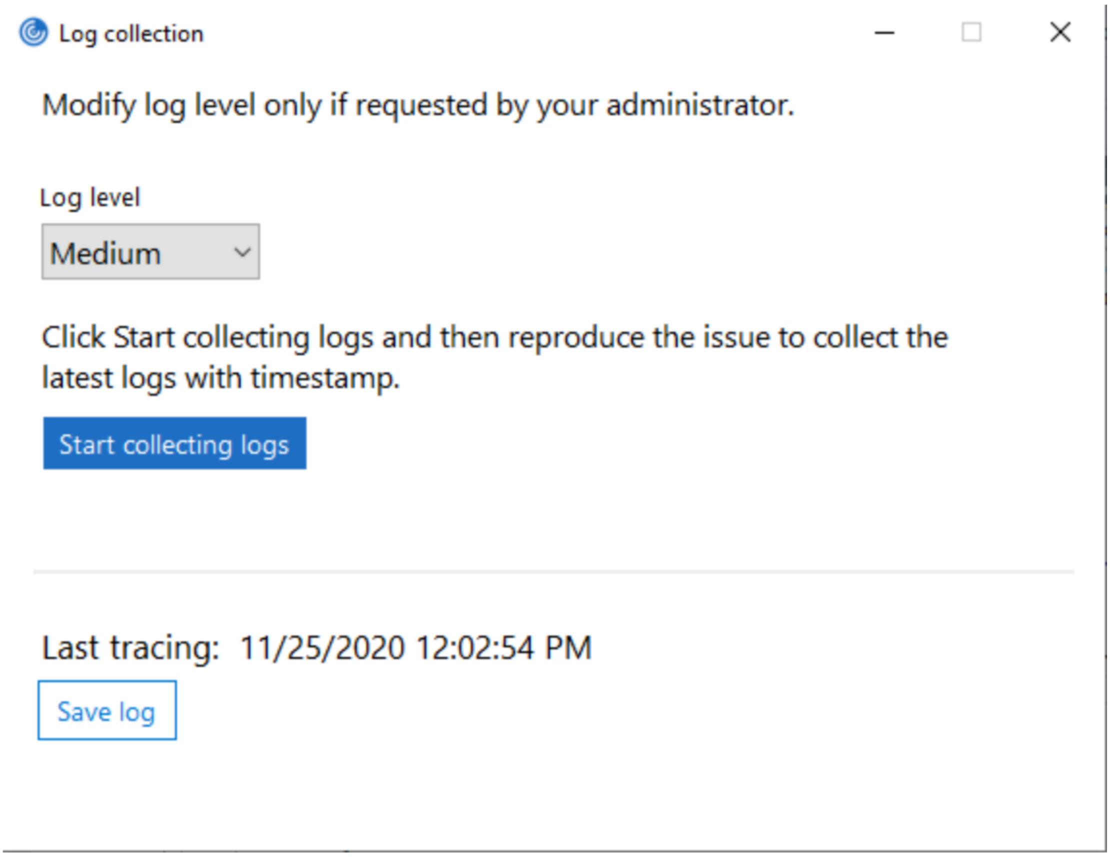
You can collect logs using the GUI.

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.



Modify log level only if requested by your administrator.

Log level: Medium

Click Start collecting logs and then reproduce the issue to collect the latest logs with timestamp.

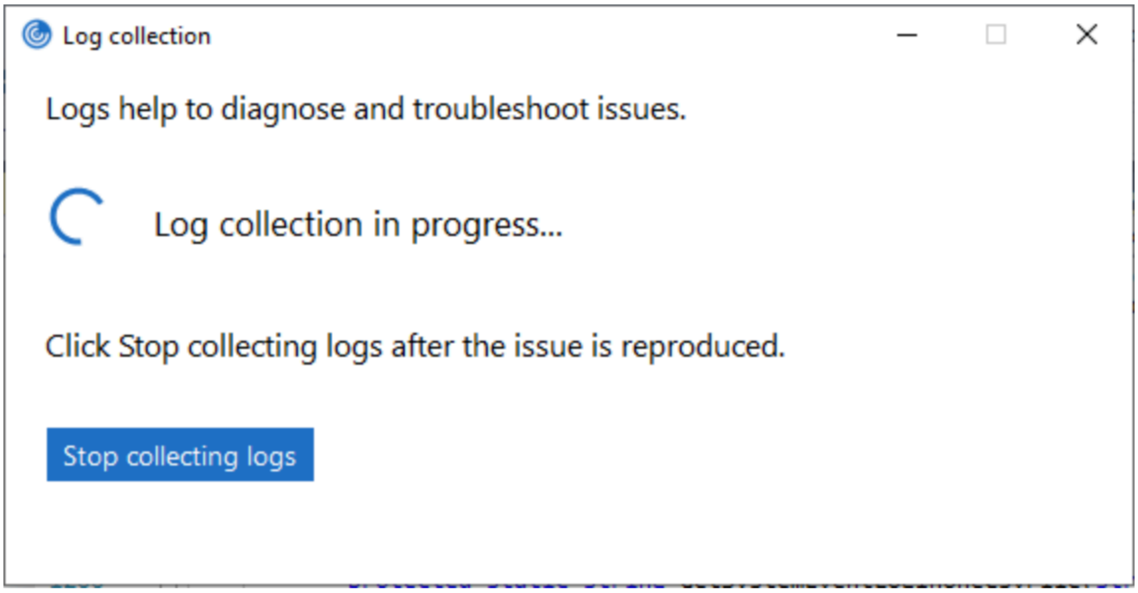
Last tracing: 11/25/2020 12:02:54 PM

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.



Log collection

Logs help to diagnose and troubleshoot issues.

Log collection in progress...

Click Stop collecting logs after the issue is reproduced.

5. Click **Stop collecting logs** after the issue is reproduced.
6. Click **Save log** to save the logs to a desired location.

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 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.

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 Files
  - 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 Files
- 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.

StoreFront to Workspace URL Migration

This feature is in Technical Preview. 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:

```
{

 ”serviceURL”: {

”url”: ”https://storefront.acme.com:443”,
”migrationUrl”: [
  {

    ”url”: ”https://sampleworkspace.cloud.com:443”,
    ”storeFrontValidUntil”: ”2023-05-01”
```

```
   }

 ]
 }
 ,
"settings": {

"name": "Productivity Apps",
"description": "Provides access StoreFront to Workspace Migration",
"useForAppConfig": true,
"appSettings": {

  "windows": [
    {

      "category": "root",
      "userOverride": false,
      "assignmentPriority": 0,
      "assignedTo": [
        "AllUsersNoAuthentication"
     ],
      "settings": [
      {

       "name": "Hide advanced preferences",
        "value": false
       }

     ]
     }

   ]
   }

  }

 }


<!--NeedCopy-->
```

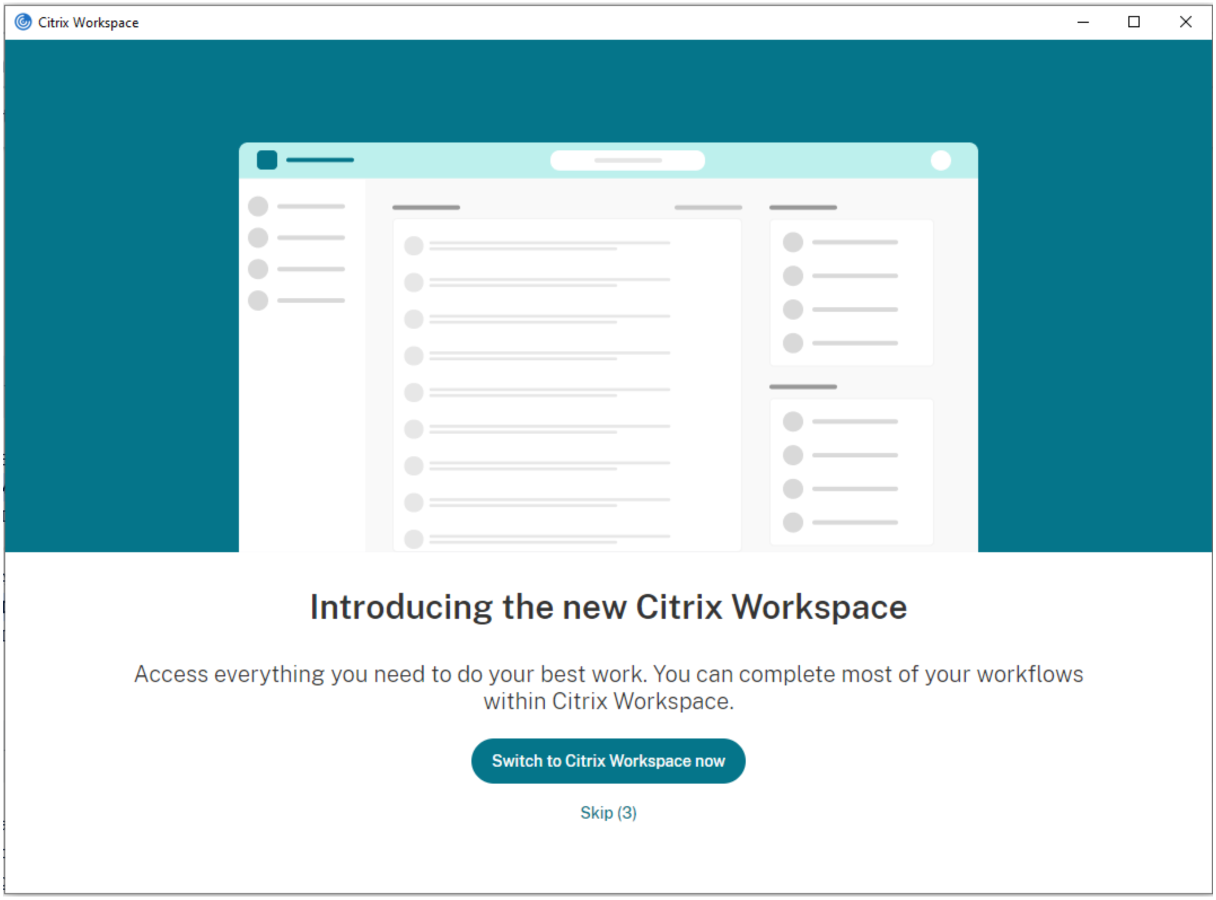
> **Note:**
>
> If you're configuring the payload for the first time, use `POST`.
> If you're editing the existing payload configuration, use `PUT` and check that you have the payload that consists of all the supported settings.

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:



Introducing the new Citrix Workspace

Access everything you need to do your best work. You can complete most of your workflows within Citrix Workspace.

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.

Application delivery

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\Roaming`in 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"
```

The section ends with the </account> tag.

Before the end of the account section, in the first properties section:

```
<properties> <clear> <properties>
```

Properties can be added into this section after the <clear /> tag, one per line, giving the name and value. For example:

```
<property 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 <property name="PutShortcutsOnDesktop"value="True"<property
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.

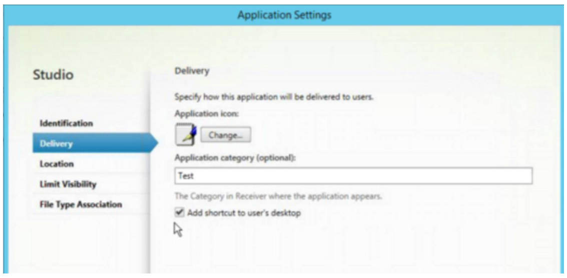
Using per-app settings in Citrix Virtual Apps and Desktops 7.x to customize app shortcut locations

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.



Application Settings

Studio

Delivery

Specify how this application will be delivered to users.

Application icon:

Application category (optional):

Test

The Category in Receiver where the application appears.

☑ Add shortcut to user's desktop

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:

1. 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.	configure Citrix Workspace app with SelfServiceMode =False. All available apps appear in the Start menu.
If you want all application shortcuts to put on the desktop.	configure Citrix Workspace app with PutShortcutsOnDesktop = true. All available apps appear in the desktop.
If you want all shortcuts to be, put on the desktop in a folder.	configure Citrix Workspace app with 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.

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

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 and MM are hours and minutes. M:T:W:TH:F:S:SU is 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	1:0:1:0:1:0:0. The session actually launches between 13:15 and 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.

Bidirectional content redirection

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:

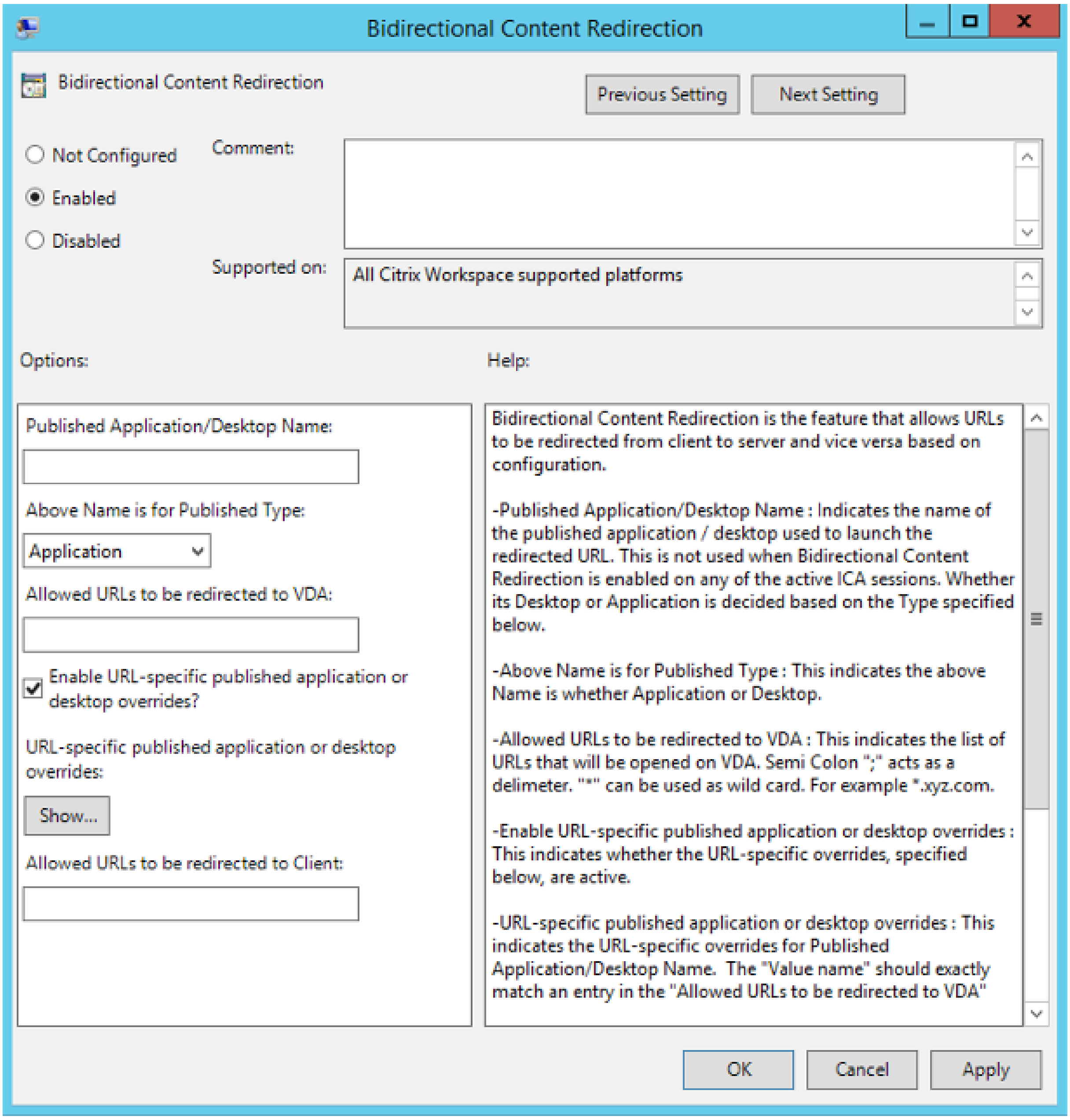
1. Group Policy Object (GPO) administrative template
2. Registry editor

> **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.



Bidirectional Content Redirection

○ Not Configured
● Enabled
○ Disabled

Supported on: All Citrix Workspace supported platforms

Published Application/Desktop Name:

Above Name is for Published Type: Application

Allowed URLs to be redirected to VDA:

☑ Enable URL-specific published application or desktop overrides?

URL-specific published application or desktop overrides:

Allowed URLs to be redirected to Client:

Bidirectional Content Redirection is the feature that allows URLs to be redirected from client to server and vice versa based on configuration.

-Published Application/Desktop Name : Indicates the name of the published application / desktop used to launch the redirected URL. This is not used when Bidirectional Content Redirection is enabled on any of the active ICA sessions. Whether its Desktop or Application is decided based on the Type specified below.

-Above Name is for Published Type : This indicates the above Name is whether Application or Desktop.

-Allowed URLs to be redirected to VDA : This indicates the list of URLs that will be opened on VDA. Semi Colon ";" acts as a delimeter. "*" can be used as wild card. For example *.xyz.com.

-Enable URL-specific published application or desktop overrides : This indicates whether the URL-specific overrides, specified below, are active.

-URL-specific published application or desktop overrides : This indicates the URL-specific overrides for Published Application/Desktop Name. The "Value name" should exactly match an entry in the "Allowed URLs to be redirected to VDA"

1. In the **Published Application or Desktop name** field, provide the name of the resource used to launch the redirected URL.

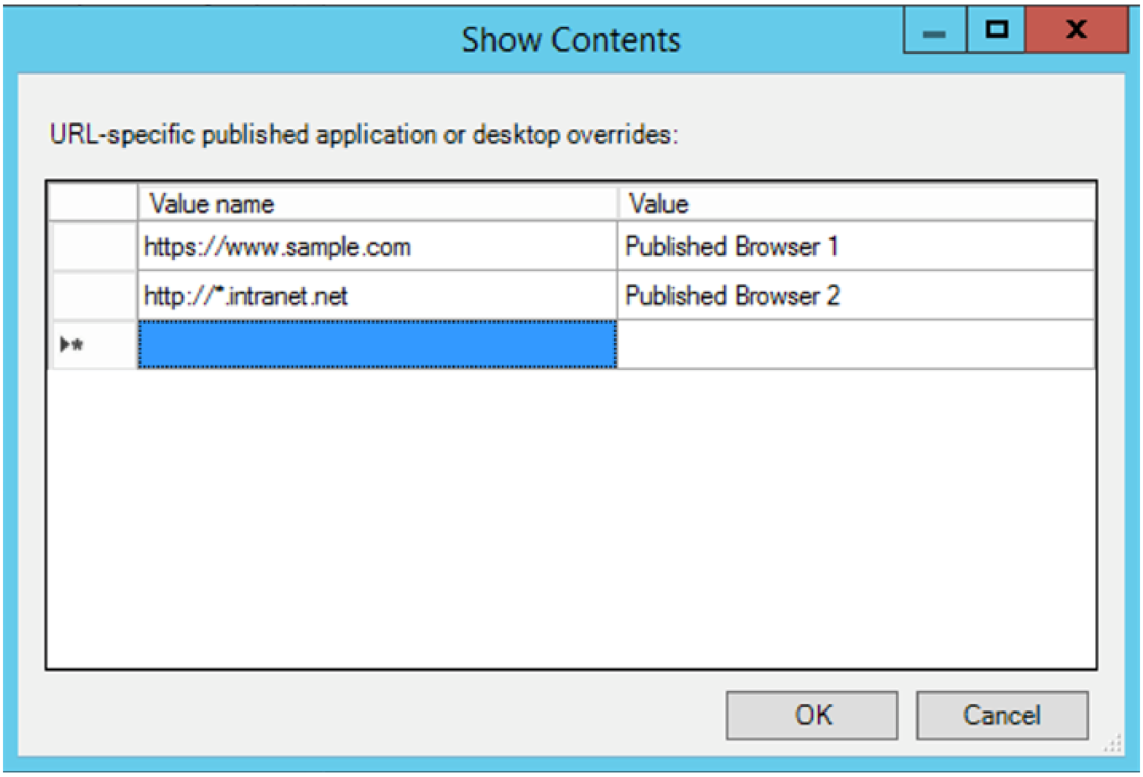
   > **Note:**
   >
   > When you include URLs, specify a single URL or a semi-colon delimited list of URLs. You can use an asterisk (*) as a wildcard.

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.
5. 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.



URL-specific published application or desktop overrides:

	Value name	Value
	https://www.sample.com	Published Browser 1
	http://*.intranet.net	Published Browser 2
▶*		

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** checkbox 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\…

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

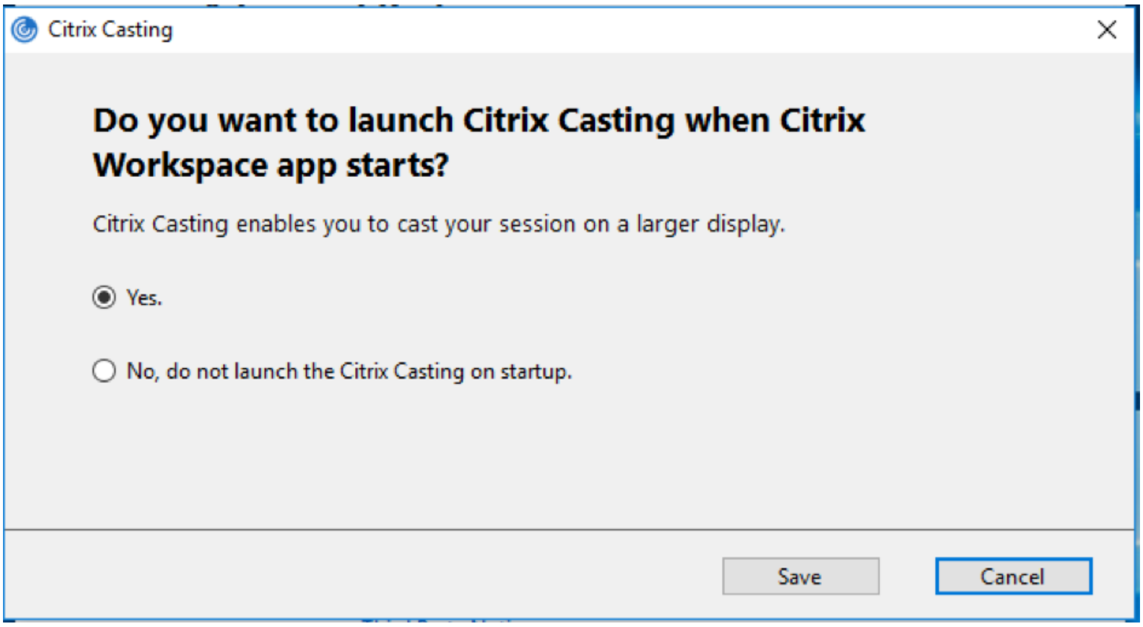
> **Note:**
>
> You can hide all or part of the Advanced Preferences sheet. For more information, see Advanced Preferences sheet.

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.



Citrix Casting

Do you want to launch Citrix Casting when Citrix Workspace app starts?

Citrix Casting enables you to cast your session on a larger display.

● Yes.

○ No, do not launch the Citrix Casting on startup.

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.

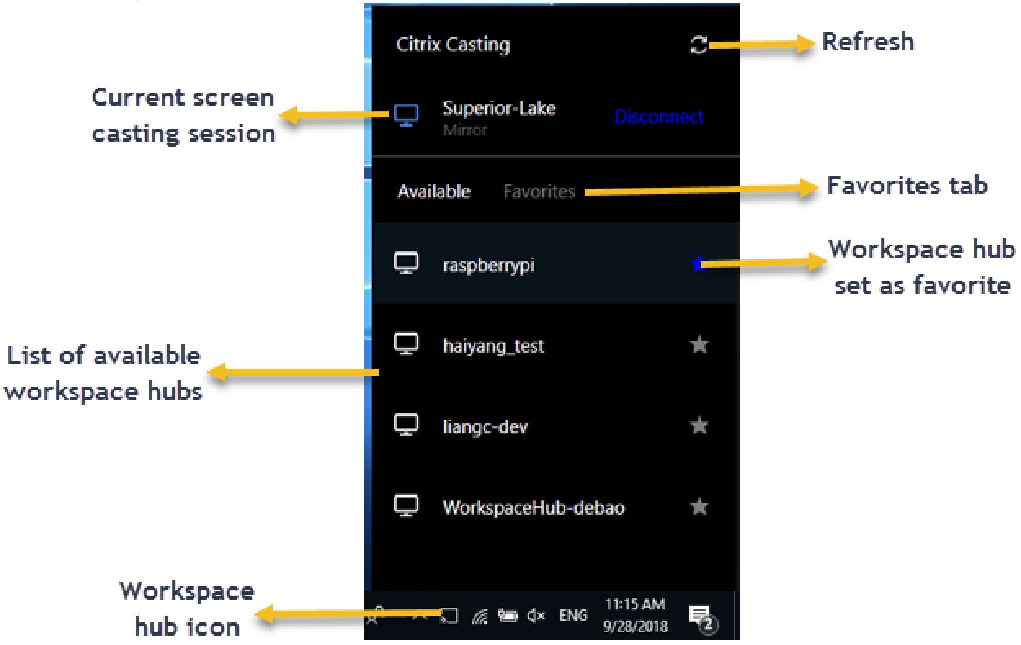
2. Select the workspace hub to cast your screen and choose one of the following:

   - **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.

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)
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.

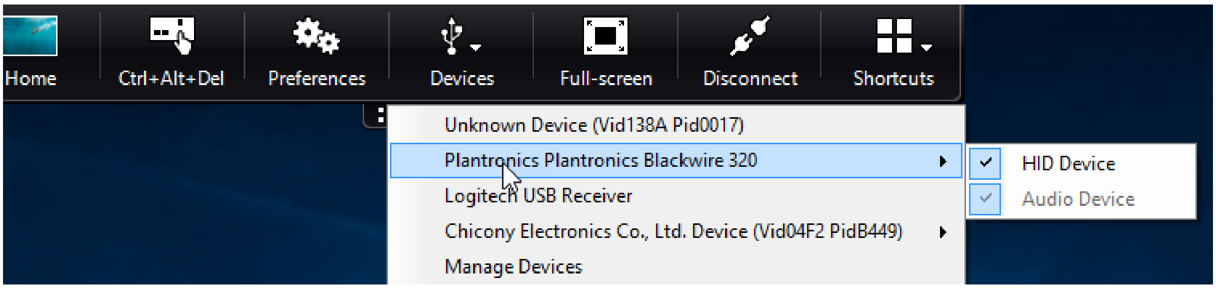
To enable device rules policy for Citrix Workspace app for Windows:

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.

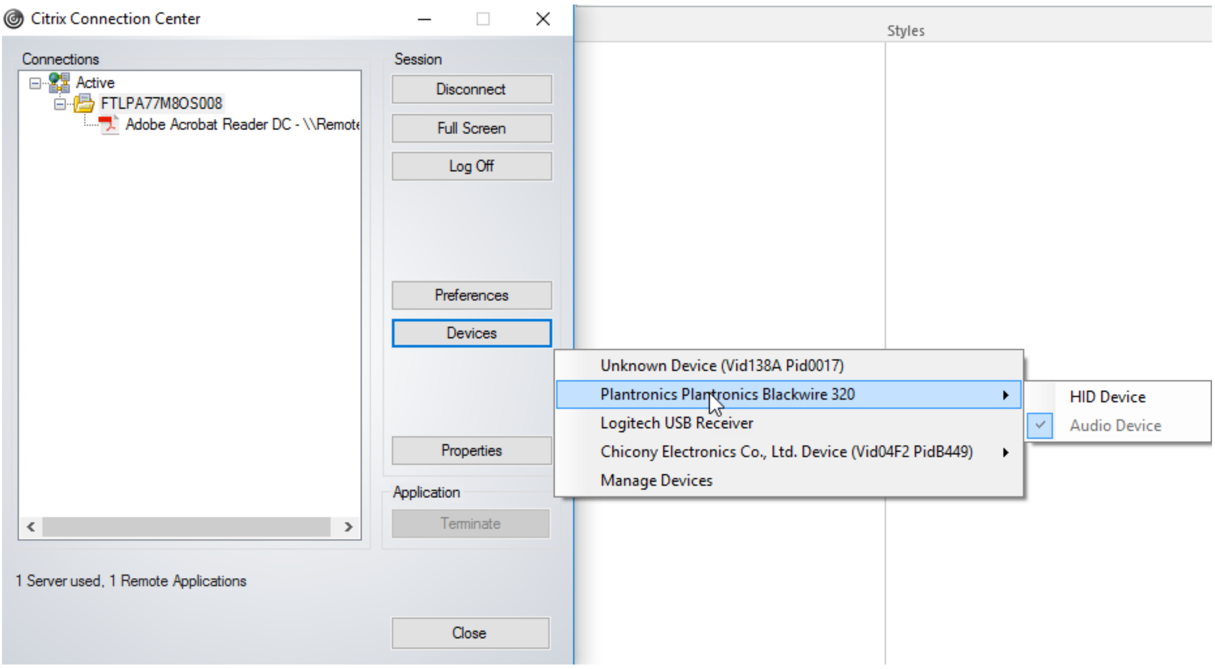
Connecting USB devices:

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**.


Home
Ctrl+Alt+Del
Preferences
Devices
Full-screen
Disconnect
Shortcuts
Unknown Device (Vid138A Pid0017)
Plantronics Plantronics Blackwire 320
Logitech USB Receiver
Chicony Electronics Co., Ltd. Device (Vid04F2 PidB449)
Manage Devices
HID Device
Audio Device

> **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:

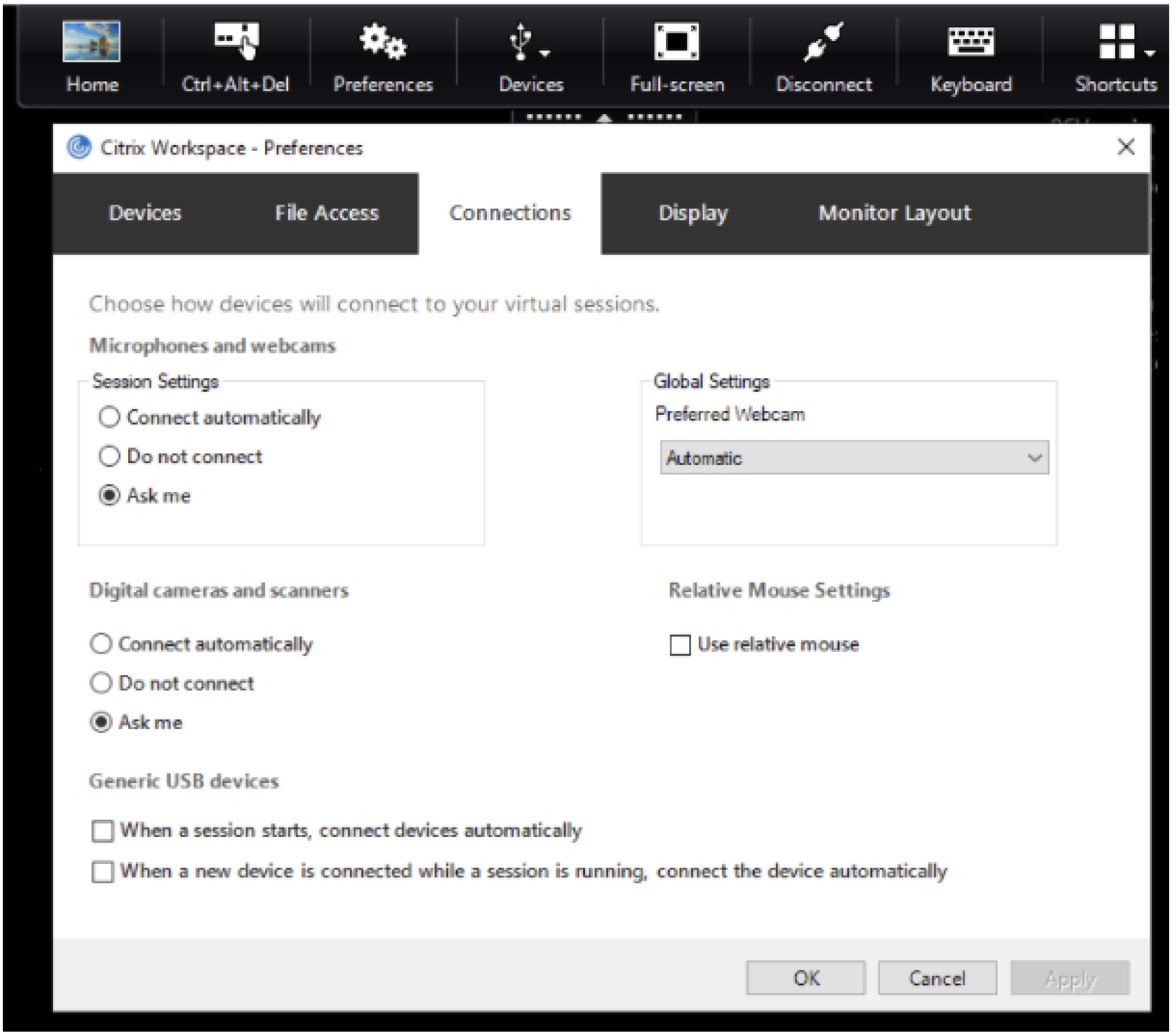
The CONNECT keyword introduced in Citrix Workspace app for Windows 2109 allows for automatic redirection of USB devices. The CONNECT rule can replace the ALLOW rule if the administrator allows the device or selected interfaces to automatically connect in the session.

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.



Choose how devices will connect to your virtual sessions.

Microphones and webcams

Session Settings

○ Connect automatically
○ Do not connect
● Ask me

Global Settings

Preferred Webcam: Automatic

Digital cameras and scanners

○ Connect automatically
○ Do not connect
● Ask me

Relative Mouse Settings

□ Use relative mouse

Generic USB devices

□ When a session starts, connect devices automatically
□ When a new device is connected while a session is running, connect the device automatically

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:

You must configure various interfaces of the Bloomberg keyboard. From Citrix Workspace Application for Windows 2109, 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. The following example uses 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
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 plug-in. 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.

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 in 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.

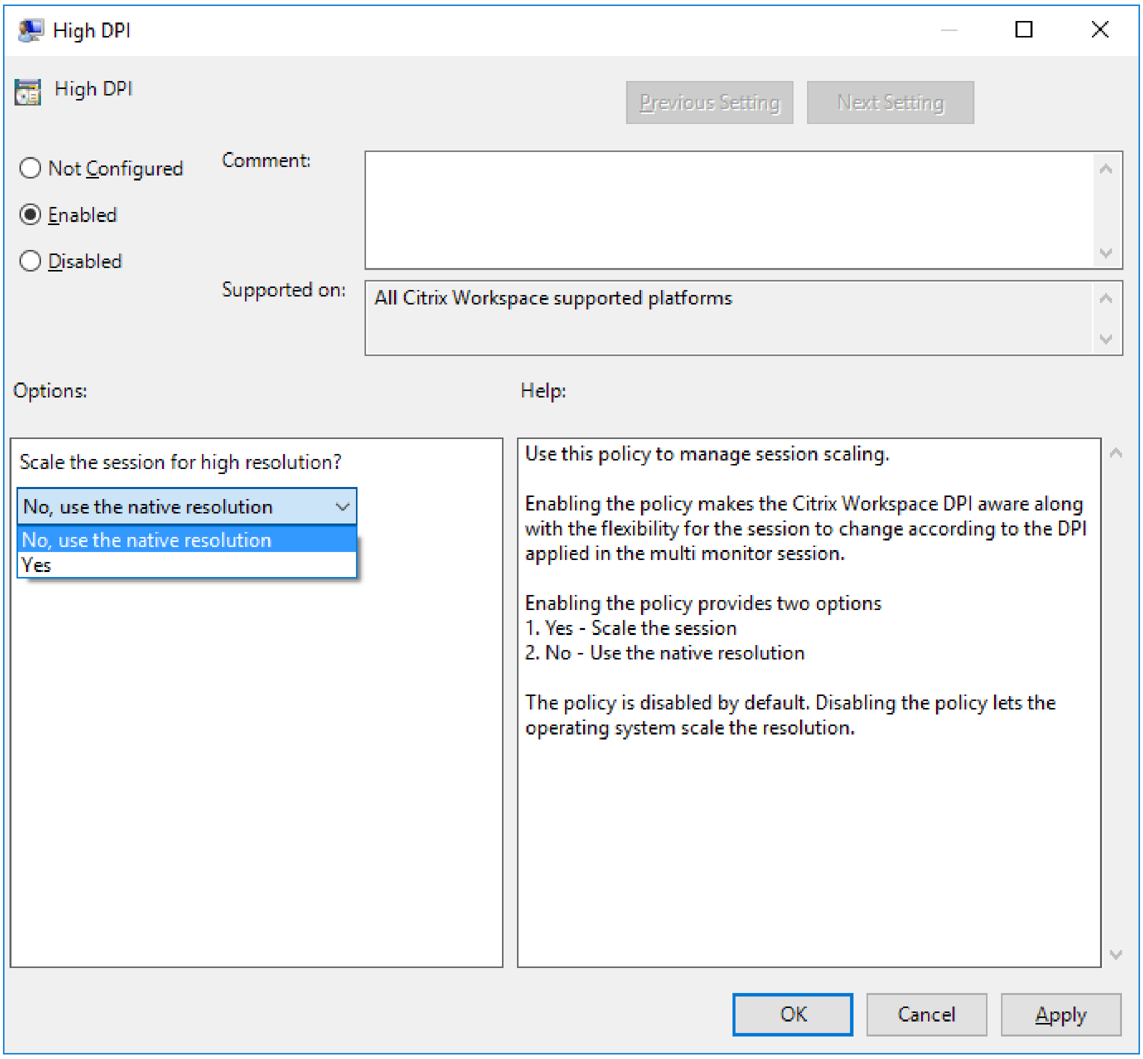
This feature is disabled by default and must be configured in Advanced Preferences or via client group policy settings.

You can configure DPI scaling using the following options:

1. Group Policy Object (GPO) administrative template (per-machine configuration)
2. Advanced Preferences (per-user configuration)

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.



○ Not Configured
● Enabled
○ Disabled

Supported on: All Citrix Workspace supported platforms

Scale the session for high resolution?

No, use the native resolution

No, use the native resolution
Yes

Use this policy to manage session scaling.

Enabling the policy makes the Citrix Workspace DPI aware along with the flexibility for the session to change according to the DPI applied in the multi monitor session.

Enabling the policy provides two options
1. Yes - Scale the session
2. No - Use the native resolution

The policy is disabled by default. Disabling the policy lets the operating system scale the resolution.

4. Select the **No, use native resolution** option to enable DPI matching (recommended).
5. Click **Apply and OK**.
6. From the command line, run the `gpupdate /force` command to apply the changes.

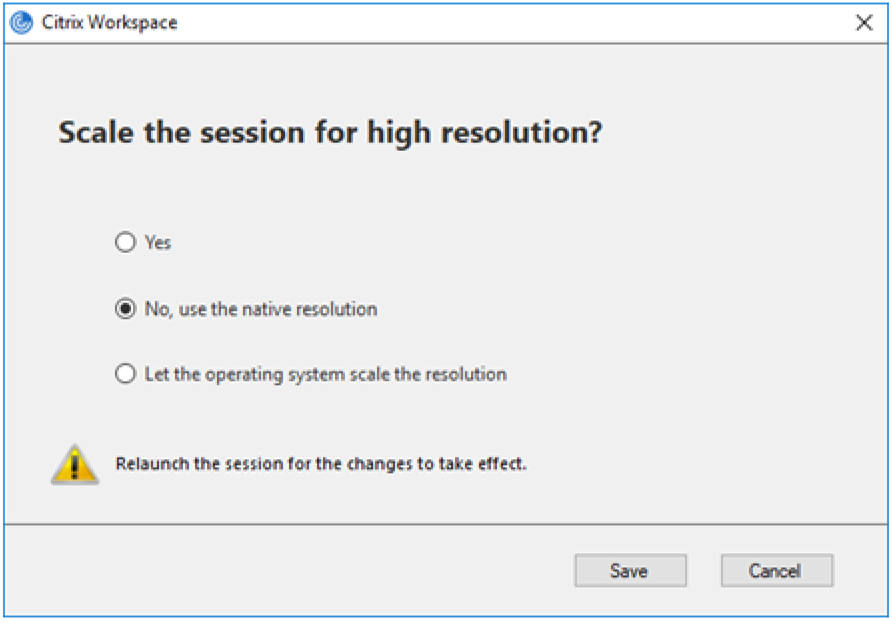
Configure DPI scaling using the graphical user interface:

> **Note:**

> You can hide all or part of the Advanced Preferences sheet. For more information, see Advanced Preferences sheet.

1. Right-click Citrix Workspace app from the notification area.
2. Select **Advanced Preferences** and click **High DPI**.

   The DPI settings dialog appears.



Citrix Workspace

Scale the session for high resolution?

○ Yes

● No, use the native resolution

○ Let the operating system scale the resolution

Relaunch the session for the changes to take effect.

3. Select the **No, use native resolution** option to enable DPI matching (recommended).
4. Click **Save**.
5. Restart the Citrix Workspace app session for the changes to take effect.

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.

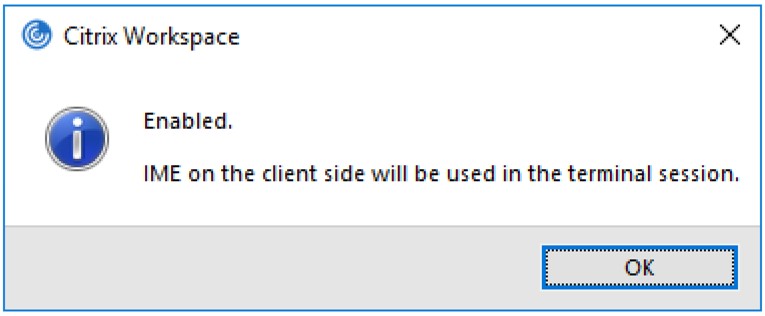
For information about troubleshooting issues with DPI scaling, see Knowledge Center article CTX230017.

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 limitation. For more information, see the Microsoft Support article.

Configuring generic client IME using the command-line interface:

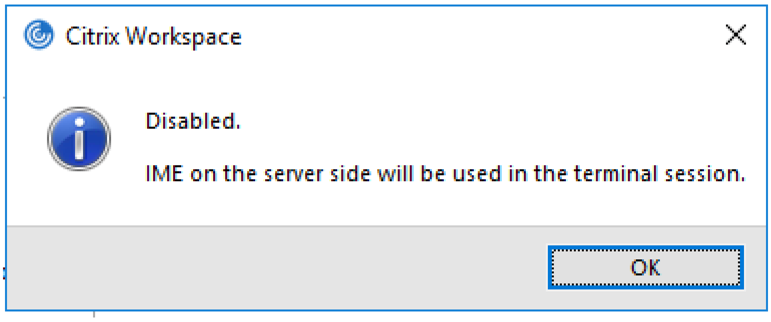
- To enable generic client IME, run the `wfica32.exe /localime:on` command from the Citrix Workspace app installation folder `C:\Program Files (x86)\Citrix\ICA Client`.



Enabled.

IME on the client side will be used in the terminal session.

- To disable generic client IME, run the `wfica32.exe /localime:off` command from the Citrix Workspace app installation folder `C:\Program Files (x86)\Citrix\ICA Client`.

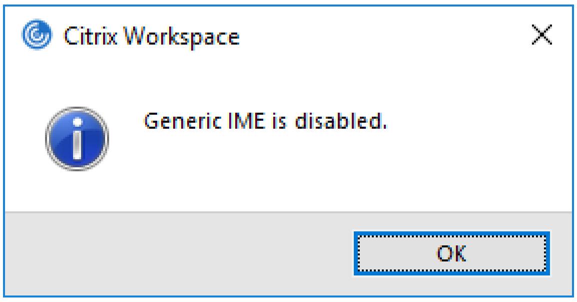


Disabled.

IME on the server side will be used in the terminal session.

> **Note:**
>
> You can use the command-line switch `wfica32.exe /localime:on` to enable both generic client IME and keyboard layout synchronization.

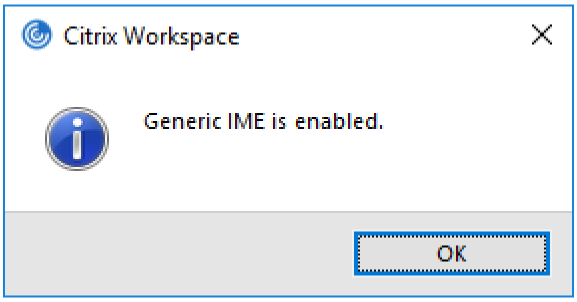
- To disable generic client IME, run the `wfica32.exe /localgenericime:off` command from the Citrix Workspace app installation folder `C:\Program Files (x86)\Citrix\ICA Client`. This command does not affect keyboard layout synchronization settings.



Citrix Workspace

Generic IME is disabled.

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.



Citrix Workspace

Generic IME is enabled.

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.

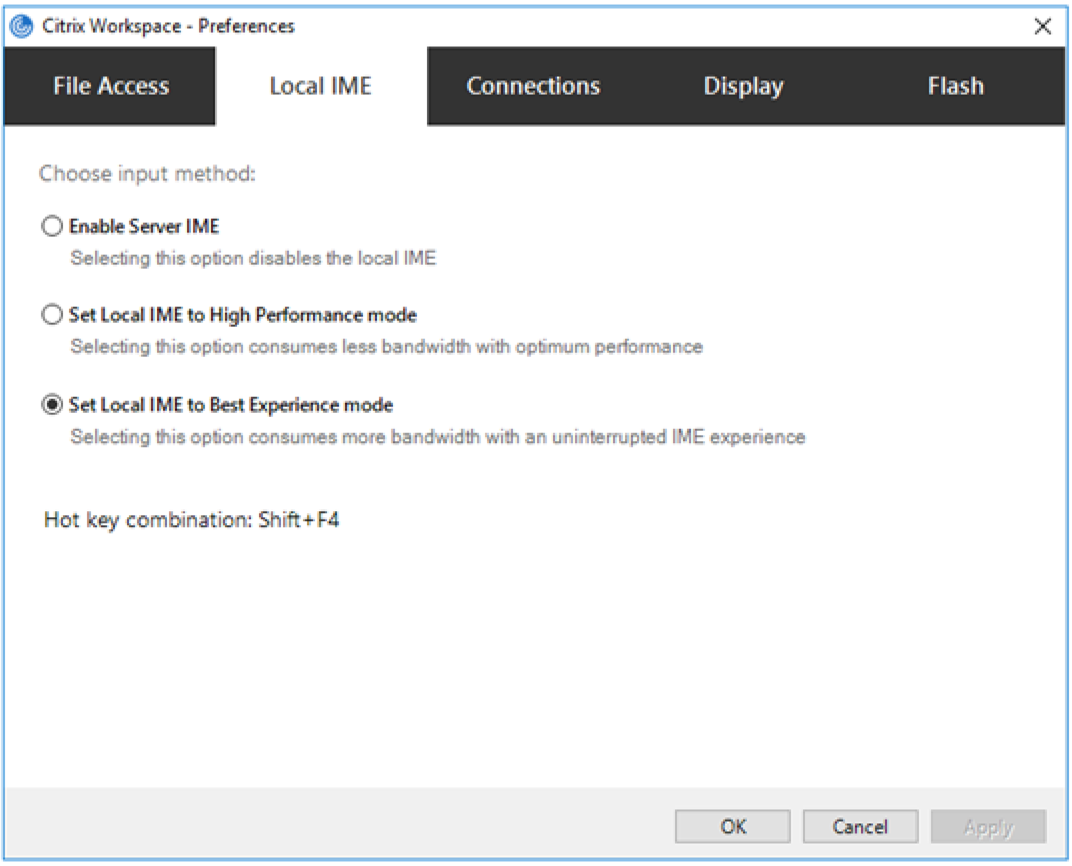
Configure generic client IME using the graphical user interface:

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**.



Choose input method:

○ Enable Server IME
Selecting this option disables the local IME

○ Set Local IME to High Performance mode
Selecting this option consumes less bandwidth with optimum performance

● Set Local IME to Best Experience mode
Selecting this option consumes more bandwidth with an uninterrupted IME experience

Hot key combination: Shift+F4

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.

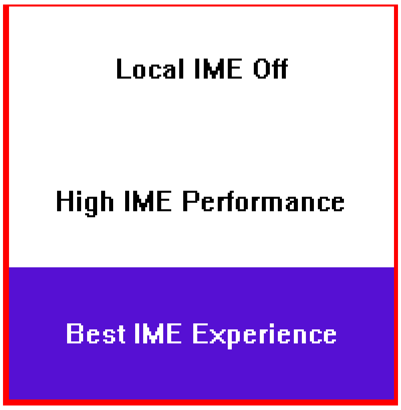
By default, the hotkey for generic client IME is disabled.

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.



Local IME Off

High IME Performance

Best IME Experience

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**.

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.

Keyboard layout and language bar

Keyboard layout

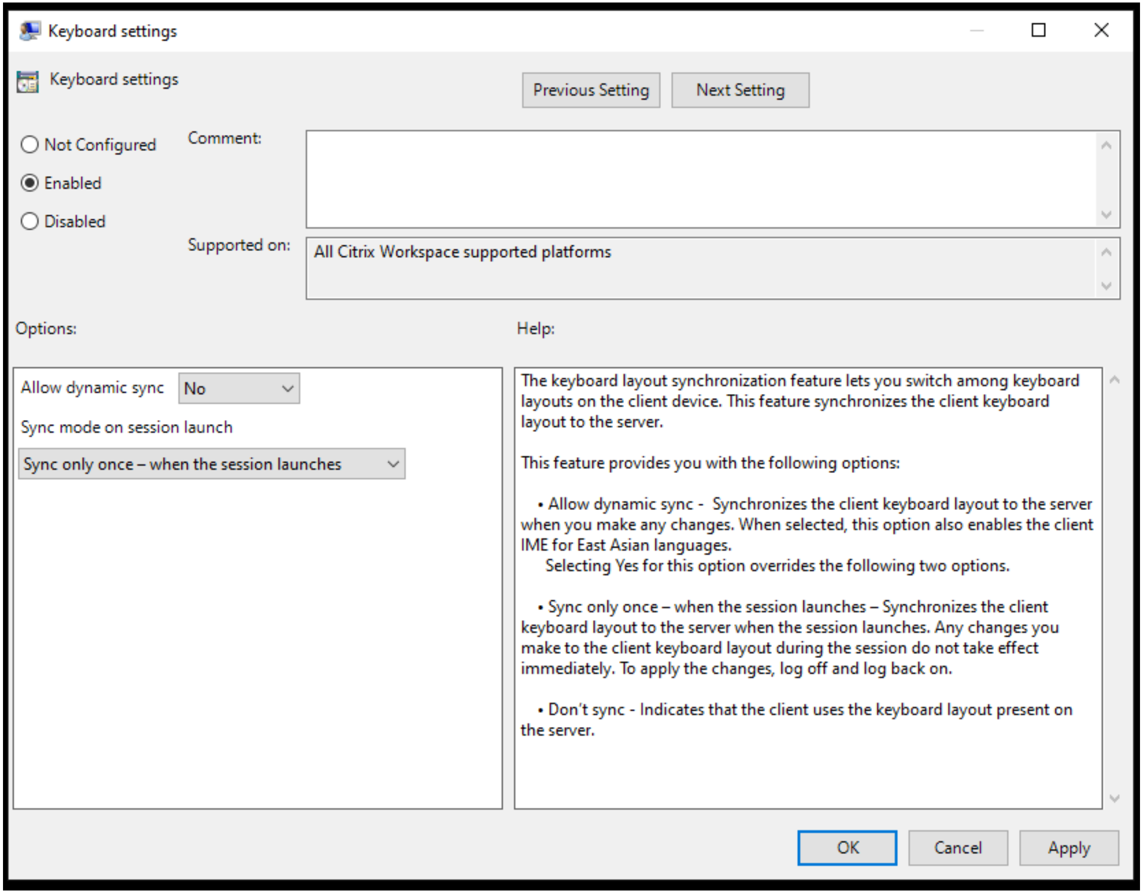
> **Note:**
>
> You can hide all or part of the Advanced Preferences sheet available from the Citrix Workspace app icon in the notification area. For more information, see Advanced Preferences sheet.

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.



Supported on: All Citrix Workspace supported platforms

Options:

Allow dynamic sync: No

Sync mode on session launch: Sync only once – when the session launches

Help:

The keyboard layout synchronization feature lets you switch among keyboard layouts on the client device. This feature synchronizes the client keyboard layout to the server.

This feature provides you with the following options:

• Allow dynamic sync - Synchronizes the client keyboard layout to the server when you make any changes. When selected, this option also enables the client IME for East Asian languages.
Selecting Yes for this option overrides the following two options.

• Sync only once – when the 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.

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.

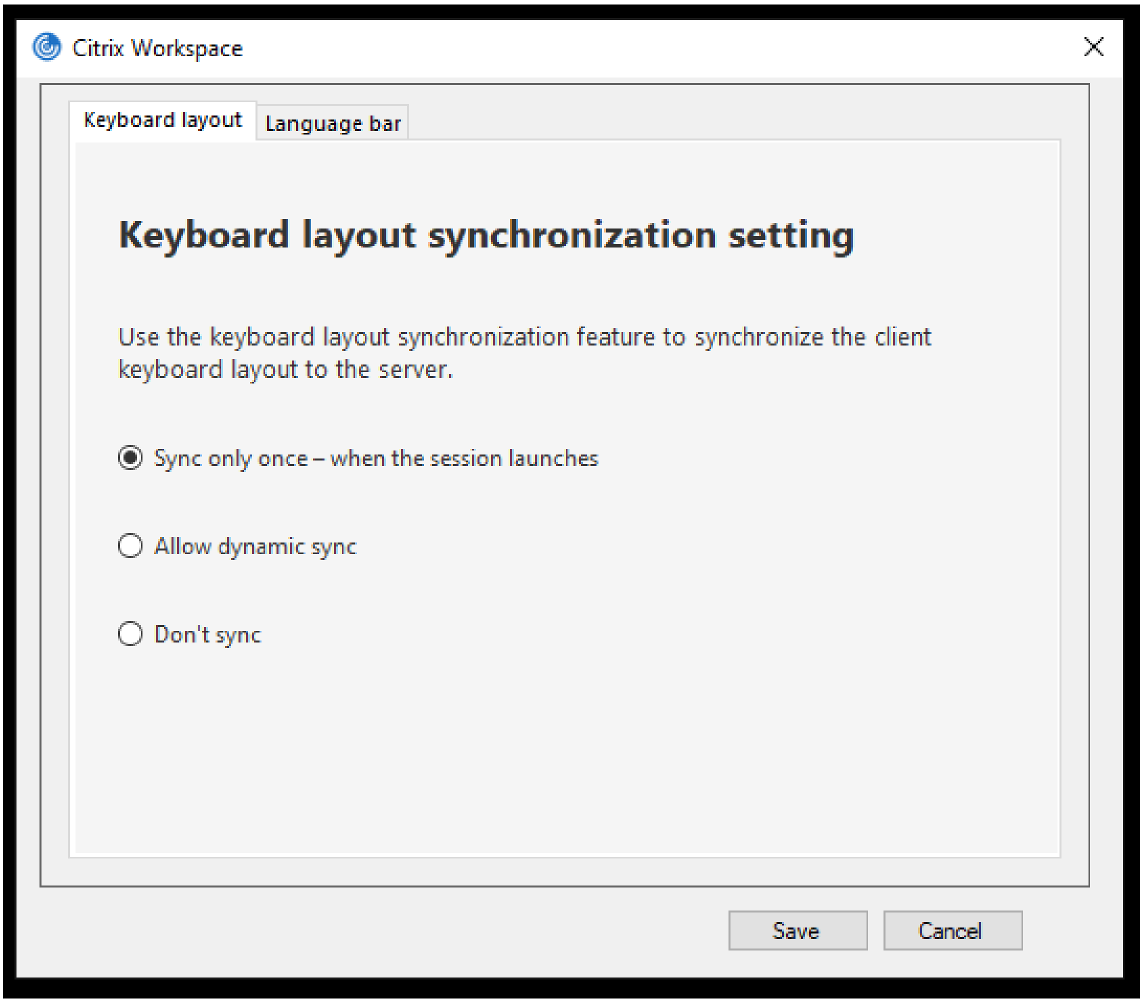
  - **Don’t sync** - Indicates that the client uses the keyboard layout present on the server.

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.

   Keyboard layout synchronization setting

   Use the keyboard layout synchronization feature to synchronize the client keyboard layout to the server.

   ● Sync only once – when the session launches

   ○ Allow dynamic sync

   ○ Don't sync

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.

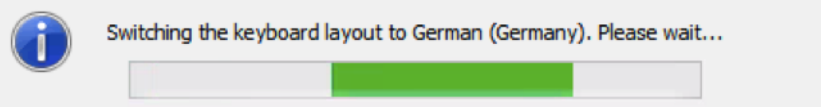
Sometimes, switching the client keyboard layout does not take effect in an active session. To resolve this issue, log off from Citrix Workspace app and login again.

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.



Switching the keyboard layout to German (Germany). Please wait...

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**.

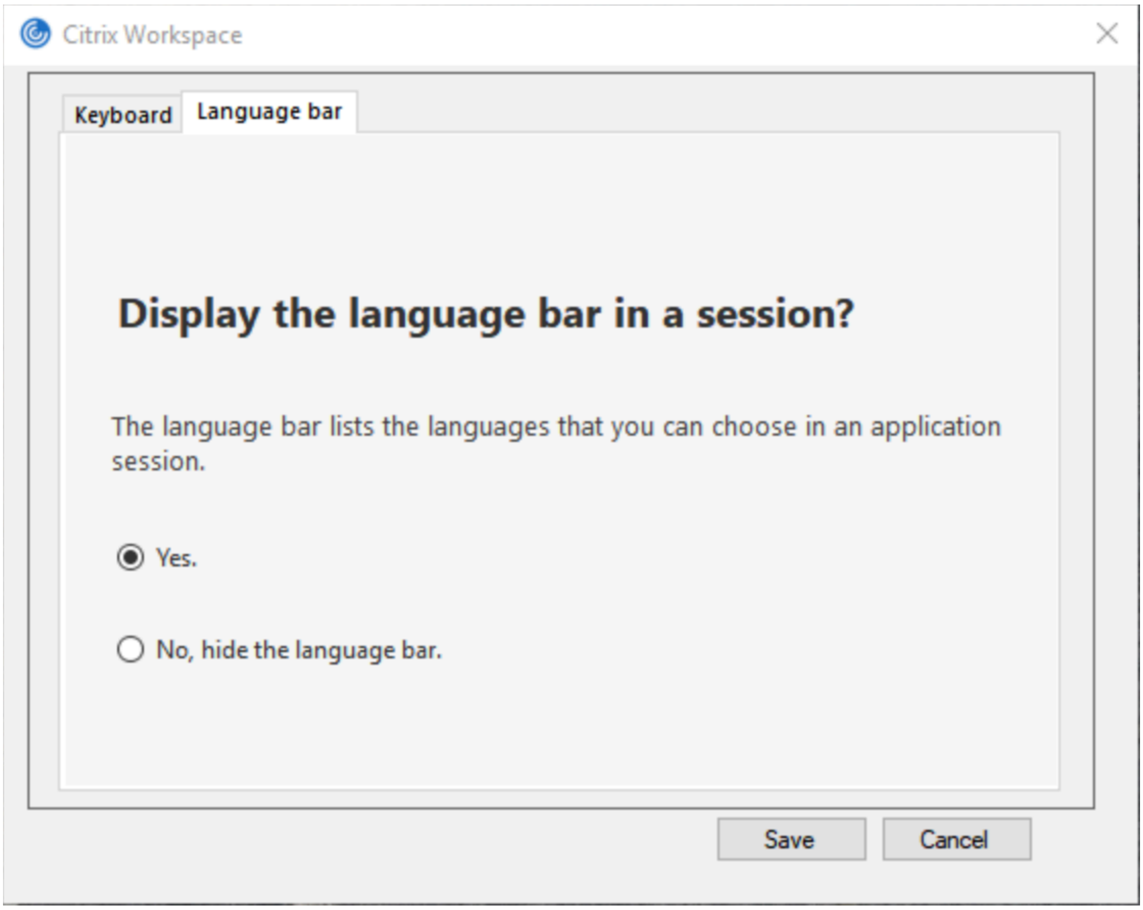
3. Select the **Language bar** tab.

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.



Display the language bar in a session?

The language bar lists the languages that you can choose in an application session.

● Yes.

○ No, hide the language bar.

> **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.

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.

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.

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:

HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Citrix\ICA Client\GenericUSB Type=String Name="DeviceRules" Value=

> **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:

HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\ICA Client\GenericUSB Type=MultiSz Name="DeviceRules" Value=

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.

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.
2. 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`.

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 StoreFront 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.

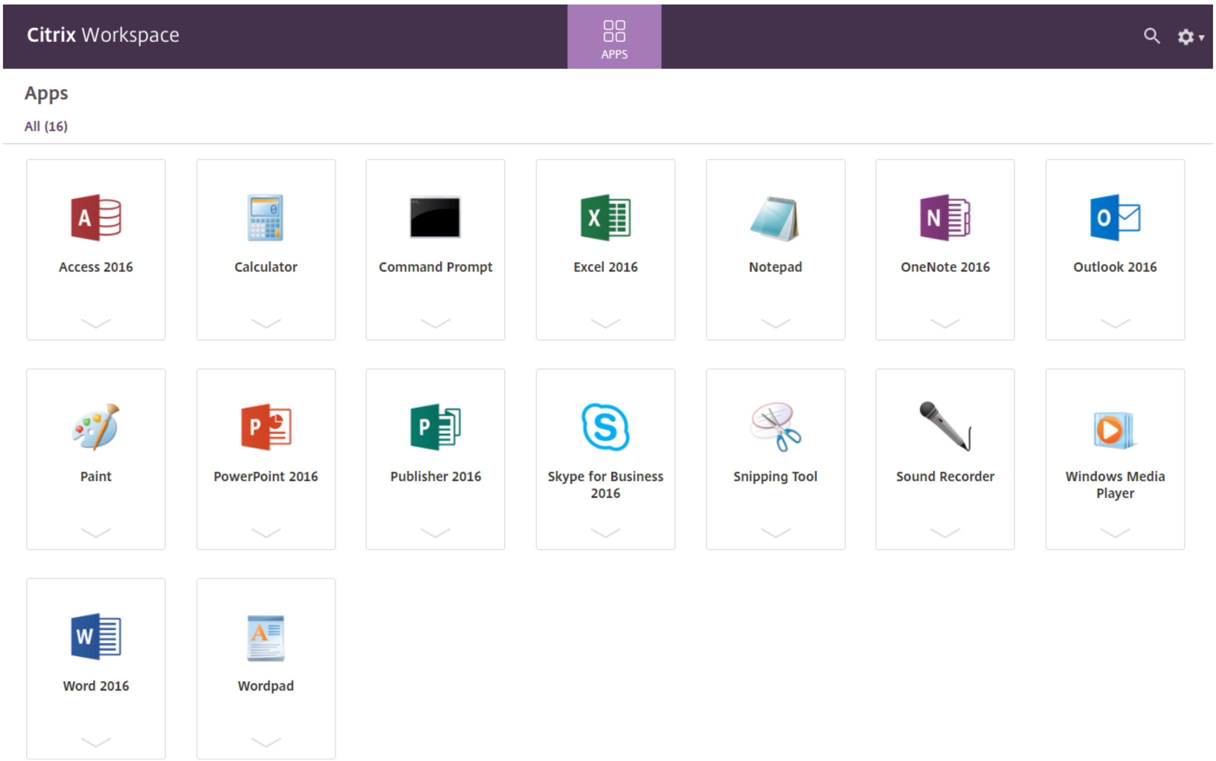
Workspace configuration

Citrix Workspace app for Windows supports configuring Workspace for subscribers, who might be using one or more services available from Citrix Cloud.

Citrix Workspace app intelligently displays only the specific workspace resources to which users are entitled. All your digital workspace resources available in Citrix Workspace app are powered by the Citrix Cloud Workspace experience service.

A workspace is part of a digital workspace solution that enables IT to securely deliver access to apps

from any device.
This screenshot is an example of what the workspace experience looks like to your subscribers. This interface is evolving and might look different to what your subscribers are working with today. For example, it might say "StoreFront" at the top of the page instead of "Workspace".



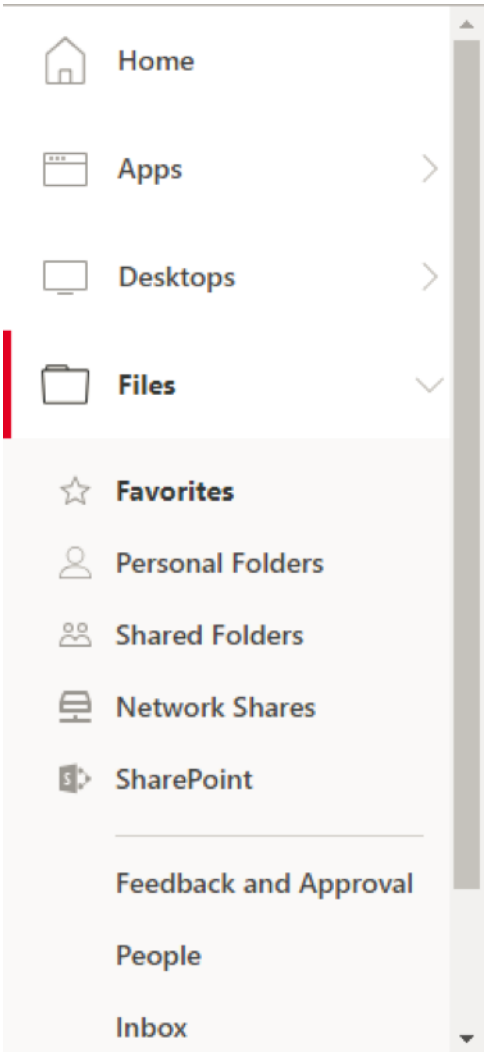
Content Collaboration Service integration

This release introduces integration of Citrix Content Collaboration Service with Citrix Workspace app. Citrix Content Collaboration enables you to easily and securely exchange documents, send large documents by email, securely handle document transfers to third parties, and access a collaboration space. Citrix Content Collaboration provides many ways to work, including a web-based interface, mobile clients, desktop apps, and integration with Microsoft Outlook and Gmail.

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

> **Note:**
>
> Citrix Content Collaboration integration in Citrix Workspace app isn't supported on Windows Server 2012 and 2016 due to operating system's security option.

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



Limitations:

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

Configure download location for Citrix Files using the Registry editor:

1. Launch the Registry editor and navigate to `HKEY_CURRENT_USER\Software\Citrix\Dazzle\`.
2. Create a String Value key by name **DownloadPreference**.
3. Copy and paste the preferred download path for Citrix Files to the Value column.
4. If you want a prompt for every download, set the Value column to *.

For information about configuring Citrix Files download location using the **Advanced Preferences** UI, see Configuring download location using Advanced Preferences in Citrix Workspace app for Windows Help documentation.

SaaS apps

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.

Citrix Workspace app launches the SaaS apps on Citrix Workspace Browser. For information, see Citrix Workspace Browser documentation.

Limitations:

1. 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.
2. Videos embedded in an app might not work.

For more information about Workspace configuration, see Workspace configuration in Citrix Cloud.

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.

Browser content redirection

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.

For more information, see Browser content redirection.

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 for Performance.

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_SZ

- Value: 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.
3. From the Desktop Viewer toolbar, select **Preferences**.

   The Citrix Workspace - Preferences window appears.
4. Select **Connections**.
5. Under **Relative Mouse** settings, enable **Use relative mouse**.
6. Click **Apply** and **OK.**

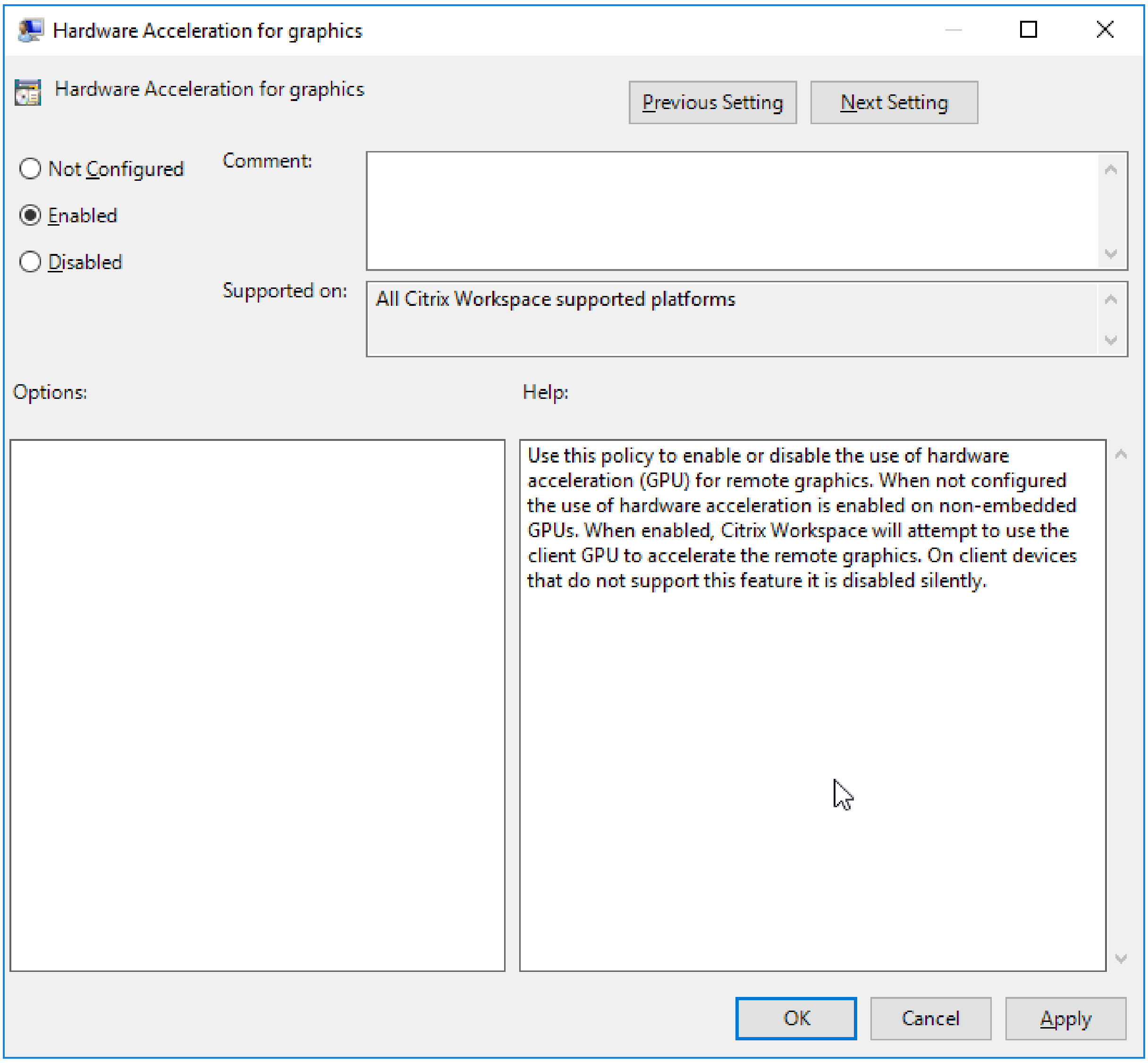
> **Note:**
>
> Configuring the relative mouse from the Desktop Viewer applies the feature to per-session only.

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**.



Supported on: All Citrix Workspace supported platforms

Help: Use this policy to enable or disable the use of hardware acceleration (GPU) for remote graphics. When not configured the use of hardware acceleration is enabled on non-embedded GPUs. When enabled, Citrix Workspace will attempt to use the client GPU to accelerate the remote graphics. On client devices that do not support this feature it is disabled silently.

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.

Microphone input

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.

Client drive-mapping

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
`0` or delete - enables

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.

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

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.

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.

Virtual desktops

From within a desktop session, users can't connect to the same virtual desktop. If the user tries do so, disconnects the existing desktop session. So, Citrix recommends:

- Administrators must not configure the clients on a desktop to point to a site that publishes the same desktop
- Users must not browse site that hosts the same desktop if the site is configured to automatically reconnect users to existing sessions
- Users must not browse to a site that hosts the same desktop and try to launch it

A user who logs on locally to a computer that is acting as a virtual desktop, blocks connection to that desktop.

Define the device mapping:

- if your users connect to virtual applications, published with virtual apps, from a virtual desktop and
- your organization has a separate virtual apps administrator.

Device mapping checks if the desktop devices are mapped consistently within desktop and application sessions. Because local drives are displayed as network drives in desktop sessions, the virtual apps administrator needs to change the drive-mapping policy to include network drives.

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)

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.

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, reliability, and performance of Citrix Workspace app.

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.

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

You can stop sending CEIP data to Citrix and Google Analytics by:

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**.

> **Note:**
>
> You can stop sending CEIP data except for the operating system and Workspace app versions collected for Google Analytics indicated by an * in the second table.

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`, to stop sending the final two

> CEIP data elements, that is, Operating System and Workspace app version, navigate to the following registry entry and set the value:

Path: `HKEY_LOCAL_MACHINE\ SOFTWARE\Citrix\ICA Client\CEIP`

Key: `DisableHeartbeat`

Value: `True`

The specific CEIP data elements collected by Citrix are:

Operating system version	Workspace app version	External devices connected	Screen resolution
Flash version	Desktop Lock configuration	Touch enabled	Authentication configuration
Session launch method	Graphics configuration	Desktop Viewer configuration	Printing
Connection error	Time to launch	Workspace app language	VDA information
SSON state	Installer state	Time to install	Connection protocol
Internet Explorer version			

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 Workspace Browser Usage	Auto-update channel
Inactivity Timeout Details	Citrix Workspace Browser Version		

Regional settings

Citrix Workspace app displays the date, time, and number based on the locale of the browser or endpoint device.

Starting from Citrix Workspace app 2106, you can customize regional date, time, and number formats through Regional Settings. Changes made in these settings are saved for an individual user and applied across all devices.

> **Note:**
>
> This option is available only on Cloud deployments.

For more information, see Regional Settings.

Microsoft Teams

- Screen sharing
- Encoder performance estimator
- Acoustic Echo Cancellation

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	Type	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.
  - `DirectWShow` 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.

Configuring Single sign-on to Workspace app

January 21, 2022

Single sign-on using Azure Active Directory

This section explains how to implement single sign-on (SSO) using Azure Active Directory (AAD) as an identity provider with domain joined workloads in hybrid or AAD enrolled endpoints. With this configuration, you can authenticate to Workspace using Windows Hello or FIDO2 on endpoints that are enrolled to AAD.

> **Note:**
>
> If you use Windows Hello, as a standalone authentication, you can achieve single sign-on to Citrix Workspace app. However, you are prompted for your user name and password while accessing published virtual apps or desktops. As a workaround, consider implementing Federated Authentication Service (FAS).

Prerequisites

- An active Azure Active Directory connection to Citrix Cloud. For more information, see Connect Azure Active Directory to Citrix Cloud.
- An Azure Active Directory workspace authentication. For more information, see Enable Azure AD authentication for workspaces.
- Verify if you have configured Azure AD Connect. For more information, see Getting started with Azure AD Connect using express settings.
- Activate Pass-through authentication on Azure AD Connect. Also, verify if the Single sign-on and the Pass-through options work on the Azure portal. For more information, see Azure Active Directory Pass-through Authentication: Quickstart.

Configuration

Do the following steps to configure SSO on your device:

1. Install the Citrix Workspace app using the Windows command line with the `includeSSON` option:

```
CitrixWorkspaceApp.exe /includeSSON
```

1. Reboot your device.
2. Open the Citrix Workspace app Group Policy Object administrative template by running `gpedit.msc`.
3. Go to **Administrative Templates** > **Citrix Components** > **Citrix Workspace** > **User Authentication** > **Local user name and password**.
4. Select **Enable pass-through authentication**. Depending on the configuration and security settings, select the **Allow pass-through authentication for all ICA** option for pass-through authentication to work.
5. Modify the User Authentication settings in Internet Explorer. To modify the settings:
   - Open **Internet Properties** from the Control panel.
   - Navigate to **General Properties** > **Local Intranet** and click **Sites**.
   - In the **Local Intanet** window, click **Advanced, add trusted sites**, add the following trusted sites, and click **Close**:
     - `https://aadg.windows.net.nsatc.net`
     - `https://autologon.microsoftazuread-sso.com`
     - `The name of your tenant, for example: https://xxxtenantxxx.cloud.com`
6. Disable extra authentication prompts by disabling the `prompt=login` attribute in your tenant. For more information, see User Prompted for Additional Credentials on Workspace URLs When Using Federated Authentication Providers. You can contact Citrix technical support to disable the `prompt=login` attribute in your tenant to successfully configure Single sign-on.
7. Enable domain pass-through authentication on the Citrix Workspace app client. For more information, see Domain pass-through authentication.
8. Restart the Citrix Workspace app for the changes to take effect.

Single sign-on using Okta and Federated Authentication Service

This section explains how you can implement single sign-on (SSO) using Okta as an identity provider with domain joined device and Federated Authentication Service (FAS). With this configuration, you can authenticate to Workspace using Okta to enable single sign-on and prevent a second logon prompt. For this authentication mechanism to work, you need to use the Citrix Federated Authentication Service with Citrix Cloud. For more information, see Connect Citrix Federated Authentication Service to Citrix Cloud.

Prerequisites

- Cloud Connector. For more information about installing the Cloud Connector, see Cloud Connector Installation.
- An Okta agent. For more information about installing an Okta agent, see Install the Okta Active Directory agent. Also, you can cofigure the Okta IWA Web agent to login from a Windows Domain joined device. For more information, see Install and configure the Okta IWA Web agent for Desktop single sign-on
- An active Azure Active Directory connection to Citrix Cloud. For more information, see Connect Azure Active Directory to Citrix Cloud.
- Federated Authentication Service. For more information, see Install the Federated Authentication Service.

Configuration

Do the following steps to configure SSO on your device:

Connect Citrix Cloud to your Okta organization:

1. Download and install the Okta Active Directory agent. For more information, see Install the Okta Active Directory agent.
2. Sign in to Citrix Cloud at `https://citrix.cloud.com`.
3. From the Citrix Cloud menu, select **Identity and Access Management**.
4. Locate Okta and select **Connect** from the ellipsis menu.
5. In **Okta URL**, enter your Okta domain.
6. In **Okta API Token**, enter the API token for your Okta organization.
7. In **Client ID** and **Client Secret**, enter the client ID and secret from the OIDC web app integration you created earlier. To copy these values from the Okta console, select **Applications** and locate your Okta application. Under **Client Credentials**, use the **Copy to Clipboard** button for each value.
8. Click **Test and Finish**. Citrix Cloud verifies your Okta details and tests the connection.

Enable Okta authentication for workspaces:

1. From the Citrix Cloud menu, select **Workspace Configuration** > **Authentication**.
2. Select **Okta**. When prompted, select **I understand the impact on the subscriber experience**.
3. Click **Accept** to accept the permissions request.

Enable Federated Authentication Service:

1. From the Citrix Cloud menu, select **Workspace Configuration** and then select **Authentication**.
2. Click **Enable FAS**. This change might take up to five minutes to be applied to subscriber sessions.

Afterward, the Federated Authentication Service is active for all virtual app and desktop launches from Citrix Workspace.

When subscribers sign in to their workspace and launch a virtual app or desktop in the same resource location as the FAS server, the app or desktop starts without prompting for credentials.

> **Note:**
>
> If all FAS servers in a resource location are down or in maintenance mode, application launches succeed, but single sign-on isn't active. Subscribers are prompted for their AD credentials to access each application or desktop.

Authenticate

May 20, 2022

To maximize the security of your environment, you must secure the connections between Citrix Workspace app and the resources you publish. You can configure various types of authentication for your Citrix Workspace app, including domain pass-through, smart card, and Kerberos pass-through.

Domain pass-through authentication

Single sign-on 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.

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

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.

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.

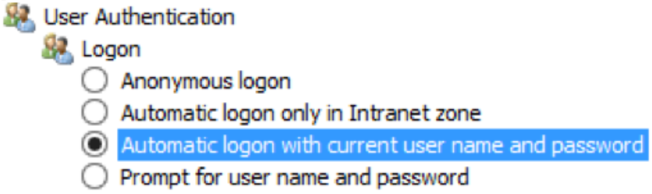
Configure XML trust services on the Delivery Controller

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 Internet** 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 > **Trusted Sites**.
   c) Click **Custom level**. The **Security Settings – Trusted Sites Zone** window appears.
   d) In the **User Authentication** pane, select **Automatic logon with current user name and password**.



User Authentication
Logon
○ Anonymous logon
○ Automatic logon only in Intranet zone
● Automatic logon with current user name and password
○ 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.bat`template 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 `CheckAndDeployWorkspacePerMachin` `.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**.

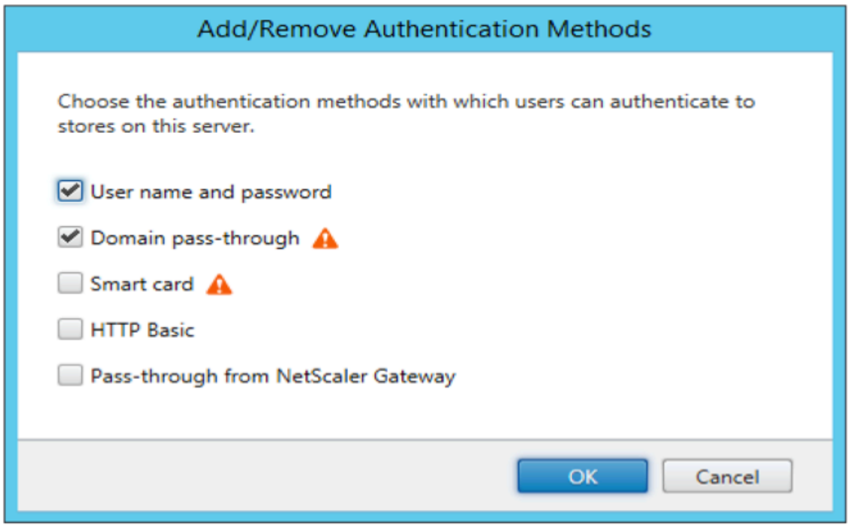
8. Select **Enable pass-through authentication** and click **Apply**.

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**.



Add/Remove Authentication Methods

Choose the authentication methods with which users can authenticate to stores on this server.

☑ User name and password

☑ Domain pass-through ⚠

□ Smart card ⚠

□ HTTP Basic

□ Pass-through from NetScaler Gateway

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.

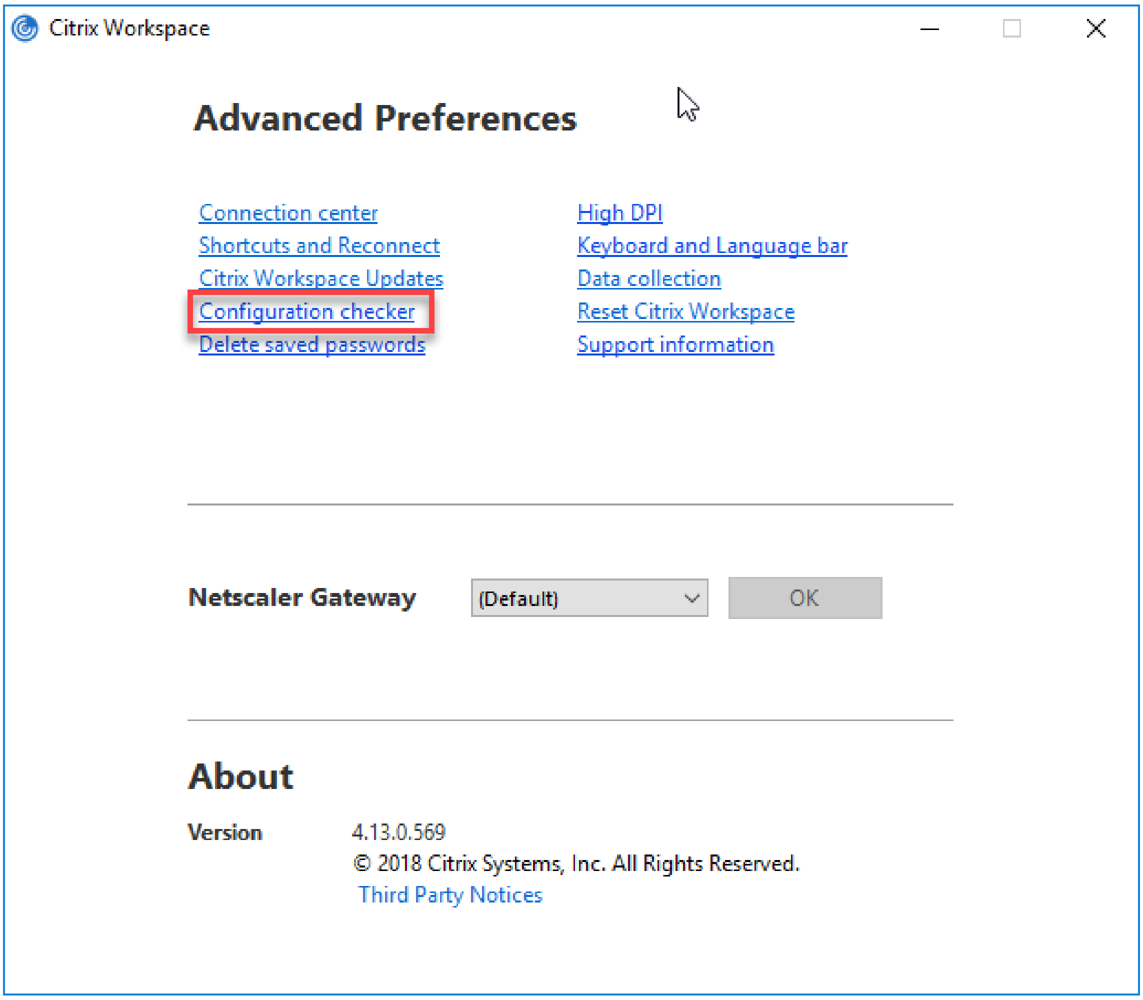
In the Global App Configuration Service, set the `Store Authentication Tokens` attribute to `False`.

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

3. 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 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 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 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:

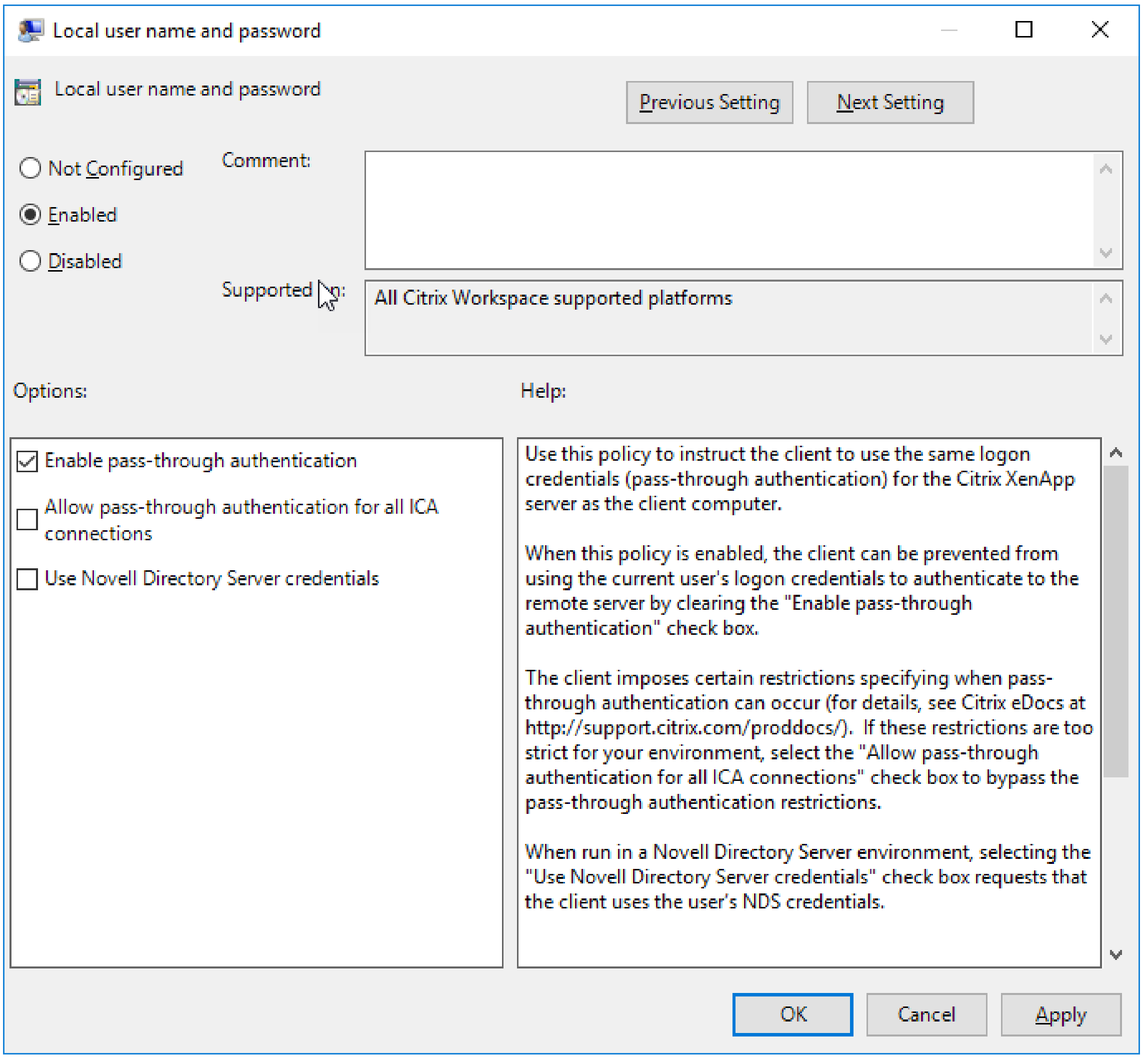
- `/includeSSON`

  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.



○ Not Configured
● Enabled
○ Disabled

Supported on: All Citrix Workspace supported platforms

☑ Enable pass-through authentication
☐ Allow pass-through authentication for all ICA connections
☐ Use Novell Directory Server credentials

Use this policy to instruct the client to use the same logon credentials (pass-through authentication) for the Citrix XenApp server as the client computer.

When this policy is enabled, the client can be prevented from using the current user's logon credentials to authenticate to the remote server by clearing the "Enable pass-through authentication" check box.

The client imposes certain restrictions specifying when pass-through authentication can occur (for details, see Citrix eDocs at http://support.citrix.com/proddocs/). If these restrictions are too strict for your environment, select the "Allow pass-through authentication for all ICA connections" check box to bypass the pass-through authentication restrictions.

When run in a Novell Directory Server environment, selecting the "Use Novell Directory Server credentials" check box requests that the client uses the user's NDS credentials.

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.

Other ways to authenticate to Citrix Workspace

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.

1. 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 is not supported.

1. 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*.

2. 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 the registry key HKEY_CURRENT_USER OR HKEY_LOCAL_MACHINE\Software\[Wow6432Node\Citrix\AuthManager: CertificateSelectionMode={ Prompt	SmartCardDefault	LatestExpiry }.

-

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.
- Add the following key value to the registry key HKEY_LOCAL_MACHINE\Software\[Wow6432Node\Citrix\AuthManager: 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:

```
copy[WFClient]
SmartCardCryptographicRedirection=On
<!--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) 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:

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**.
3. Click the **Silent authentication for Citrix Workspace** policy and set it to **Enabled**.
4. Click **Apply** and **OK**.

Domain pass-through access matrix

June 21, 2022

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 Joined to	IdP	VDA Joined to	SSO to Citrix 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.
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.

End Point Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
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 documentation for the IdP used to configure domain pass-through.
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.

End Point Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
AD	Any SAML based IdP (ex ADFS)	AD	Yes	Citrix Workspace app	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 Joined to	IdP	VDA Joined to	SSO to Citrix 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 Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
Non-Domain Joined	IdP that supports password less authentication - link	AD	No	FAS	Citrix Workspace uses Microsoft 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 Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
AD	StoreFront	AD	Yes	Citrix Workspace app	Domain pass-through authentication

End Point Joined to	IdP	VDA Joined to	SSO to Citrix Workspace	SSO to VDA	Documentation
AD/Hybrid joined/Windows Hello for Business	StoreFront	AD	Yes*	Citrix Workspace app /FAS(1)	Domain pass-through authentication and Enable single sign-on for workspaces with Citrix Federated Authentication Service.
AD	Citrix Gateway - Advanced Authentication	AD	Yes	Citrix Workspace app(2))	Domain pass-through to Citrix Workspace using on-premises Citrix Gateway as the identity provider.
AD	Citrix Gateway - Basic authentication	AD	Yes	Citrix Workspace app(3)	Domain pass-through authentication.

> **Notes:**
>
> 1. If you are using Windows Hello to sign in, FAS is required and registry configuration to enable SSO.
> 2. Needs client to be reachable to AD as it uses Kerberos.
> 3. 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

May 20, 2022

> **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.

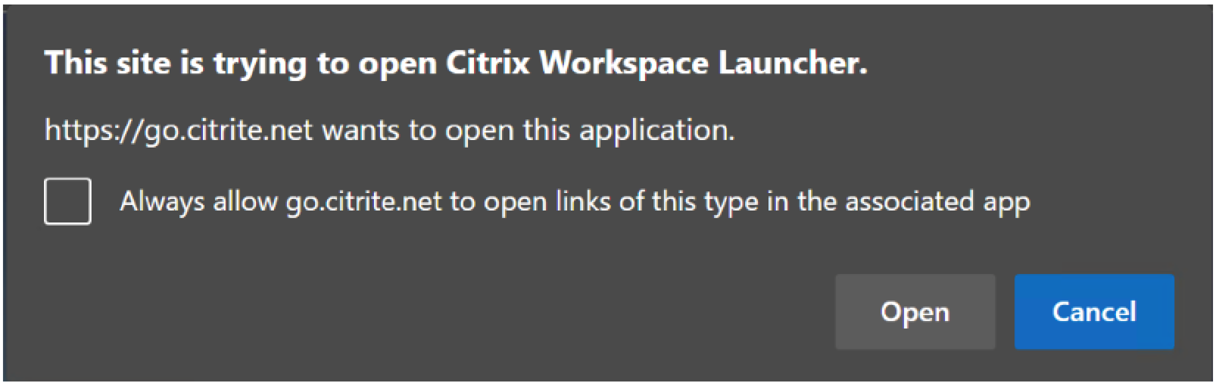
When launching StoreFront URL in a browser, the **Detect Receiver** prompt is shown.

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.



This site is trying to open Citrix Workspace Launcher.

https://go.citrite.net wants to open this application.

□ Always allow go.citrite.net to open links of this type in the associated app

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.

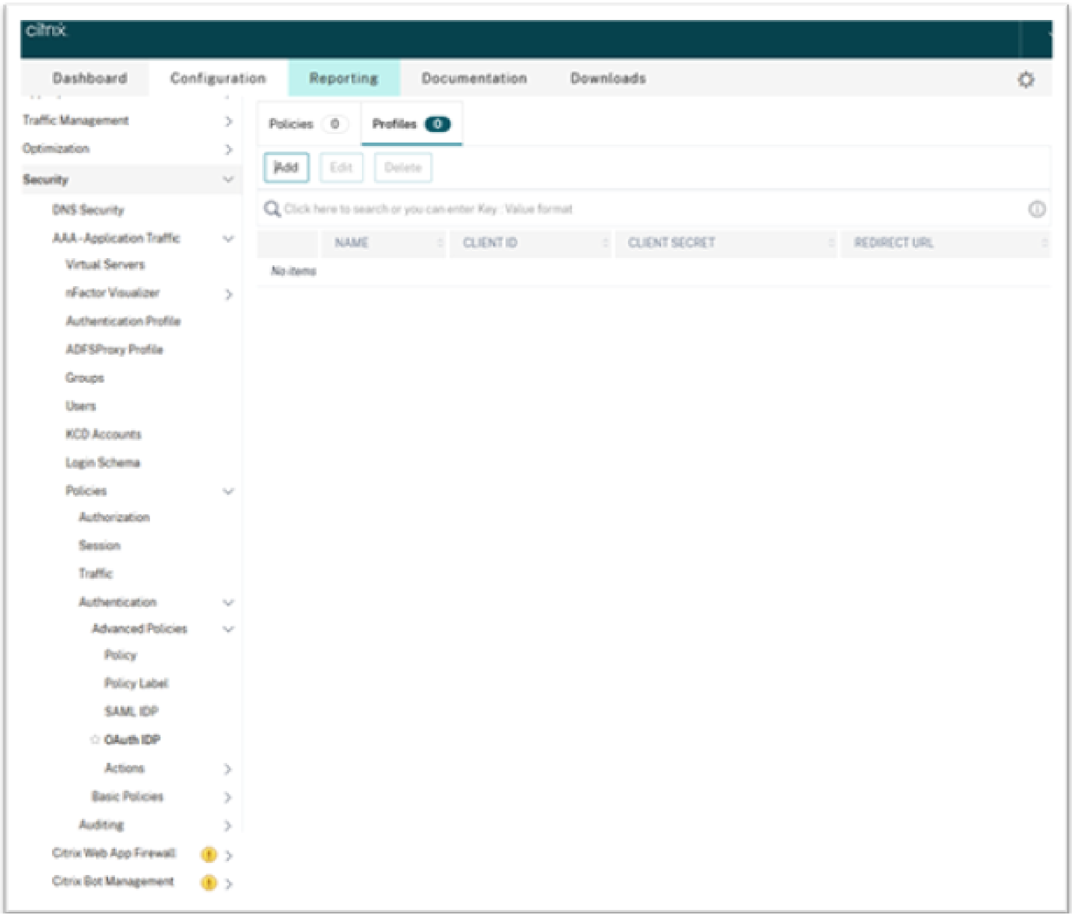
Create an OAuth IdP profile

1. To create an OAuth IdP profile by using the CLI, type the following in the command prompt:

```
add authentication OAuthIdPProfile <name> [-clientID <string>][-clientSecret ][-redirectURL <URL>][-issuer <string>][-audience <string>][-skewTime <mins>] [-defaultAuthenticationGroup <string>]

add authentication OAuthIdPPolicy <name> -rule <expression> [-action <string> [-undefAction <string>] [-comment <string>][-logAction <string>]

add authentication ldapAction <name> -serverIP <IP> -ldapBase ”dc=aaa,dc=local”

ldapBindDn <administrator@aaa.local> -ldapBindDnPassword <password> -ldapLoginName sAMAccountName

add authentication policy <name> -rule <expression> -action <string>

bind authentication vserver auth_vs -policy <ldap_policy_name> -priority <integer> -gotoPriorityExpression NEXT

bind authentication vserver auth_vs -policy <OAuthIdPPolicyName> -priority <integer> -gotoPriorityExpression END

bind vpn global  - certkey <>

<!--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**.

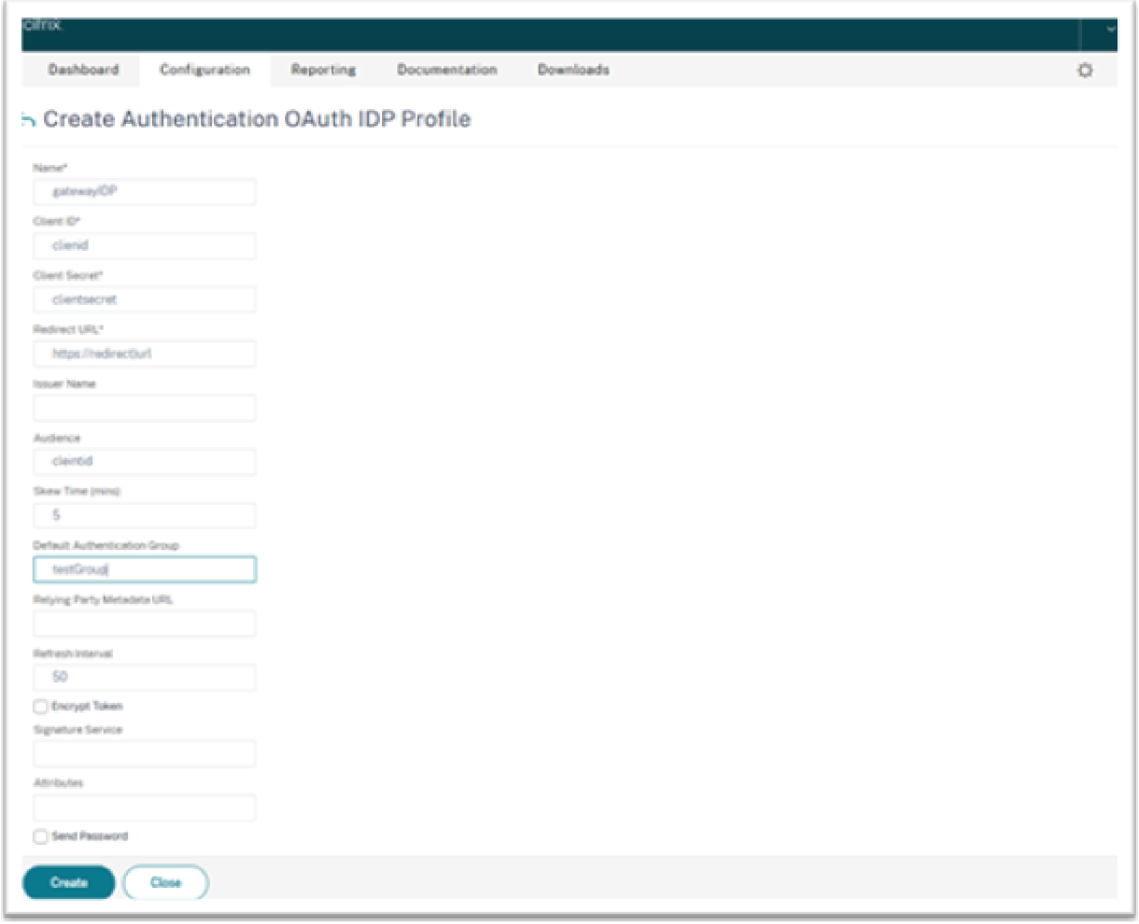
- **Name** – Name of the authentication profile. Must begin with a letter, number, or the underscore character (_). Name must have only letters, numbers, and the hyphen (-), period (.) pound (#), space ( ), at (@), equals (=), colon (:), and underscore characters.

]

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.



Create Authentication OAuth IDP Profile

Name*: gatewayIDP

Client ID*: clientid

Client Secret*: clientsecret

Redirect URL*: https://redirectUrl

Issuer Name:

Audience: clientid

Skew Time (mins): 5

Default Authentication Group: testGroup

Relying Party Metadata URL:

Refresh Interval: 50

□ Encrypt Token

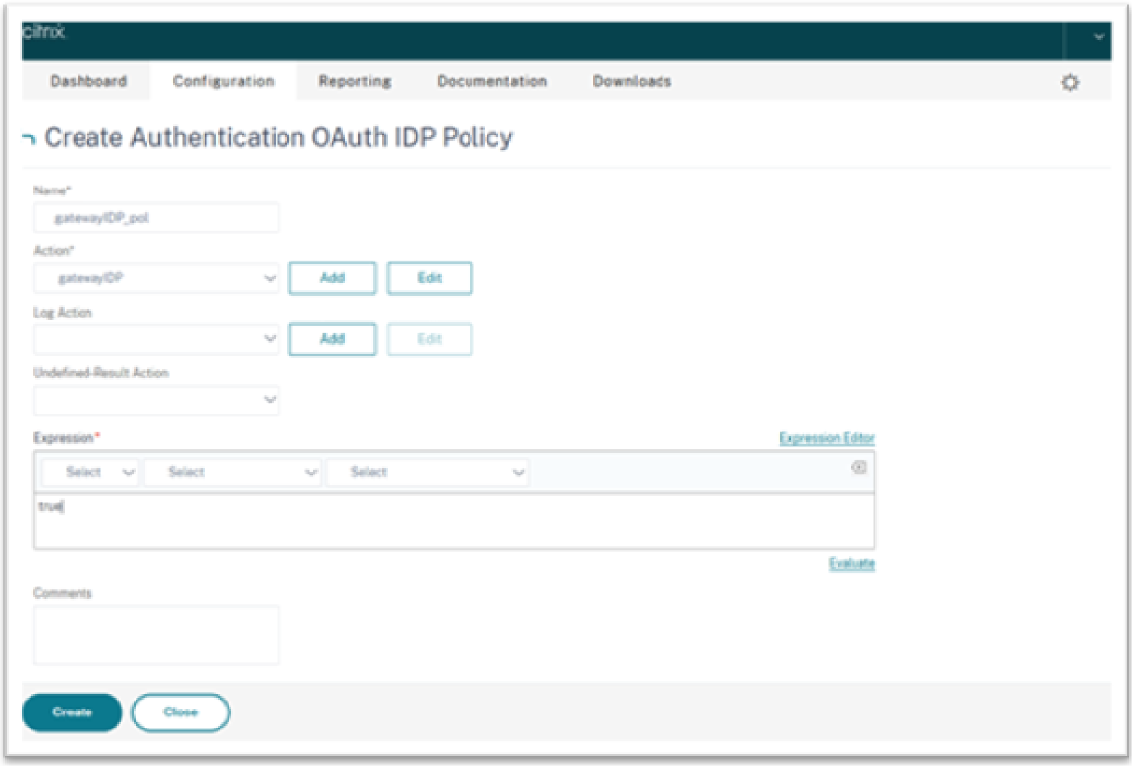
Signature Service:

Attributes:

□ Send Password

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.



Create Authentication OAuth IDP Policy

Name*: gatewayIDP_pol

Action*: gatewayIDP

Log Action:

Undefined-Result Action:

Expression*: true

Comments:

> **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.

1. 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

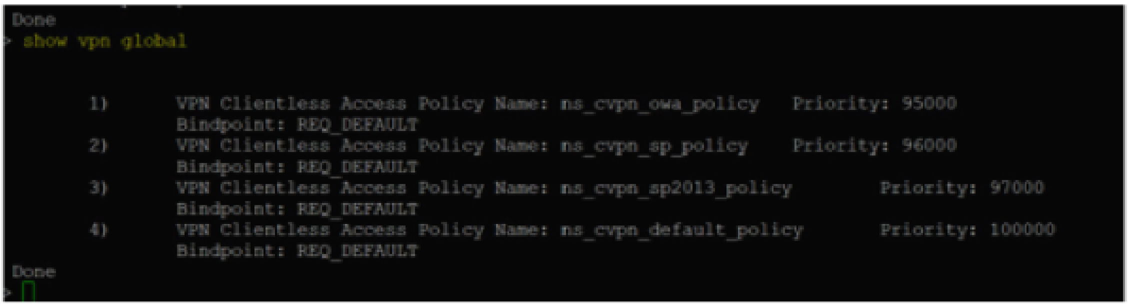
Binding the certificate globally to the VPN requires CLI access to the on-premises Citrix Gateway. Using Putty (or similar) login to the on-premises Citrix Gateway using SSH.

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.

   ```
   Done
   > show vpn global


           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
   >
   ```

4. To list the certificates on the on-premises Citrix Gateway, type the following command:
   `show ssl certkey`

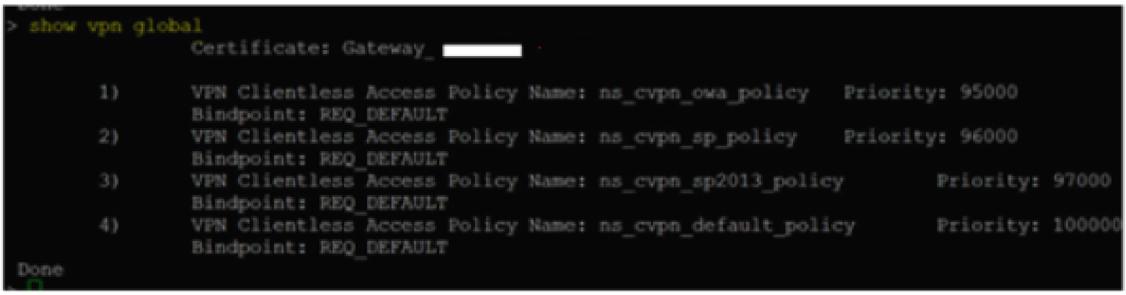
5. Select the appropriate certificate and type the following command to bind the certificate globally to VPN:

   ```
   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_[redacted]

        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 CTX221696.

Configuring the domain pass-through includes the following steps:

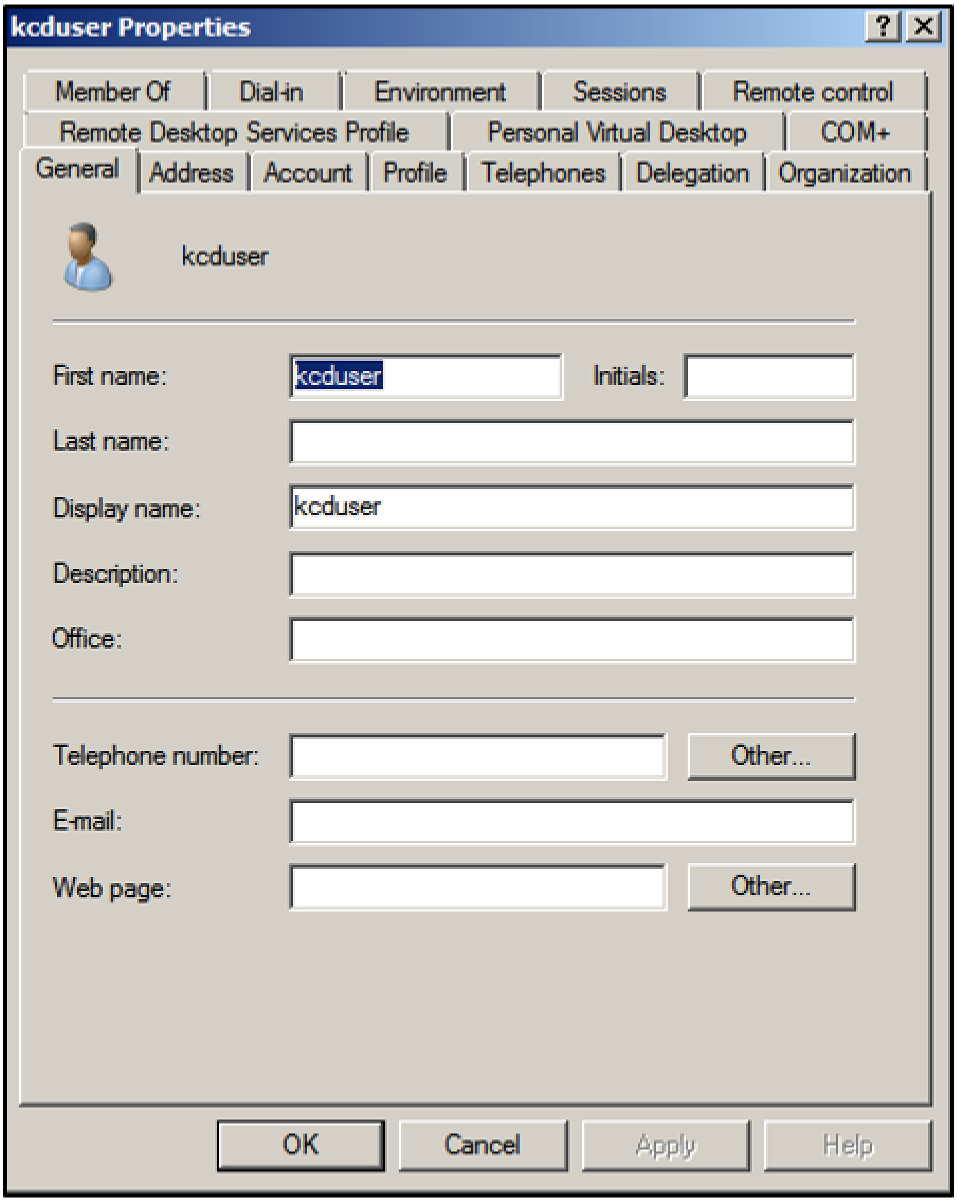
1. Kerberos Constrained Delegation configuration
2. Client configuration

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.



kcduser

First name: kcduser

Initials:

Last name:

Display name: kcduser

Description:

Office:

Telephone number:

E-mail:

Web page:

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.

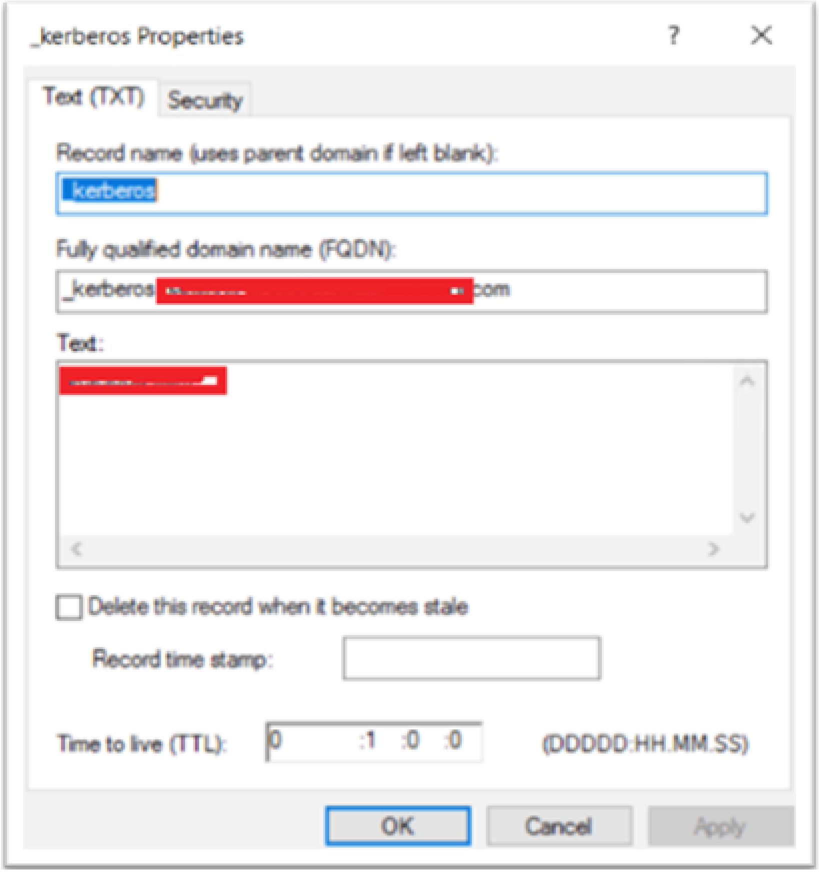
   a) In the Active Directory server, open a command prompt.
   b) In the command prompt, enter the following command:

```
`setspn  - A http/<LB fqdn> <domain\Kerberos user>`     1.  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.
    1.  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.

     ![KCD user properties](/en-us/citrix-workspace-app-for-windows
        /media/kcduser-properties.png)
```

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..



_kerberos Properties

Text (TXT) | Security

Record name (uses parent domain if left blank): kerberos

Fully qualified domain name (FQDN): _kerberos[redacted]com

Text: [redacted]

□ Delete this record when it becomes stale

Record time stamp:

Time to live (TTL): 0 :1 :0 :0 (DDDDD:HH.MM.SS)

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.

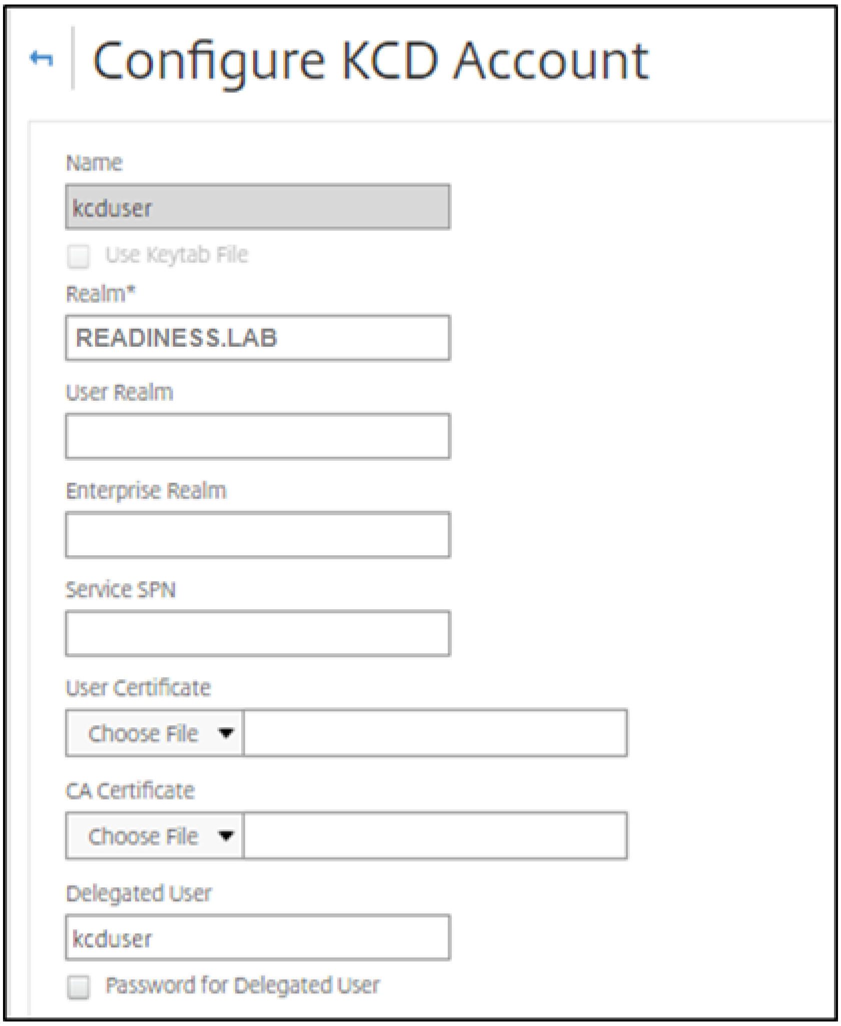
Hence, you must create a DNS TXT record that helps the client to look up for the _kerberos.gateway.citrix.com and get the Kerberos ticket for authentication.

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.



Configure KCD Account

Name

kcduser

□ Use Keytab File

Realm*

READINESS.LAB

User Realm

Enterprise Realm

Service SPN

User Certificate

Choose File

CA Certificate

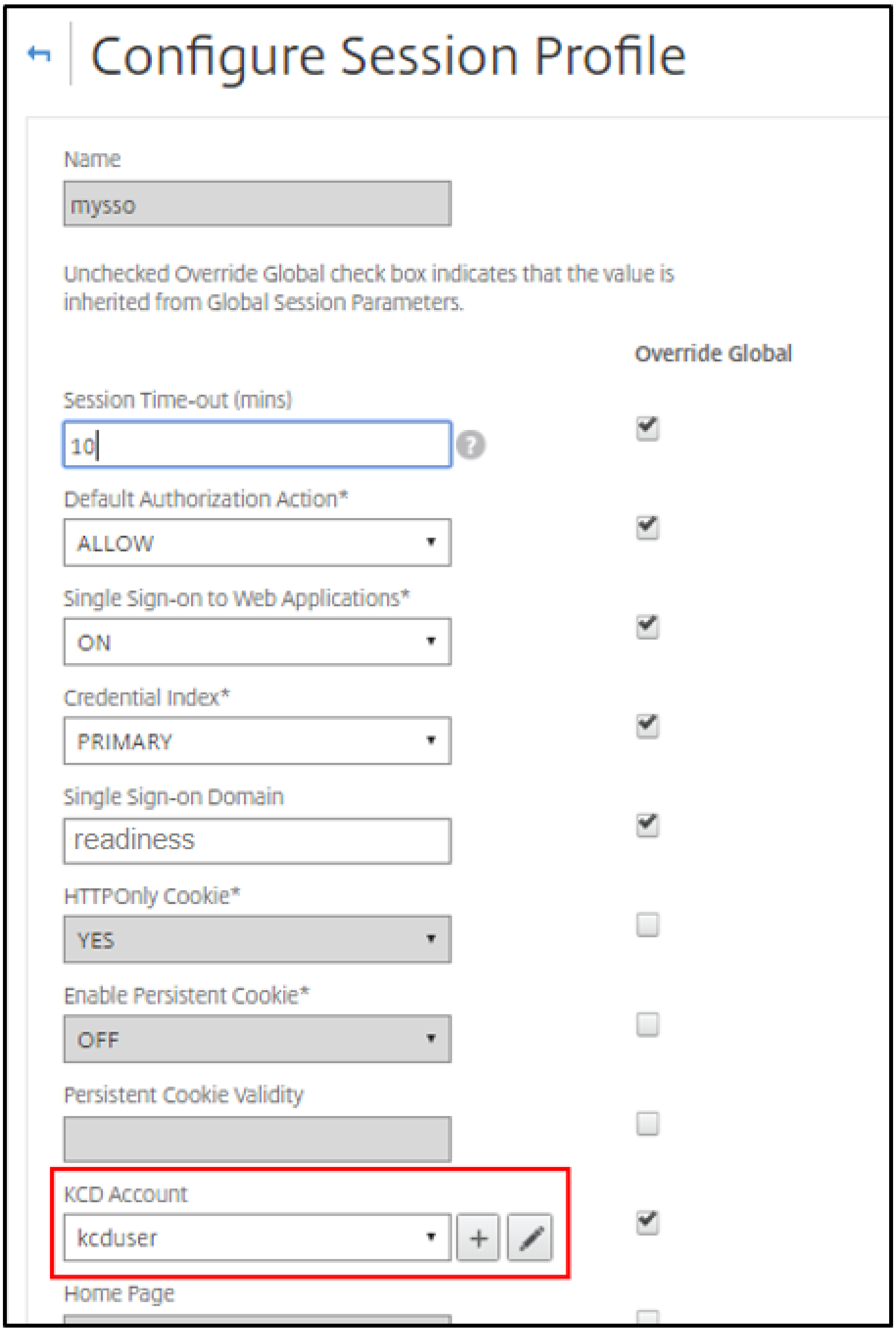
Choose File

Delegated User

kcduser

□ Password for Delegated User

b) Ensure that the Session Profile is using the right KCD account. Bind the session policy to the authentication, authorization, and auditing virtual server.



Configure Session Profile

Name: mysso

Unchecked Override Global check box indicates that the value is inherited from Global Session Parameters.

		Override Global
Session Time-out (mins)	10	☑
Default Authorization Action*	ALLOW	☑
Single Sign-on to Web Applications*	ON	☑
Credential Index*	PRIMARY	☑
Single Sign-on Domain	readiness	☑
HTTPOnly Cookie*	YES	□
Enable Persistent Cookie*	OFF	□
Persistent Cookie Validity		□
KCD Account	kcduser	☑
Home Page		□

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.

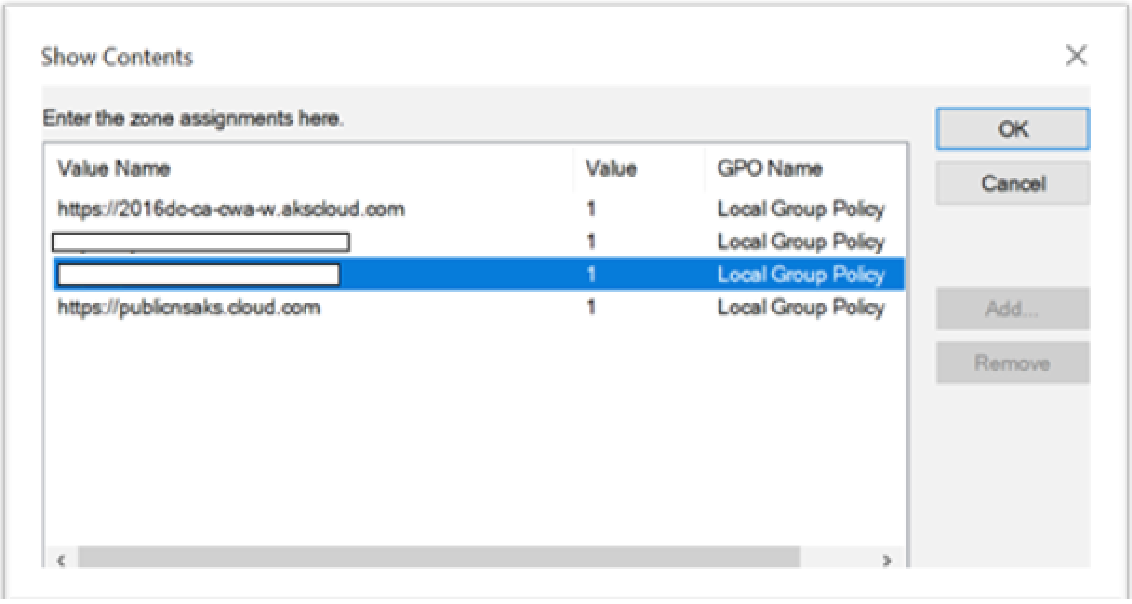
Following are some of the URLs to be trusted in the browser:

- 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.



Show Contents

Enter the zone assignments here.

Value Name	Value	GPO Name
https://2016dc-ca-cwa-w.akscloud.com	1	Local Group Policy
[redacted]	1	Local Group Policy
[redacted]	1	Local Group Policy
https://publicnsaks.cloud.com	1	Local Group Policy

   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:

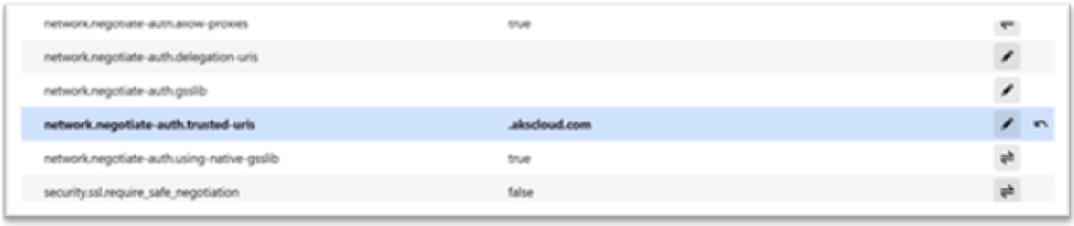
    a) Open the browser.

    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.



network.negotiate-auth.allow-proxies	true
network.negotiate-auth.delegation-uris	
network.negotiate-auth.gsslib	
network.negotiate-auth.trusted-uris	**.akscloud.com**
network.negotiate-auth.using-native-gsslib	true
security.ssl.require_safe_negotiation	false

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

June 9, 2022

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`:

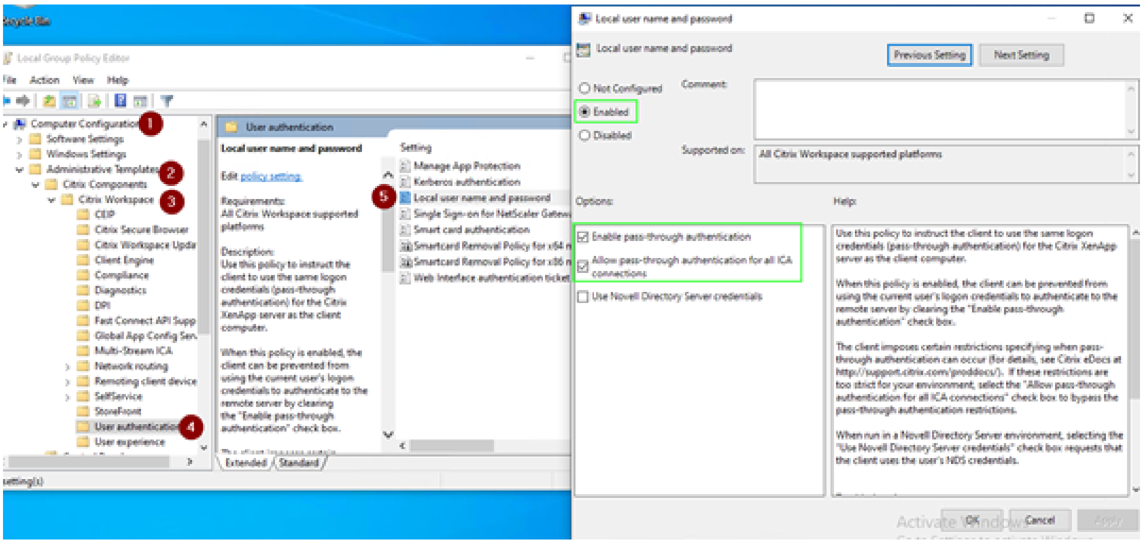
   ```
   CitrixWorkspaceApp.exe /includeSSON
   ```

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.



Local user name and password

Edit policy setting.

Requirements:
All Citrix Workspace supported platforms

Description:
Use this policy to instruct the client to use the same logon credentials (pass-through authentication) for the Citrix XenApp server as the client computer.

When this policy is enabled, the client can be prevented from using the current user's logon credentials to authenticate to the remote server by clearing the "Enable pass-through authentication" check box.

○ Not Configured
● Enabled
○ Disabled

Supported on: All Citrix Workspace supported platforms

☑ Enable pass-through authentication
☑ Allow pass-through authentication for all ICA connections
☐ Use Novell Directory Server credentials

Help:
Use this policy to instruct the client to use the same logon credentials (pass-through authentication) for the Citrix XenApp server as the client computer.

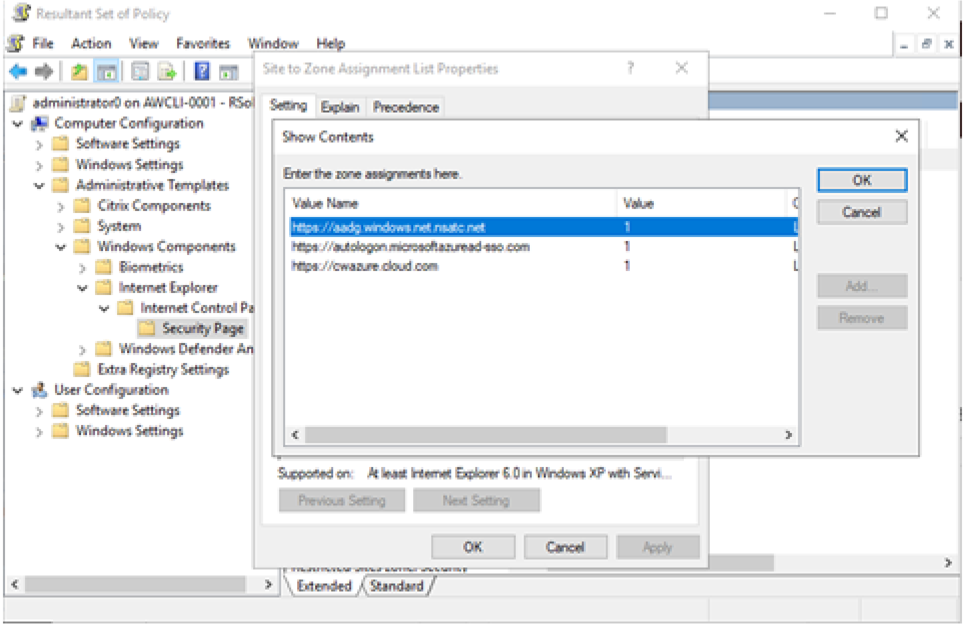
When this policy is enabled, the client can be prevented from using the current user's logon credentials to authenticate to the remote server by clearing the "Enable pass-through authentication" check box.

The client imposes certain restrictions specifying when pass-through authentication can occur (for details, see Citrix eDocs at http://support.citrix.com/proddocs/). If these restrictions are too strict for your environment, select the "Allow pass-through authentication for all ICA connections" check box to bypass the pass-through authentication restrictions.

When run in a Novell Directory Server environment, selecting the "Use Novell Directory Server credentials" check box requests that the client uses the user's NDS credentials.

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



Enter the zone assignments here.

Value Name	Value
https://aadg.windows.net.nsatc.net	1
https://autologon.microsoftazuread-sso.com	1
https://cwazure.cloud.com	1

Supported on: At least Internet Explorer 6.0 in Windows XP with Servi...

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.

Contact Citrix Technical Support to disable the `prompt=login` parameter in your Citrix Workspace to achieve single sign-on. For more information, see Citrix Knowledge Center article CTX253779.

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

May 30, 2022

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)

> - 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.

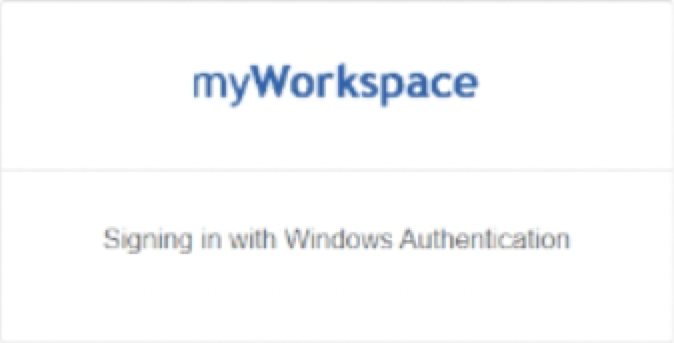
   > **Note:**
   >
   > Make sure that the prerequisites mentioned in Active Directory integration prerequisites are met before installing the agent.

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.

> 
>
> myWorkspace
>
> Signing in with Windows Authentication
>
> - 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 pass-through 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 information on how to enable FAS, see Enable Federated Authentication Service in Configuring Single sign-on to Workspace app.
   > If you aren't using FAS, Configure Citrix Workspace app to support SSO.

Secure communications

March 21, 2022

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 StoreFront 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 1.2 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: 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.

1. 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	Type	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 Citrix 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:

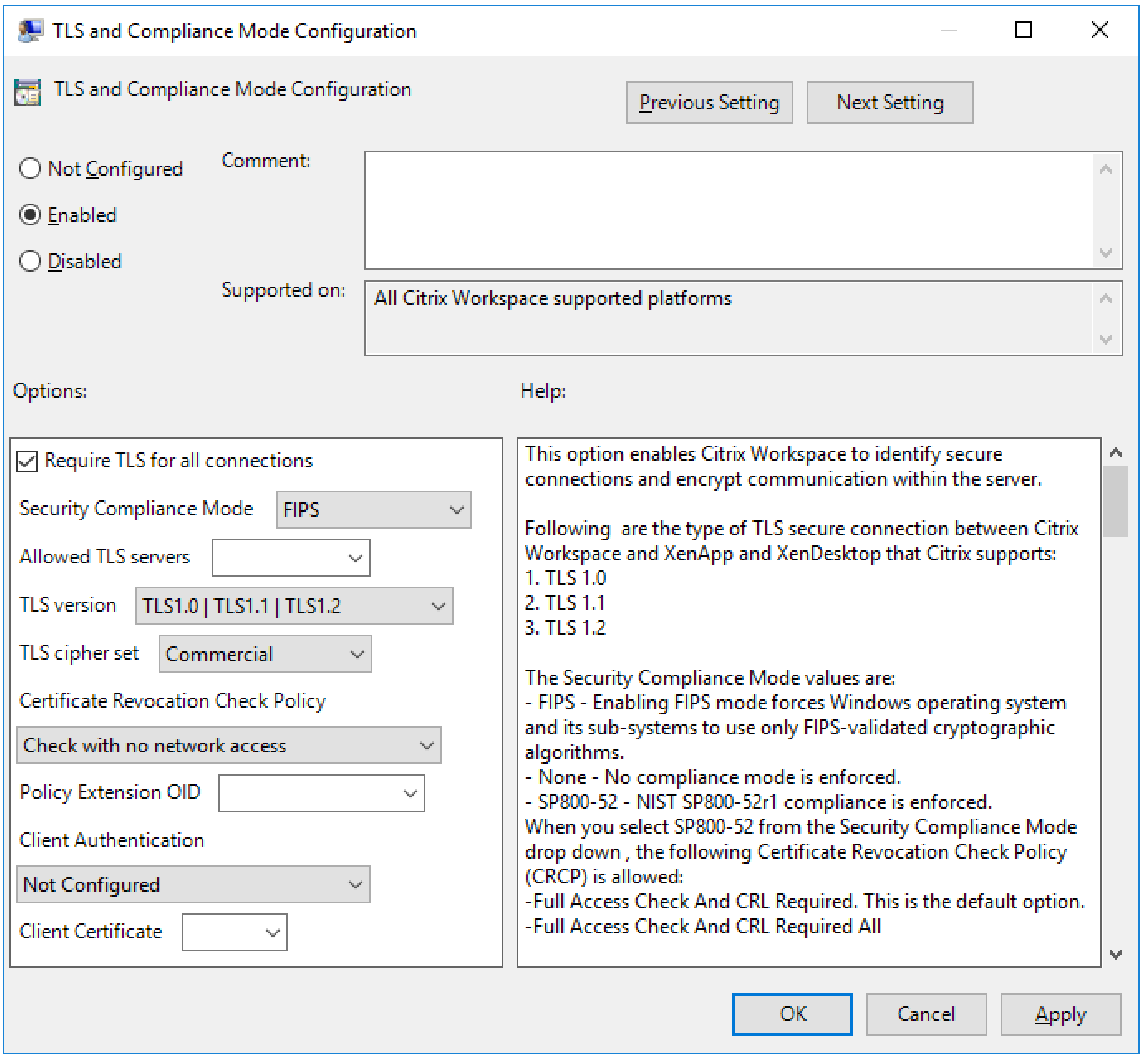
- Enforce use of TLS: We recommend that you use TLS for connections using untrusted networks, including the Internet.
- Enforce use of FIPS (Federal Information Processing Standards): Approved cryptography and follow the recommendations in NIST SP 800-52. These options are disabled by default.

- 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 Citrix Knowledge Center article CTX250104.

TLS support

1. Open the Citrix Workspace app GPO administrative template by running gpedit.msc.
2. Under the **Computer Configuration** node, go to **Administrative Templates** > **Citrix Workspace** > **Network routing**, and select the **TLS and Compliance Mode Configuration** policy.


TLS and Compliance Mode Configuration
TLS and Compliance Mode Configuration
Previous Setting
Next Setting
OK
Cancel
Apply

○ Not Configured

● Enabled

○ Disabled

Comment:

Supported on: All Citrix Workspace supported platforms

Options:

☑ Require TLS for all connections

Security Compliance Mode: FIPS

Allowed TLS servers:

TLS version: TLS1.0 | TLS1.1 | TLS1.2

TLS cipher set: Commercial

Certificate Revocation Check Policy: Check with no network access

Policy Extension OID:

Client Authentication: Not Configured

Client Certificate:

Help:

This option enables Citrix Workspace to identify secure connections and encrypt communication within the server.

Following are the type of TLS secure connection between Citrix Workspace and XenApp and XenDesktop that Citrix supports:
1. TLS 1.0
2. TLS 1.1
3. TLS 1.2

The Security Compliance Mode values are:
- FIPS - Enabling FIPS mode forces Windows operating system and its sub-systems to use only FIPS-validated cryptographic algorithms.
- None - No compliance mode is enforced.
- SP800-52 - NIST SP800-52r1 compliance is enforced.
When you select SP800-52 from the Security Compliance Mode drop down , the following Certificate Revocation Check Policy (CRCP) is allowed:
-Full Access Check And CRL Required. This is the default option.
-Full Access Check And CRL Required All

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 comma-separated 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 Citrix 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 Citrix Knowledge Center article CTX250104.

Trusted server

Trusted server configuration identifies and enforces trust relations in Citrix Workspace app connections.

When you enable Trusted server, Citrix Workspace app specifies the requirements and decides if the connection to the server can be trusted. For example, a Citrix Workspace app connecting to a certain address, such as `https://\*.citrix.com` with a specific connection type (such as TLS) is directed to a trusted zone on the server.

When you enable this feature, the connected server is in the Windows **Trusted Sites zone**. For instructions about adding servers to the Windows **Trusted Sites zone**, see the Internet Explorer online help.

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**.

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 Citrix 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\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"
```

Storebrowse

May 16, 2022

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\AuthManager\Inst
On a 64-bit machine	[HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Citrix\A

When Citrix Workspace app is installed by users (non-administrators):

On a 32-bit machine	[HKEY_CURRENT_USER\SOFTWARE\Citrix\AuthManager\Insta
On a 64-bit machine	[HKEY_CURRENT_USER\SOFTWARE\WOW6432Node\Citrix\Au

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**: Enable HTTP Basic authentication so that the **Storebrowse** utility can communicate with the StoreFront servers. This option is disabled by default on the StoreFront server. Enable the **HTTP Basic authentication** method.

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 applies when the user provides the credentials using the **Storebrowse** commands.
- External `Authmanager` that can be included with Citrix Workspace app for Windows.

Single sign-on with Citrix Gateway

In addition to the newly added Citrix Gateway support, you can now use single sign-on with it. You can add a store and list the published resources without having to provide your user credentials.

For more information about single sign-on support with Citrix Gateway, see Support for single sign-on with Citrix Gateway.

> **Note:**
>
> This feature is supported only on domain-joined machines where the Citrix Gateway is configured with the single sign-on authentication.

Launch published desktop or application

You can now launch a resource directly from the store without having to use an ICA file.

Command usage

The following section provides detailed information about the commands that you can use from the **Storebrowse** utility.

`-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>
```

/?

Description:

Provides details on **Storebrowse** utility usage.

(-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
```

(-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>
```

-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''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_publ
 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_publ
 apps and desktops } <https://my.secondexmaplestore.com>
```

-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 } <https://my.firstexamplestore.net/Citrix/Store/discovery>
```

Command example on Citrix Gateway:

```
<.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -L { Resource_Name
 } https://my.secondexamplestore.com>
```

-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 } <https://my.firstexamplestore.net/Citrix/Store/
discovery >
```

Command example on Citrix Gateway:

```
.\storebrowse.exe -U { Username } -P { Password } -D { Domain } -S { Friendly_Resource_
 } <https://my.secondexamplestore.com>
```

-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 }
```

`-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 }
```

`-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
```

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 **Storebrowse** utility are case-sensitive and must be in upper case only.

Storebrowse for Workspace

May 10, 2022

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 feature provides **Storebrowse** support with Single sign-on only.

> - The prerequisites mentioned in System requirements and compatibility must be available to use this feature.

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 resources.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/YTlhOGUzYWMtMDk5ZC00NTc3LWI4NGUtZTMzZDA2OTVkZjM5Lk5vdGVwYWQ-/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`.

Citrix Workspace app Desktop Lock

May 16, 2022

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.

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:

   ```
   CitrixWorkspaceApp.exe
         /includeSSON
   STORE0=”DesktopStore;https://my.storefront.server/Citrix/MyStore/
       discovery;on;Desktop Store”
   <!--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

March 28, 2022

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.

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.

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.

For more information, see Fast Connect 3 Credential Insertion API for Citrix Workspace app for Windows documentation.

ICA Settings Reference

February 1, 2021

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)

Locations

Corporate Headquarters | 851 Cypress Creek Road Fort Lauderdale, FL 33309, United States
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