

# PCoIP Software Client for macOS Administrators' Guide

## **24.03**

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# Anyware Software Client for macOS

Welcome to the Software Client for macOS Administrators' Guide.

Anyware Software Clients are applications that establish PCoIP sessions with remote Windows, Linux, or macOS desktops. Connections can be made to Anyware agents installed on virtual or physical machines, or to Remote Workstation Cards in physical workstations.

This guide explains how to install, configure, and use the Software Client for macOS. It includes client system requirements and information on host dependencies.

## Who Should Read This Guide?

This guide is intended for administrators and users who install, configure, or use the Software Client for macOS.

## Additional Documentation

The following guides contain additional information relevant to Anyware systems and Anyware Software Clients:

For more information about HP Anyware, including detailed information on included Anyware components as well as HP Anyware plans, see the Cloud Access Architecture Guide.

For more information about Anyware agents, which are required on remote virtual machines, see the following pages:

- [Anyware Graphics Agent for Windows](#)
- [Anyware Graphics Agent for Linux](#)
- [Anyware Graphics Agent for macOS](#)
- [Anyware Standard Agent for Windows](#)
- [Anyware Standard Agent for Linux](#)

For information about the Remote Workstation Card Software, which is required on remote workstations using a the Remote Workstation Card, see the following pages:

- [Remote Workstation Card Software for Windows](#)
- [Remote Workstation Card Software for Linux](#)

# What's New in This Release

**Release 24.03 of the Software Client for macOS includes:**

## Support for macOS 14 (Sonoma)

Version 24.03 of the macOS Agent introduces support for macOS 14 (Sonoma), and removes support for macOS 12 (Monterey).

### **Note: Local Printing Capability**

The capability to [print on local machines](#) is not supported on macOS Sonoma. It is only available on macOS Ventura.

## Simplified Update Experience Ensures that Clients Are Always Up to date

Version 24.03 introduces a simplified experience for updating Anyware clients. Clients are now equipped to check for new updates and send notifications that appear as banners if an update is available. Clicking the banner redirects to the product download page, from where users can download the client installer.

This allows users to access the newest client version with new features and improvements with minimal intervention. For more information, see [Downloading the macOS Update](#).



# Alternative Approach Ensures Added Security While Launching Anyware Client

When invoking the Anyware Client via the Command Line, the command line parameters can be viewed in the shell history or process list. To prevent this, the ability to protect sensitive parameter values while launching has been introduced in Anyware Client 24.03.

This is accomplished with the new `--ask-extra-args-as-json` parameter, which enables the user to pass parameter values to the `pcoip-client` process via Standard Input. With this new approach, sensitive parameter values are not stored in the shell history or process list, thereby ensuring enhanced security while launching the client. For more information, see [Securely Passing Parameters via the Command Line](#).

# System Requirements

The following table outlines the system requirements for the Anyware Software Client for macOS:

System	Version Required
Anyware Software Client Operating Systems	<ul style="list-style-type: none"><li>• macOS 13 (Ventura)</li><li>• macOS 14 (Sonoma)</li></ul>
Compatible Anyware Agents	<p>The Software Client for macOS can connect to any Anyware agent. Some features require specific agent versions; see the <i>Feature Support</i> section of this guide for details.</p> <p>We recommend always using the same version of Anyware agent and Anyware client.</p>
Compatible Remote Workstation Cards <sup>1</sup>	TERA22x0 with firmware 20.04+ and Remote Workstation Card Software for Windows or Linux 20.04+.
Supported IP versions	IPv4 and IPV6.

## Important: Support for PCoIP Ultra on Apple Silicon Processors

PCoIP Ultra is now supported on client macOS machines running on Apple Silicon (M1 or M2 chips).

## Hardware System Requirements

For different display configurations HP recommends certain processor and RAM combinations:

- For up to dual 1920 x 1080 display configuration HP recommends 1.6 GHz dual core processor or higher with at least 4 GB RAM.
- For up to dual 4K/UHD HP recommends a 3.0 Ghz quad core processor or higher with at least 8GB Dual Channel RAM.

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1. For details on feature limitations between Anyware Software Clients and Remote Workstation Cards, see [Connecting to Remote Workstation Cards](#). ←

# Feature Support

## Audio Support

Stereo audio output and mono audio input are supported and enabled by default.

The Anyware Client provides an enhanced audio and video synchronization (AV Lock) feature that provides improved full-screen video playback, reducing the difference in delays between the audio and video channels and smoothing frame playback on the client. This improves lip sync and reduces video frame drops for movie playback. This feature introduces a small lag in user interaction responsiveness when enabled. Using enhanced audio and video synchronization will reduce the maximum frame rate.

Audio input devices should not be bridged to the remote session. Audio input devices are locally terminated and utilize local OS audio drivers. A bluetooth headset can be supported locally, but cannot be bridged.

## Multi-Channel Audio Output

The Anyware Client supports multi-channel audio output when connecting to the macOS Anyware Graphics Agent.

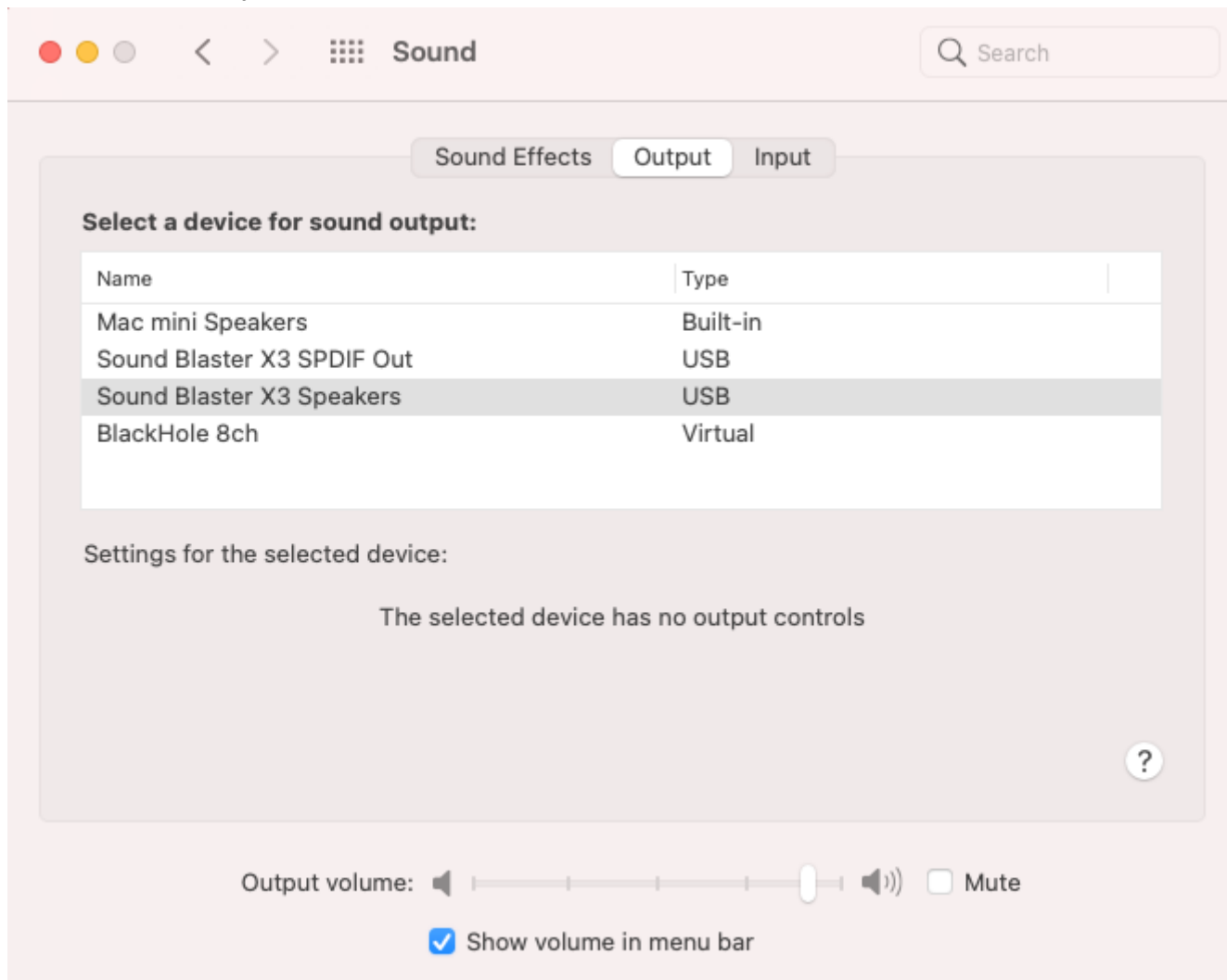
### **Note: Current Limitations**

Only 2.0, 2.1, 5.1 and 7.1 channel configurations are currently supported.

## Enabling Multi-Channel Audio Output

After you connect your audio device to your macOS Anyware Client, follow the instructions outlined below to ensure it is configured as the default audio device prior to establishing your PCoIP session:

1. From the macOS System Preferences click **Sound**.



2. Click on the **Output** tab.
3. Select the audio device you wish to make your default device.
4. Close System Preferences.

Once you have set the default audio device you can connect to your Anyware Agent for macOS. During session negotiation the Anyware Agent will configure PCoIP Virtual Speakers, with the same number of channels as your Anyware Clients default audio device.

# Client Modes

The Software Client for macOS supports multiple performance modes to suit different types of workloads. Performance modes are described next. To change the client mode, see [Selecting a Client Mode](#) below.

## High Performance Mode

*High Performance (recommended)* mode delivers high frame rates and synchronized audio, resulting in smoother images and video streaming. This mode is suitable for demanding applications such as 3D modelling and visual effects software.

**This mode is enabled by default and is recommended for most users.**

## Standard Mode

*Standard performance* provides consistent performance at moderate framerates. This mode is suitable for task workers using low-demand applications such as browsers and Microsoft Office applications.

## High Performance (Legacy) Mode

 **Caution: High performance (legacy) mode is deprecated**

This mode is deprecated, and will be removed in a future release. New users should use the **High Performance** mode instead.

*High performance (legacy)* mode is an earlier implementation of the high performance client. Unless your workflow specifically requires this mode, you should switch to *High Performance* mode.

## Selecting a Client Mode

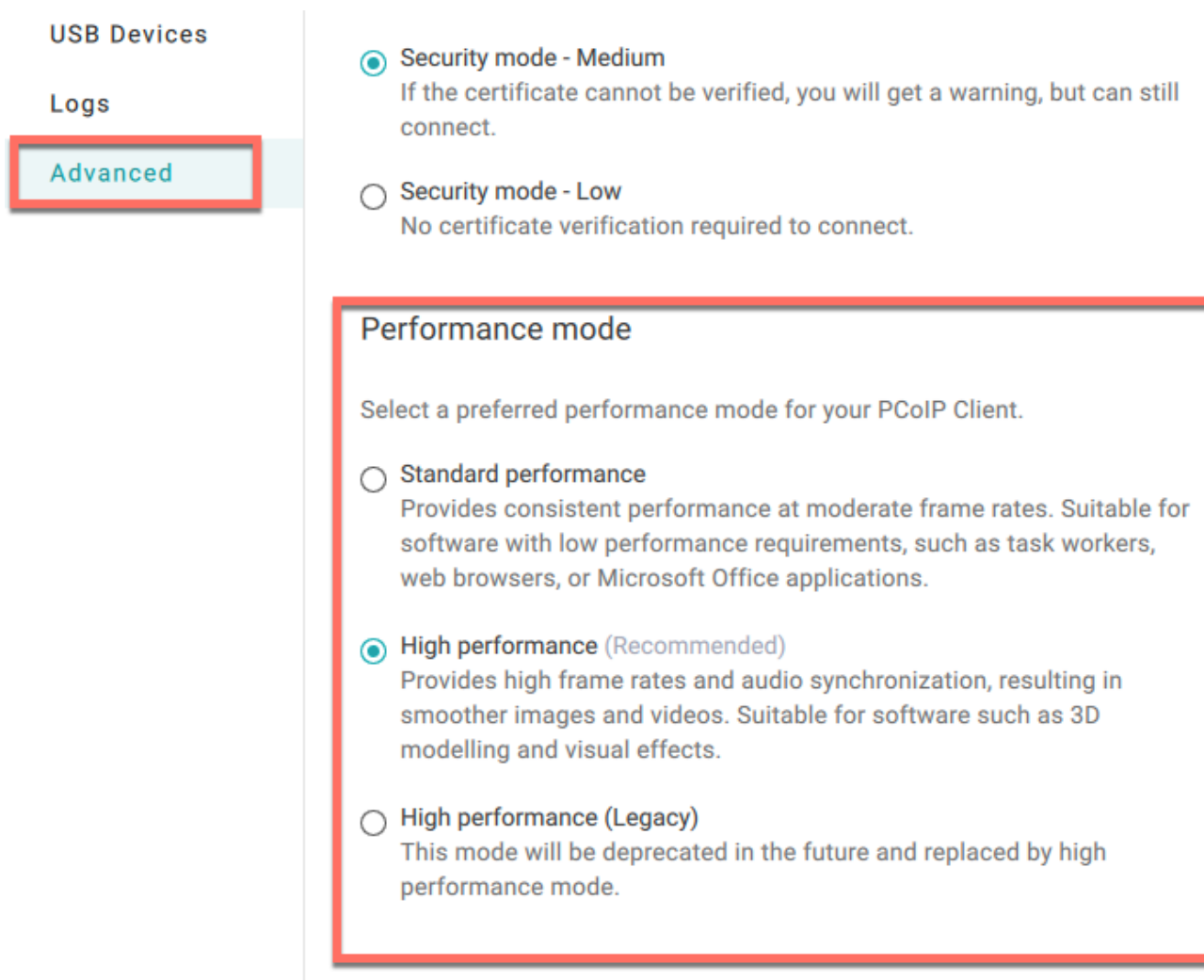
Changes to the client mode take effect when the next session starts, and persist until changed again.

### To change client modes:

1. If you are in a PCoIP session, disconnect from it.
2. In the Software Client for macOS, click the gear icon to open the client settings window.



3. In the side navigation panel, click **Advanced**, then choose your preferred mode in the **Performance mode** section.

A screenshot of the software client settings window. The side navigation panel on the left has three items: 'USB Devices', 'Logs', and 'Advanced'. The 'Advanced' item is highlighted with a red rectangular box. The main content area shows two radio button options for security mode: 'Security mode - Medium' (selected) and 'Security mode - Low'. Below this, a section titled 'Performance mode' is highlighted with a red rectangular box. This section contains the text 'Select a preferred performance mode for your PCoIP Client.' and three radio button options: 'Standard performance', 'High performance (Recommended)' (selected), and 'High performance (Legacy)'. Each option includes a brief description of its performance characteristics.

4. Close the settings window.

# Collaboration

**PCoIP Ultra Collaboration** enables a PCoIP session user to share their session with multiple remote collaborators using Anyware Software Clients.

## **Note: Collaboration terminology**

When discussing this feature, we'll refer to the first user as the *session owner*, and subsequent users who join the session as *collaborators*. The session owner's screens, audio, and input devices (if allowed) are shared with the collaborators when they join the session.

Up to 5 collaborators can join an ongoing PCoIP session using the same invitation.

While connected, all collaborators can view and hear the session owner's screens and audio, and see the controlling collaborator's mouse movements. If permitted by the session owner, they can also share control of the session owner's keyboard and mouse using [input control](#).

During a collaboration session, *all* of the session owner's desktop screens may be shared depending on the session owner's Anyware software client display settings. See [Understanding Display Behavior](#) for more information.

## Collaboration Requirements

PCoIP Ultra Collaboration is supported by all Anyware agents. Anyware software clients that support PCoIP Ultra can participate in collaboration sessions (all Anyware software clients 23.04 and higher meet this requirement).

Some collaboration features have specific version requirements for Anyware agents and Anyware software clients; [these are noted below](#).

## **Note: Only Anyware Software Clients are supported**

Anyware Tera2 Zero Clients and mobile clients do not support PCoIP Ultra and cannot join collaboration sessions.

## Feature Version Requirements

PCoIP Ultra Collaboration features depend on coordinated updates in Anyware agents and Anyware clients, so review these requirements carefully to ensure the features you need are supported by your system. **We strongly recommend using the latest versions of both Anyware agent and Anyware client.**

Feature	Required versions	Notes
<b>Collaborate menu</b>	Anyware agent 23.06+ Anyware client 23.06+	Both client and agent must be 23.06 or higher, with Collaboration and PCoIP Ultra enabled.
<b>Multiple collaborators</b>	Anyware agent 23.04+ Anyware client 23.04+	HP Anyware versions 22.07–23.01 supported single collaborators only.
<b>Input control</b>	Anyware agent 23.01+ Anyware client 23.01+	See <a href="#">Input Control</a> for more information.
<b>Mouse visibility</b>	Anyware agent 22.07+ Anyware client 22.07+	Session owner and collaborator software clients must be in <i>standard client mode</i> for mouse visibility to work.

## Enabling Collaboration

PCoIP Ultra Collaboration is enabled and configured on the Session Owner's desktop. Refer to the following documentation, depending on the Anyware agent you are connecting to:

- [Anyware Graphics Agent for Linux -Collaboration](#)
- [Anyware Graphics Agent for macOS - Collaboration](#)
- [Anyware Graphics Agent for Windows - Collaboration](#)
- [Anyware Standard Agent for Linux - Collaboration](#)
- [Anyware Standard Agent for Windows - Collaboration](#)

Collaboration is disabled by default. The following instructions will not work until Collaboration is enabled on the session owner's Anyware agent as described in the guides above.

## Sharing Your Session With Collaborators

You can invite up to 5 collaborators to participate in your session, and optionally allow them to control your desktop.



### **Important: Anyware Client steps**

Collaboration sessions are shared from Anyware clients in established PCoIP sessions. Make sure the software client version you are using supports the collaboration features you expect. For details, see [Feature Version Requirements](#).

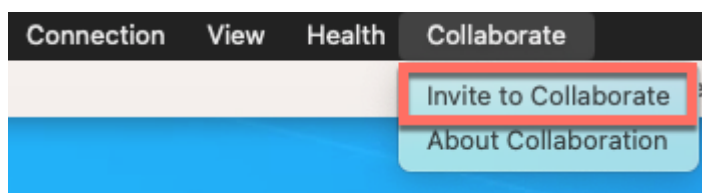
Collaboration sessions are managed using the **Collaboration manager**. The collaboration manager shows you who is connected to your session, whether each collaborators can view or control the session, and allows you to invite new collaborators or stop collaborating.

### **Note: New Collaboration Manager menu option**

The Collaboration manager can now be launched by using the client's in-session menu, in addition to the system menu bar.

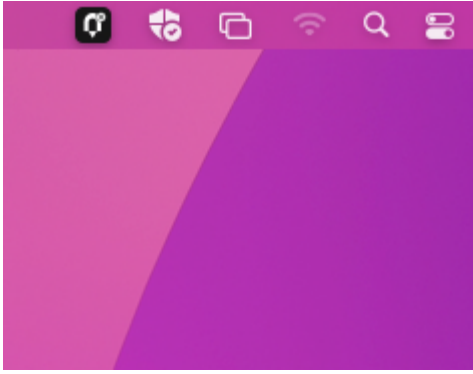
#### **To launch the Collaboration Manager:**

1. Connect to a PCoIP session with PCoIP Ultra and Collaboration enabled.
2. From the remote session, open the **Collaboration Manager** using either of these methods:
  - **From the client menu:** From the client's in-session menu, select **Collaborate > Invite to Collaborate**.



The Collaborate menu appears if both the Anyware agent and Anyware client are version 23.06 and higher, and if both support Collaboration.

- **From the menu bar:** Click the **Anyware Collaboration** icon in the menu bar:



This example shows a macOS desktop; yours may vary depending on which operating system you are connecting to.

To invite collaborators, the session owner generates a *collaboration invitation* using the collaboration manager, and distributes the invitation to all collaborators.

## About Collaboration Invitations

Collaboration invitations are created by the session owner and distributed to collaborators, who use them to join an established collaboration session.

### **Note: About collaboration invitations**

A single collaboration invitation can be used by multiple collaborators (up to the maximum number configured). You do not need to generate a new invitation for each collaborator.

Collaboration invitations behave as follows:

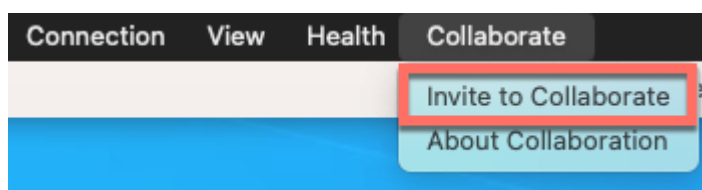
- If an invitation is generated but no collaborators connect within one hour, it expires and can no longer be used. If this happens, generate a new invitation.
- If *any* collaborators connect using an invitation, the invitation is activated and its time limit is removed. Once activated, an invitation can be re-used until the session owner stops collaborating or ends the session.
- Collaborators can disconnect from a collaboration session and then rejoin it later using the same invitation.
- Collaboration sessions persist even if all collaborators leave and only the session owner remains. Until the session owner disconnects or stops the collaboration session, collaborators can rejoin the session using the same invitation.
- The collaboration invitation remains valid until the session owner disconnects or stops the collaboration session.

## Inviting the First Collaborator

To begin a collaboration session, generate an invitation using the Collaboration Manager.

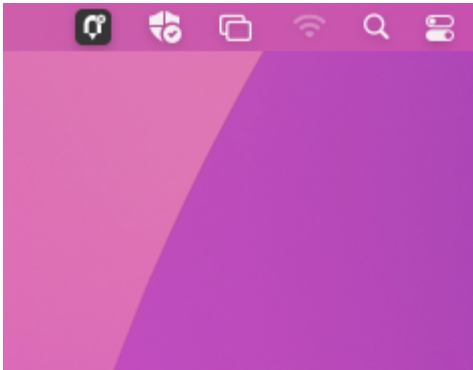
### To generate a collaboration invitation:

1. Connect to a PCoIP session with PCoIP Ultra and Collaboration enabled.
2. From the remote session, open the **Collaboration Manager** using either of these methods:
  - **From the client menu:** From the client's in-session menu, select **Collaborate** > **Invite to Collaborate**.



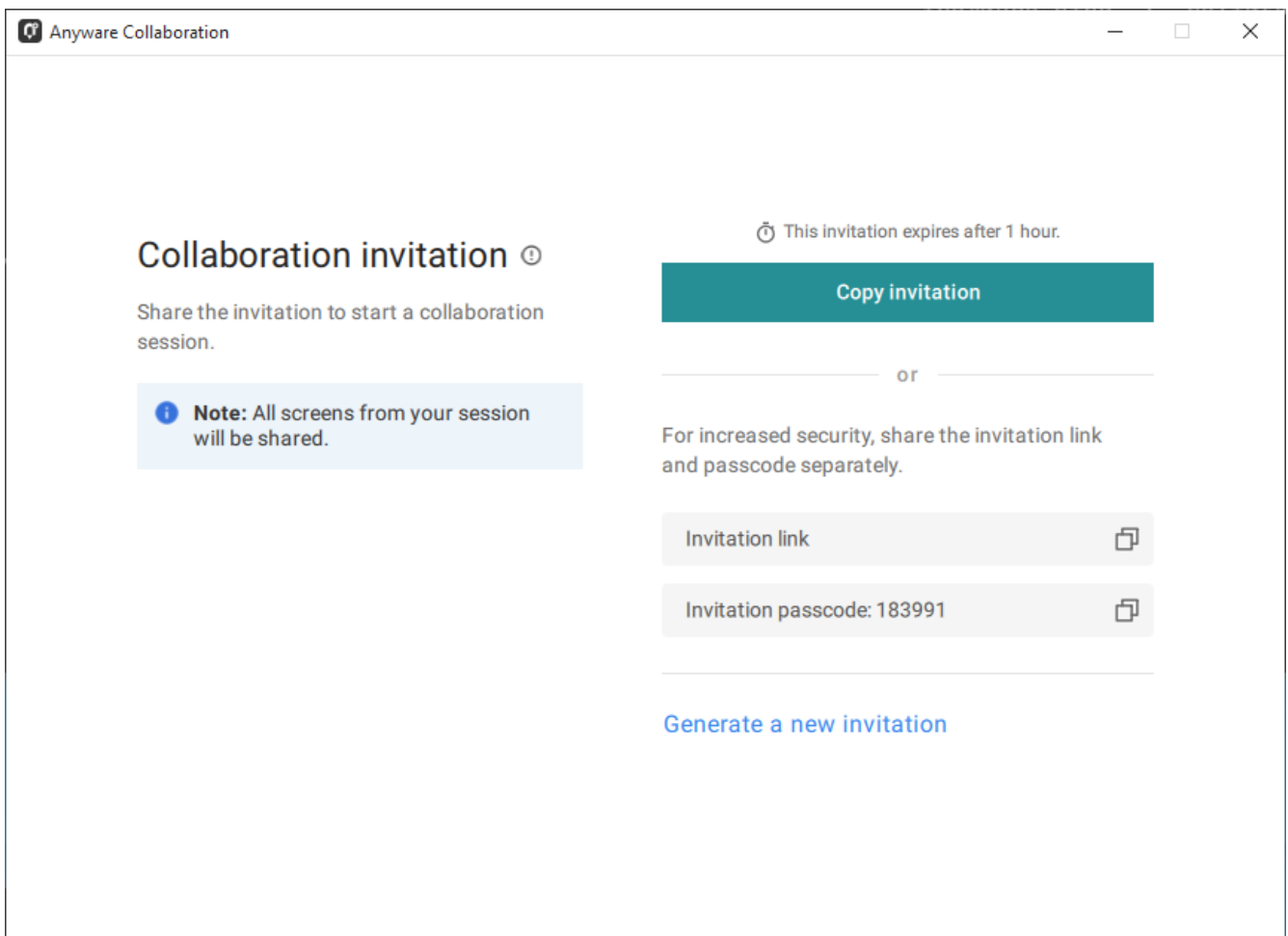
The Collaborate menu appears if both the Anyware agent and Anyware client are version 23.06 and higher, and if both support Collaboration.

- **From the menu bar:** Click the **Anyware Collaboration** icon in the menu bar:



This example shows a macOS desktop; yours may vary depending on which operating system you are connecting to.

3. The Collaboration manager generates and displays an invitation:



The invitation contains two pieces of information that are used to invite the collaborator:

- **Invitation Link:** The collaborator will use this link to join your session. The link may be opened on any Mac, Windows or Linux machine with a Anyware Client 21.07 or newer.
- **Invitation passcode:** This is a 6-digit code that confirms the identity of the individual connecting to the collaboration session. A new code is generated along with each new token.

4. Share the *invitation link* and the *invitation passcode* with the collaborator.

- To share both the link and the code at once, click the **Copy invitation** button. This will create a single message containing both the link and the code and place it on your clipboard. Share this with your collaborators using any acceptable method.
- To share the link and code *separately*, click the *copy* button beside each item and share them using separate communications. Sharing the invitation this way reduces risk in the event that a message is inadvertently sent, forwarded, or intercepted by a third party.

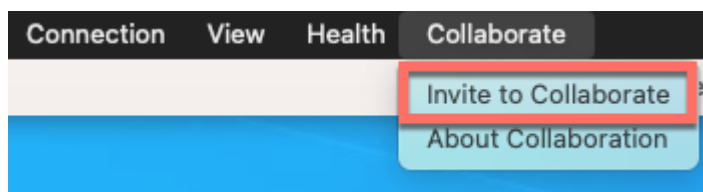
## Inviting Additional Collaborators

Once the collaboration session has been created, you can invite additional collaborators by sharing the same invitation link and passcode with them. You can also view the invitation, and copy its link and passcode for sharing, using the Collaboration Manager.

**To view and copy the invitation link and passcode:**

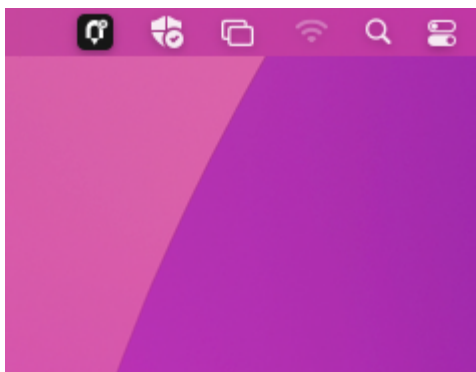
1. From the remote session, open the **Collaboration Manager** using either of these methods:

- **From the client menu:** From the client's in-session menu, select **Collaborate > Invite to Collaborate**.



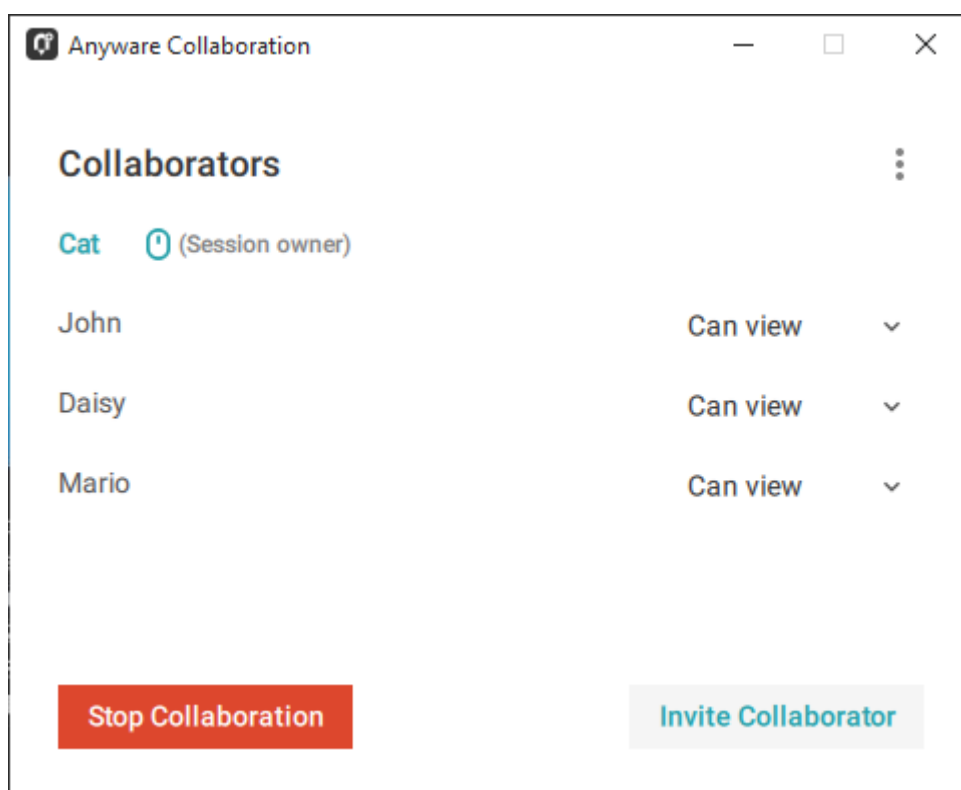
The Collaborate menu appears if both the Anyware agent and Anyware client are version 23.06 and higher, and if both support Collaboration.

- **From the menu bar:** Click the **Anyware Collaboration** icon in the menu bar:

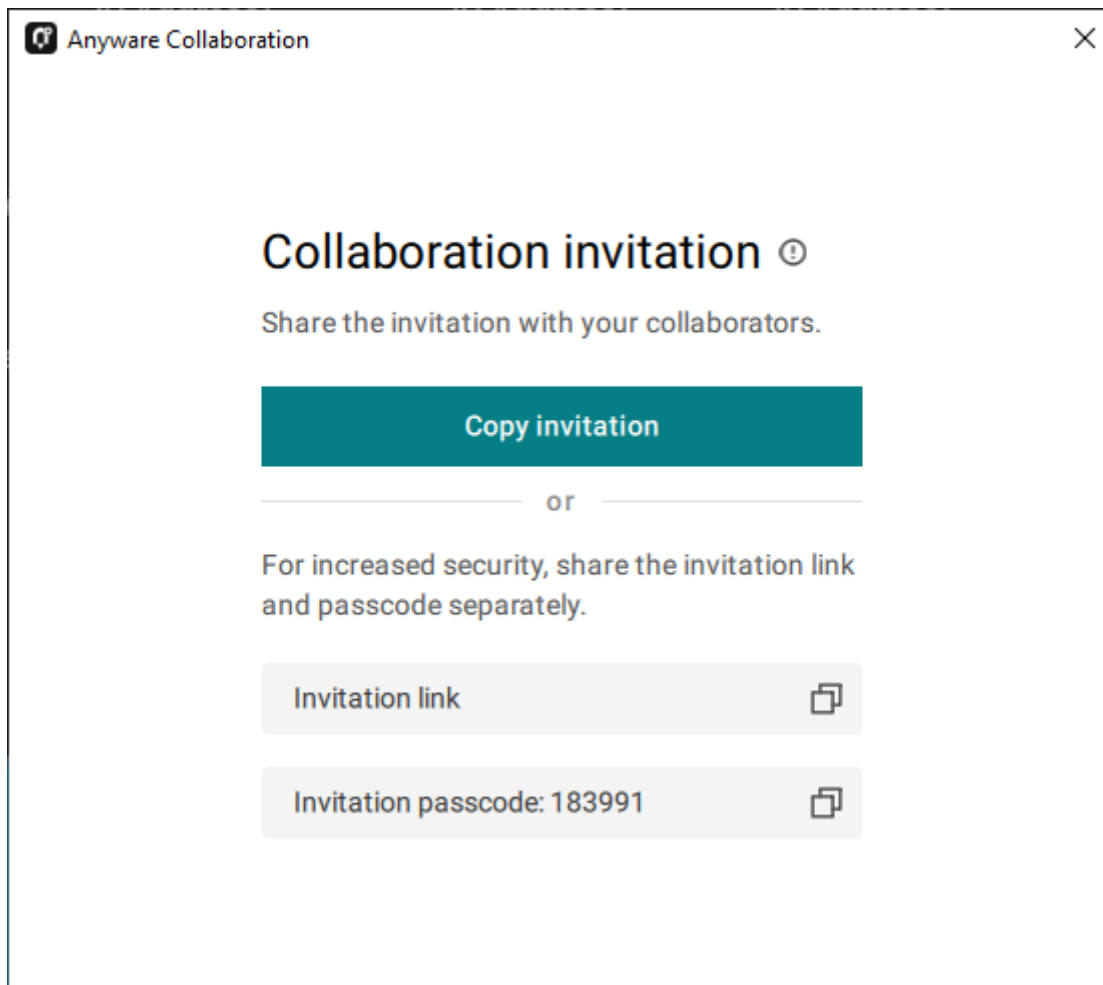


The collaboration manager shows a list of your active collaborators (if any).

2. In the Collaboration manager, below the list of active collaborators, click **Invite Collaborator**:



3. The Collaboration manager displays the generated invitation. Note that this is the *same* invitation link and passcode you used previously. It is not a new invitation:



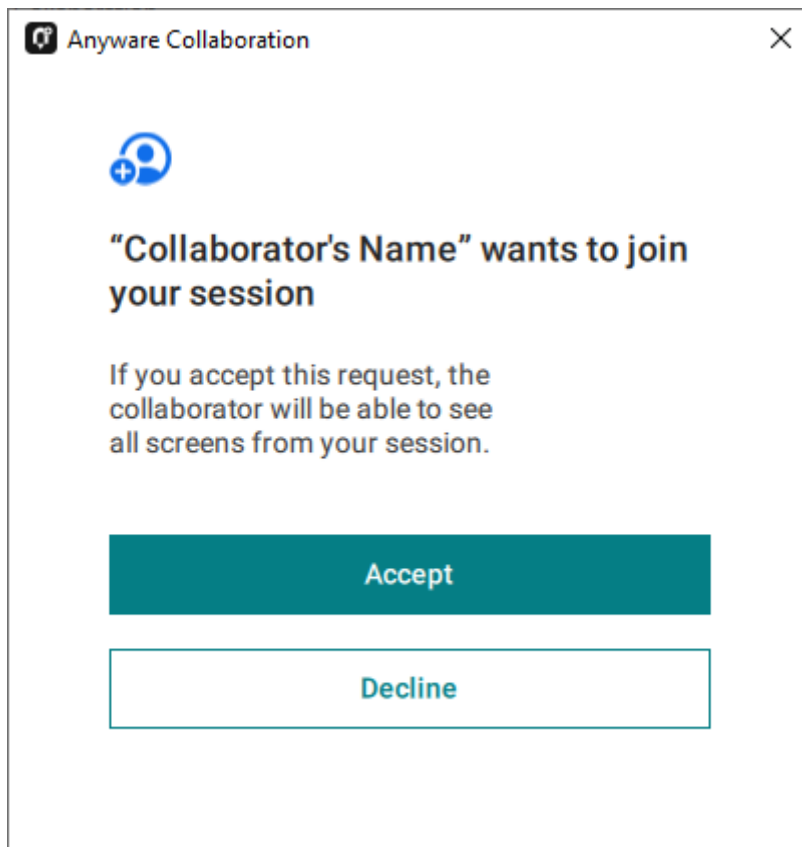
4. Share the *invitation link* and the *invitation passcode* with the additional collaborators.

## Accepting or Declining Collaborators

Once distributed, the session owner's collaborators can [join the collaboration session](#). As collaborators use the invitation, the session owner is notified and can accept or reject each connection attempt.

### To respond to a collaborator:

1. When the collaborator attempts to join the session, the Collaboration manager will display options to accept or reject the connection.



2. Click **Accept** to start the collaboration session. Click **Decline** to deny the request. Whether you accept the request or not, the invitation has been used and is now disabled. Subsequent attempts will require a new invitation.

## Ending a Collaboration Session

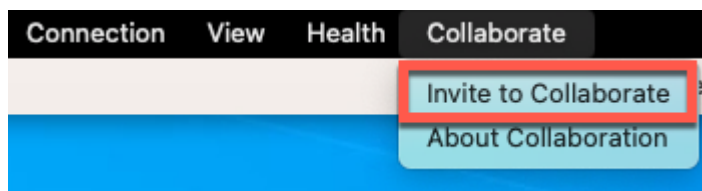
The collaboration session will end when the session owner disconnects their PCoIP session, or if they stop collaborating using the collaboration manager.

Ending the collaboration session invalidates the invitation. To start a new session, generate a new invitation by inviting another collaborator.

### To stop collaborating:

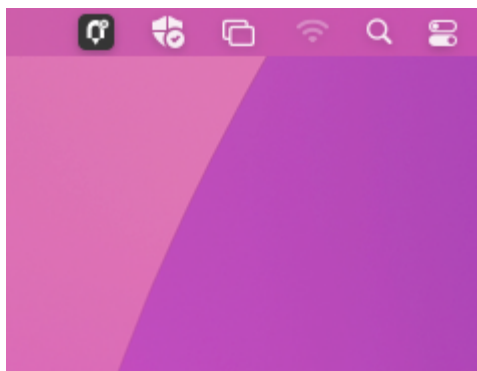
1. From the remote session, open the **Collaboration Manager** using either of these methods:
  - **From the client menu:** From the client's in-session menu, select **Collaborate > Invite to Collaborate**.





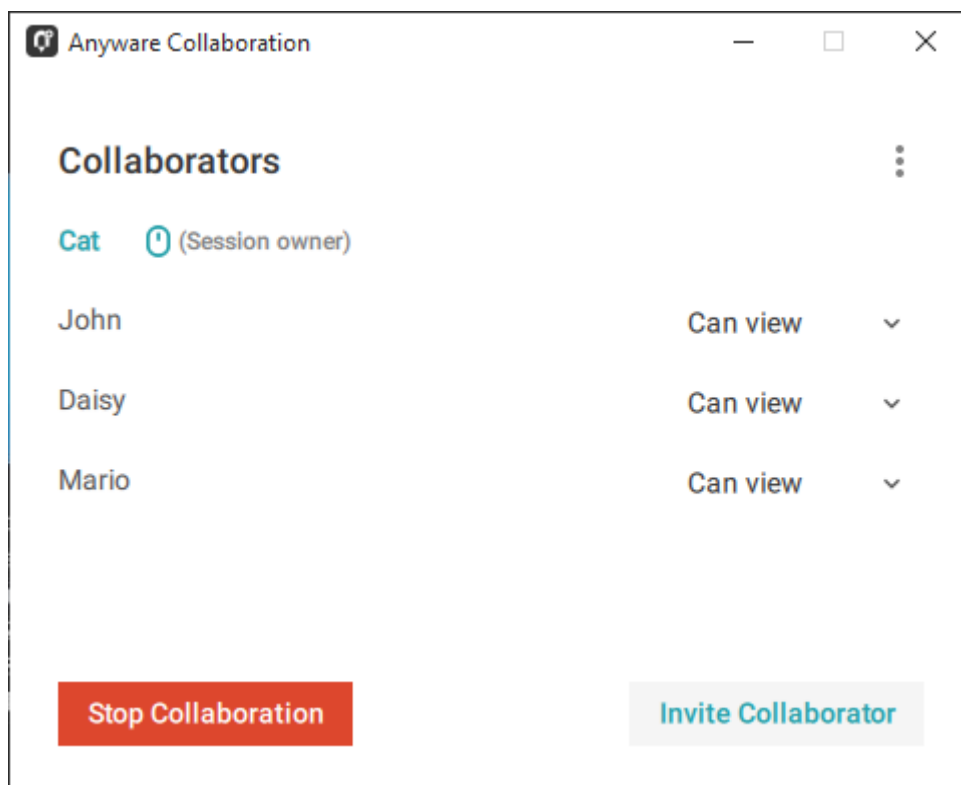
The Collaborate menu appears if both the Anyware agent and Anyware client are version 23.06 and higher, and if both support Collaboration.

- **From the menu bar:** Click the **Anyware Collaboration** icon in the menu bar:



This example shows a macOS desktop; yours may vary depending on which operating system you are connecting to.

2. Click the **Stop Collaboration** button.



## Allowing Collaborators to Control the Session

*Collaborator input control* allows collaborators to use their own mice and keyboards to control the session owner's desktop. **This feature is disabled by default**, and must be enabled on the Anyware agent before it is available.

Once enabled, input control options are available from the collaboration manager. Input control can be granted (or retracted) for each user separately or for all users at once.

### **Note: Disabling input control globally**

You can disable Input Control on the Anyware agent, which turns the feature off entirely. When disabled this way, session owners will not be able to allow collaborators to take control, and all sessions will be view-only. For more information, see [Disabling Input Control](#).

### **Important: The session owner always has control of their Anyware client's in-session menu**

The session owner always has control of their Anyware client's in-session menu. If the owner is unable to reclaim session input control for any reason, they can disconnect the PCoIP session using the in-session menu option. When the owner disconnects from the session, the collaborator is immediately disconnected.

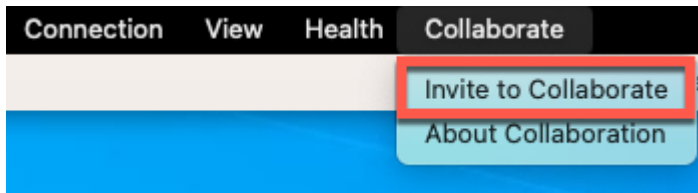
## ENABLING INPUT CONTROL FOR COLLABORATORS

The following steps will allow one or more collaborators to take control of the session desktop. The collaborators will not immediately have control when this is granted; they must still take control using the [process described above](#).

This option will not be available if Input Control has been disabled on the Anyware agent.

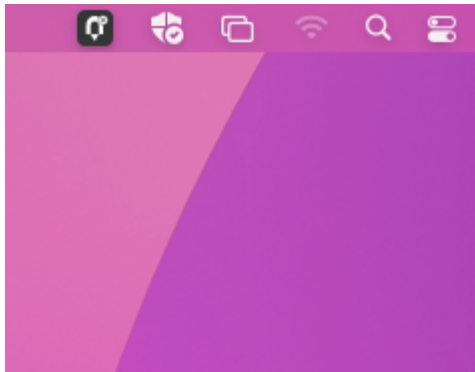
### **To allow collaborators to control the session desktop:**

1. From the remote session, open the **Collaboration Manager** using either of these methods:
  - **From the client menu:** From the client's in-session menu, select **Collaborate > Invite to Collaborate**.



The Collaborate menu appears if both the Anyware agent and Anyware client are version 23.06 and higher, and if both support Collaboration.

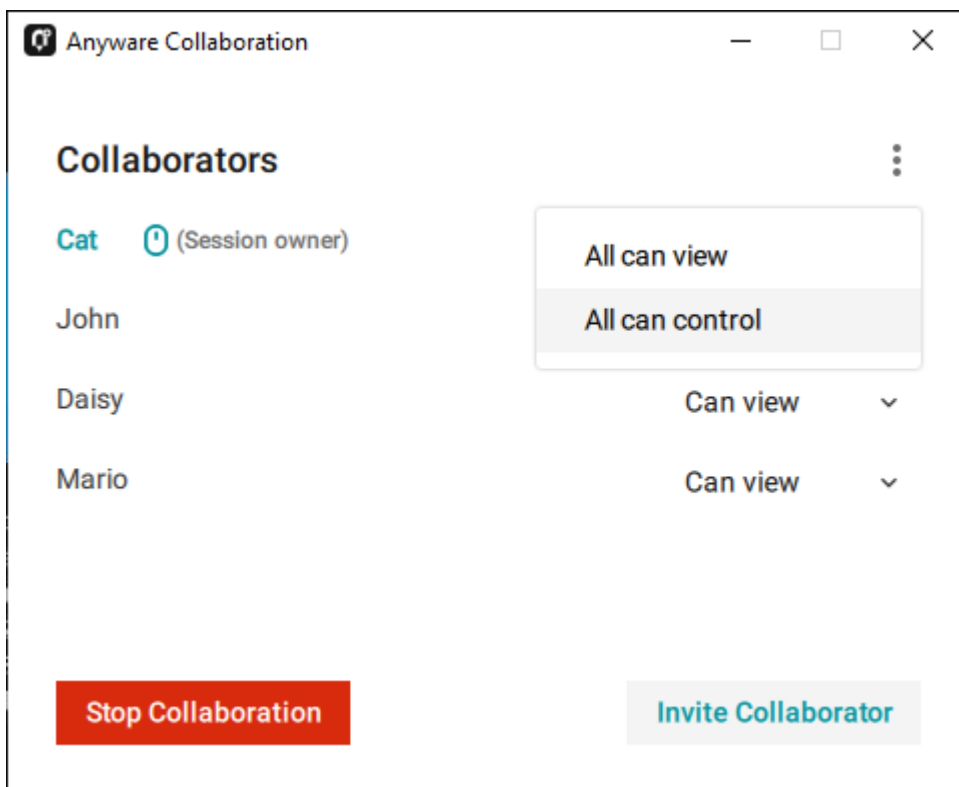
- **From the menu bar:** Click the **Anyware Collaboration** icon in the menu bar:



This example shows a macOS desktop; yours may vary depending on which operating system you are connecting to.

## 2. Grant input control using one of these methods:

- To allow input control for *all collaborators*, click the dropdown menu at the top right and select **All can control**.



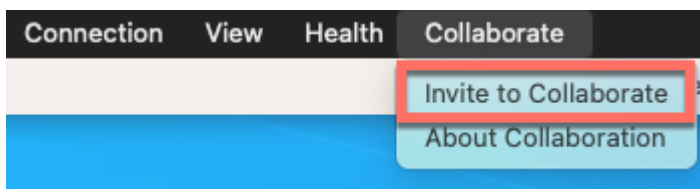
- To allow input for *one collaborator*, click the dropdown menu beside the collaborator's name and select **Can control**.

## STOPPING INPUT CONTROL

**To return a user (or all users) to view-only mode:**

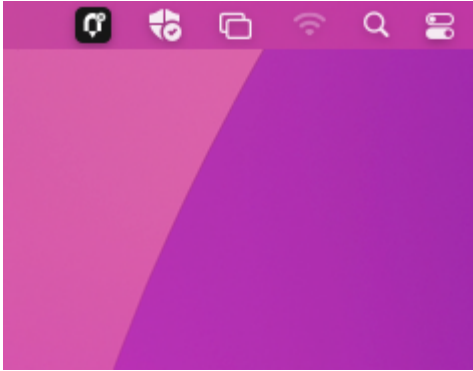
1. From the remote session, open the **Collaboration Manager** using either of these methods:

- **From the client menu:** From the client's in-session menu, select **Collaborate > Invite to Collaborate**.



The Collaborate menu appears if both the Anyware agent and Anyware client are version 23.06 and higher, and if both support Collaboration.

- **From the menu bar:** Click the **Anyware Collaboration** icon in the menu bar:



This example shows a macOS desktop; yours may vary depending on which operating system you are connecting to.

2. Beside the collaborator's name, click the dropdown menu and select **Can View**.

## Understanding Display Behavior

Collaboration sessions support sharing of multiple monitors, which varies by session owner's client setting as follows:

- **Windowed mode:** The session in the owner's client window will be shared.
- **Fullscreen One Monitor:** The single fullscreen session will be shared. The session owner should set their Anyware Client to *Fullscreen One Monitor* mode prior to starting the collaboration session.
- **Fullscreen All Monitors:** All monitors will be shared, beginning with the Session Owner's monitor 1 and continuing up to the number of displays in the collaborator's system. The monitors that are shared cannot be configured, and are shared in system order.

*When using this mode, the session owner should assume that collaborators can see **all** displays unless a specific configuration has been tested and verified.*

For example, if the session owner has four monitors and a collaborator only has two, the collaborator will see the session owner's first and second monitors. If different collaborators have a different number of screens, each will see as many displays their system supports; in this scenario, you may have some displays that are visible to certain collaborators but not others.

The session owner should set their Anyware Client to *Fullscreen All Monitors* mode prior to starting the collaboration session.

If the session owner's and collaborator's screen resolutions are different, the collaborator's screen will use scrollbars and letterboxing to display the shared content.

If *high performance client* mode is enabled, and if the session owner's resolution is greater than the collaborator's, the collaborator's screen will be clipped instead.

## Joining a Collaboration Session

Collaborators receive the invitations generated by session owners, and use the invitation URI and passcode to connect to the session.

### **Important: Anyware Client steps**

Collaborators join sessions using Anyware clients. Make sure the software client version you are using supports the collaboration features you require. For details, see [Feature Version Requirements](#).

Each collaborator can join the session with the collaboration link and the Collaboration Invitation passcode. The same URI and passcode are used for all collaborators on the same session.

### **To join a collaboration session as a collaborator:**

1. Open a web browser and go to the collaboration link shared with you (you may be able to click this link directly, depending on how it was shared with you).
2. The web browser will warn you that the link is attempting to open the *Anyware Client* application. Allow the browser to open the Anyware client.
3. When the Anyware client opens, it will prompt you for your name and the Collaboration Invitation passcode. The name you provide here will identify you in the collaboration session. The collaboration invitation passcode is the six digit number provided by the session owner. Enter both values and click **Submit**.
4. Once the session owner accepts your connection request, the Collaboration screen share will start.
5. To leave the collaboration session, select **Connection > Disconnect** from the Anyware Client menu.

## Collaborator Input Control

If the session owner has enabled input control for a collaborator, the collaborator can take control of the session owner's desktop including mouse, keyboard, and pointer activity. The session owner retains the ability to stop input control at any time.

## USING INPUT CONTROL AS A COLLABORATOR

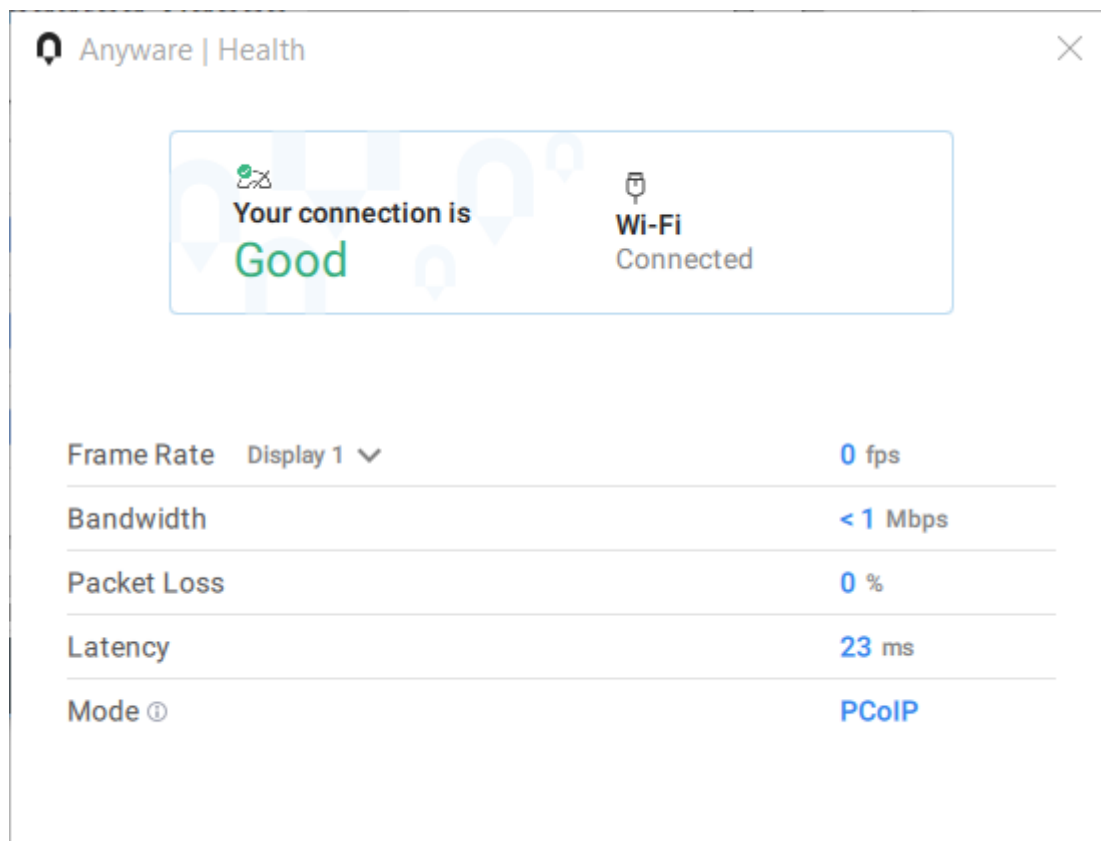
A collaborator who has input control can release it by idling—stopping all keyboard, mouse, and pointer activity—for a short time. Once the control timeout has elapsed, the floor is open, and whichever collaborator provides input next takes control.

By default, the control timeout is 3 seconds. The timeout value can be configured when enabling the input control feature.

For example: the session owner has initial control of the session. In order to give control to the collaborator, the owner takes their hands off the keyboard and mouse for three seconds, allowing the control timeout to pass. A collaborator then moves their mouse, which gives them control. To give control back to the session owner, the collaborator takes their hands off their keyboard and mouse for three seconds. This exchange continues as long as needed.

# Anyware Connection Health

The **Connection Health Indicator** gives you quick feedback on the quality of your active PCoIP session, including a general status indicator and several specific metrics that you can use to troubleshoot connection problems.



The screenshot shows a window titled "Anyware | Health" with a close button in the top right corner. The main content area displays a status message: "Your connection is Good" in green text, accompanied by a Wi-Fi icon and the text "Wi-Fi Connected". Below this, there is a table of connection metrics:

Frame Rate	Display 1 ▾	0 fps
Bandwidth		< 1 Mbps
Packet Loss		0 %
Latency		23 ms
Mode ⓘ		PCoIP

**Note: Not available in the legacy high performance mode**

The Connection Health Indicator is only available in the client's *standard* mode and *High Performance (Preview)* mode. It is not available in the *High Performance (Legacy)* mode.

## To open the Connection Health Indicator:

1. If you are in a full-screen mode, reveal the Software Client for macOS menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for macOS menu bar, select **Health > Connection Health**.



The Anyware Health opens as a separate window on top of the current session. You can move the window as needed, including to a different monitor, but it will remain on top of the current session displays until it is closed.

The Anyware Health monitor shows the [general network health status](#), identifies the [type of network connection](#) being used, and displays several [real-time metrics](#).

## Connection Health Status

The general connection health is described as *good*, *fair*, or *poor* depending on a combination of packet loss and latency statistics.

Connection Health Status	
<b>Good</b>	The network connection is healthy and should provide excellent PCoIP performance.
<b>Fair</b>	The network is experiencing packet loss greater than 0.25%, or latency greater than 50ms. PCoIP sessions may be degraded, and you may experience moderate dropped frames, image stutter, and sluggish responsiveness.
<b>Poor</b>	The network is experiencing packet loss greater than 0.5%, or latency greater than 100ms. PCoIP sessions will be significantly degraded and will suffer from dropped frames, stutter, poor responsiveness, and loss of image quality.

## Network Connection Indicator

This identifies the type of connection your client is using for the current session. It will indicate if your connection is wired (LAN) or wireless (WIFI), and show the name of the connected network and its state.

Note that PCoIP over WIFI is not as robust as connections on a wired LAN; if you are experiencing degraded performance on a WIFI connection, switch to a wired LAN connection if possible.

## Measured Statistics

The following real-time statistics are reported in the Anyware Health indicator:

Metric	Description	Notes
<b>Frame rate</b>	Displays the current frame rate for the PCoIP session.	<p>If you have multiple displays, you can check the frame rate for each display by selecting it from the provided dropdown.</p> <p>Frame rates are dynamic in PCoIP sessions, varying by the amount of dynamic content shown on screen as well as network and hardware capacity. It is normal for PCoIP frame rates to drop as low as zero if the screen content is perfectly static.</p>
<b>Bandwidth</b>	The total network bandwidth being used by the current PCoIP session.	Bandwidth utilization fluctuates based on many factors, including frequency and range of dynamic screen changes and audio output.
<b>Packet loss</b>	The percentage of PCoIP packets that are being lost to network quality.	Packet loss greater than 0.25% will negatively affect PCoIP performance; a loss of greater than 0.50% will result in severely degraded performance.
<b>Latency</b>	The total end-to-end network latency between the Anyware client and Anyware agent.	Latency greater than 50ms will negatively affect PCoIP performance; latency greater than 100ms will result in severely degraded performance.
<b>PCoIP mode</b>	The active PCoIP protocol mode.	Note that PCoIP Ultra Auto-Offload mode can employ different protocols on different screens simultaneously; you can select a specific display from the dropdown here to inspect them individually.

# Display Modes

The Anyware Client supports a maximum of four displays and a maximum resolution of 4K UHD (3840×2160).

Monitors can be arranged in a vertical line, a horizontal line, or as a 2×2 box display. They can be used in any standard rotation (0°, 90°, 180°, or 270°), with any monitor as the primary display.

## **Note: Using multiple high-resolution displays**

Systems with multiple high-resolution displays, such as quad 4K UHD topologies, require powerful system infrastructure. Be sure to use a system with sufficient bandwidth and client capability to support your required display topology.

## **Important: Attaching monitors to the host machine is not supported**

Anyware client supports a maximum of four displays. Attaching extra monitors to the host machine will conflict with client display topologies.

## Using Full-Screen Modes

FullScreen modes extend macOS Mission Control functionality. To work as intended, the client machine should have *Displays have separate Spaces* enabled in Mission Control settings. For more information, see the [Configuring the macOS Client](#) topic.

# Language Support

The Software Client for macOS's interface will automatically use the operating system's language setting, if it is supported.

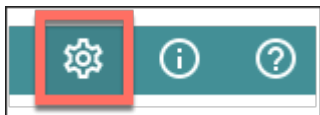
The interface language can be changed to any of the following supported languages:

- Chinese Simplified
- English
- French
- German
- Italian
- Japanese
- Korean
- Portuguese (Iberian)
- Spanish

## Changing the Software Client for macOS Display Language

**To set the client's display language:**

1. If you are connected to a PCoIP session, disconnect.
2. Click the **Settings** icon at the top of the Software Client for macOS window.



3. Click the **Language** tab in the left sidebar.
4. Select the language you would like to set from the dropdown menu.

This setting is persistent, and will remain active until changed.

This setting only affects the Software Client for macOS's pre-session interface. It does not change language settings on remote desktops.

 **Note: In-session menus are not localized**

This feature sets the language for the client's pre-session display *only*. The in-session menu bar is not affected by this change. Support for localization of the in-session menu bar will be added in a future release.

 **Important: Broker-generated screens are not localized**

Multi-factor authentication screens displayed during a login sequence use content provided by an external connection broker. These screens are not localized.

## Setting the Language via Command Line

You can also set the Software Client for macOS language by invoking it on the command line and passing a language code as an argument. For details and instructions about this method, see [Configuring the Anyware Client: Language](#)

# PCoIP Ultra

## Important: Support for PCoIP Ultra on Apple Silicon

PCoIP Ultra is now supported on client macOS machines running on Apple Silicon (M1 or M2 chips). Clients running on Apple Silicon can now connect to PCoIP Ultra sessions.

The Software Client for macOS provides support for PCoIP Ultra, the latest protocol enhancements from HP.

PCoIP Ultra enhancements are **controlled on the Anyware agent**. There is no configuration required on the Anyware Client.

## Important: PCoIP Ultra is Enabled by Default

PCoIP Ultra is enabled by default. To configure Ultra, carefully review the recommended use cases in the next section to determine the PCoIP Ultra value most suited for your needs.

## Requirement: AVX2 Support

All client machines *and* remote Windows and Linux agent machines must support the AVX2 instruction set. The Anyware Agent for macOS requires AVX2 support when running on Intel hardware. PCoIP Ultra is supported on Apple Silicon with Anyware Agent for macOS 22.09 or higher.

For additional detail on PCoIP Ultra technical requirements for various use cases and troubleshooting steps, refer to [KB 2109: PCoIP Ultra Troubleshooting](#).

## PCoIP Ultra Modes

PCoIP Ultra has three acceleration modes, which leverage CPU and GPU offloading to optimize content delivery.

- **Auto Offload:** When using a Anyware Graphics agent, PCoIP Ultra can automatically select and switch between CPU-offload and GPU-offload modes based on the amount of pixel change in the displays. When displays are rendering highly dynamic content, PCoIP Ultra will enable GPU Offload to provide improved frame rates and bandwidth optimization. When displays are less dynamic, PCoIP Ultra defaults to CPU offload to provide the best image fidelity.

PCoIP Ultra Offload only takes effect if the remote Anyware Graphics agent and the Anyware software client are capable of both CPU and GPU offload.

Dynamically switches between CPU and GPU offload modes depending on the workload being processed. This setting is appropriate for work-from-home or WAN content creators who require optimized delivery of high resolution content, including video playback, while still achieving build-to-lossless color accuracy. This mode requires a GPU and a graphics agent.

- **CPU Offload:** Provides efficient scaling across multicore CPUs, leveraging AVX2 instruction sets. Appropriate for users that require CPU-optimized delivery of 4K UHD, high-framerate video playback and build-to-lossless color accuracy. It is also useful when GPU encoding resources must be reserved for video encoding applications, typically in LAN environments.
- **GPU Offload:** PCoIP encoding is always offloaded to a GPU. Appropriate for users who demand the highest possible CPU efficiency. This mode requires a GPU and a graphics agent.

## Setting PCoIP Ultra

PCoIP Ultra defaults to **Auto Offload** on agent machines, provided that it has not been set to Auto Offload (in a prior deployment), and the agent and client machines are capable of both CPU and GPU Offload.

The PCoIP Ultra offload mode is set on the Anyware agent. Refer to the appropriate documentation for instructions:

- Windows Graphics Agent
  - [PCoIP Ultra](#)
  - [Configuring PCoIP Ultra](#)

- macOS Graphics Agent
  - [PCoIP Ultra](#)
  - [Configuring PCoIP Ultra](#)
- Linux Graphics Agent
  - [PCoIP Ultra](#)
  - [Configuring PCoIP Ultra](#)
- Windows Standard Agent
  - [PCoIP Ultra](#)
- Linux Standard Agent
  - [PCoIP Ultra](#)

## PCoIP Codec Indicator

When enabling PCoIP Ultra, an onscreen indicator is observed at the bottom-left corner of the screen. CPU optimization is indicated by a dark blue dot, while GPU optimization is indicated by a magenta dot.

To disable this codec update the `pcoip.code_indicator` parameter:

```
~/ .pcoip.rc pcoip.codec_indicator = 0
```

Ensure that you maintain the space before and after the `=` sign.



# Printing Support

Anywhere Clients support the following printing options:

- **Printing from the Local Machine:** This option permits jobs created on host machines to be printed using printers connected to the client machines. Documents can also be printed on printers in the Anyware client's local area network.

This method is suitable for printing when the host and the client are not on the same network, such as in multi-site organizations.

- **Printing from a USB Printer:** This option permits jobs to be printed on USB printers that are connected by means of the USB Bridging feature. USB printers are typically attached to Anyware clients, but are redirected to the remote host.

The following options are also available for printing:

## **Note: Default Printing Options**

The printing options described below are default options, independent of the client software.

- **Printing from the Agent Machine:** This option permits jobs to be printed on printers that are connected to the agent machines.
- **Printing Using a Cloud Service:** This option permits the use of an external cloud service, such as Google Print, for processing print jobs created on host machines. The use of an external cloud service allows for the use of shared printers on the client's network without the need for installing device drivers. Prior to using, the external cloud service must be correctly configured.

Support for these methods depends on the Anyware agent and the Software Client for macOS it connects to. The Software Client for macOS printing support is as follows:

**⚠ Important: Printing Option Support**

The ability to **print from local machines** is only available on macOS Ventura. It is not supported on macOS Sonoma.

	Windows agents	Linux agents	macOS agents
Printing from the Local Machine	✓	–	–
Printing from a USB Printer	✓	–	–
Printing from the Agent Machine	✓	✓	✓
Printing Using a Cloud Service	✓	✓	✓

# Relative Mouse Support

Relative Mouse is a method of translating mouse movements as a delta from the last mouse position rather than a move to an absolute position on the screen. This type of mouse control is used in many CAD/CAM, Visual Effects and First-Person Gaming software. In a CAD program you may want to control an objects orientation in 3-D with mouse movements. Moving the mouse to the left or right rotates the object around the Z-axis, and moving the mouse up or down rotates the object around the X-axis. As you continue to move the mouse left the object continues to rotate about the axis, and the rotation is not bounded by the mouse stopping at the borders of the screen.

While in relative mouse mode, **the mouse cursor is not visible** since it the mouse is controlling directional movement and is not pointing to a location on the screen.

Applications that use relative mouse movements generally provide methods for entering or exiting relative mouse mode, for instance clicking on an object with the middle button. While the middle button is held down the object may be controlled using relative mouse movements.

Relative mouse mode is supported by all Anyware clients. Note that Anyware Zero Clients must be configured to enable it.

Relative mouse mode is supported by the following agents:

- Anyware Standard Agent for Windows
- Anyware Graphics Agent for Windows
- Anyware Standard Agent for Linux
- Anyware Graphics Agent for Linux

Relative mouse mode is not supported by the Anyware Graphics Agent for macOS.

 **Note: Only supported on standard mode**

Relative Mouse is not supported when a client is running in High Performance Mode. It is only supported in standard mode.

## Enabling Relative Mouse

The following sections outline how to enable relative mouse support on the Software Client for macOS.

### Enabling from the Menu Tab

The following steps outline how to enable relative mouse from the menu tab, while connected to a supported Anyware Agent with a supported Anyware Client:

1. Click **Connection** from the menu tab.
2. Select the **Relative Mouse** option and click it to enable it. Once the check-mark is visible beside the Relative Mouse option it is enabled.

If you are connected to a Anyware Agent version that does not support relative mouse then you will not be able to select this option.

### Enabling with a Hot-Key

To enable relative mouse using a hot-key, while connected to a supported Anyware Agent with a supported Anyware Client, press `ctrl + alt + r`. This will toggle the feature on and off. This will only work if you are connected to a Anyware Agent version that supports relative mouse.

# USB

## USB Support

Anyware Clients supports redirecting USB devices to a remote session. Administrators can set rules governing allowed and disallowed devices, device classes, or device protocols.

### Important: USB support is enabled by default

USB bridging is enabled by default. If you want to restrict or disable USB support, you can globally disable or set rules governing USB behavior via GPO settings on the Anyware Agent.

### USB Redirection

USB redirection is only intended to be used with a single instance of the Anyware Software Client. Launching a second instance of the Anyware Software Client while USB devices are redirected from another client may not work as expected.

## Remote USB Device Support

When remoting pointer-style USB devices such as a mouse, stylus, or Wacom tablet, you must grant *PCoIPClient.app* computer control. You can enable this through the **Preferences>Security & Privacy>Privacy>Accessibility** in system settings.

## Isochronous USB device Support

The Software Client for macOS does not support isochronous USB devices.

# Wacom Tablet Support

The Software Client for macOS supports Wacom tablets in two configurations: [bridged](#), where peripheral data is sent to the desktop for processing, and [locally terminated](#), where peripheral data is processed locally at the Software Client.

## Locally-Terminated Wacom Tablets

Locally terminated Wacom tablets are much more responsive, and tolerate high-latency connections better than bridged.

Local Termination is automatically used whenever it is supported for a device. If you prefer to use bridged mode—if, for example, you must use sophisticated tablet features like touch, which is not supported by local termination—you can override this behavior by [blacklisting a device for local termination](#).

Local termination requires a supported Anyware agent (any type), and a supported Software Client for macOS.

## Anywhere client support for *locally terminated* Wacom tablets and the Software Client for macOS

	Anywhere agents (Windows)	Anywhere agents (Linux)	Anywhere Graphics Agent for macOS	Remote Workstation Card
<b>Intuos Pro Small</b> <i>PTH-460</i>	✓	✓	—	—
<b>Intuos Pro Medium</b> <i>PTH-660</i>	✓	✓	✓	—
<b>Intuos Pro Large</b> <i>PTH-860</i>	✓	✓	✓	—
<b>Cintiq Pro 16</b> <i>DTH-167</i>	✓	✓	—	—
<b>Cintiq Pro 16</b> <i>DTH-1621</i>	✓	✓	—	—
<b>Cintiq 22</b> <i>DTK-2260</i>	✓	✓	—	—
<b>Cintiq 22HD</b> <i>DTK-2200</i>	—	—	—	—
<b>Cintiq 22HDT - Pen &amp; Touch</b> <i>DTH-2200</i>	—	—	—	—
<b>Cintiq Pro 24</b> <i>DTK-2420</i>	—	—	—	—
<b>Cintiq Pro 24 - Pen &amp; Touch</b> <i>DTH-2420</i>	✓	✓	—	—
<b>Cintiq Pro 27</b> <i>DTH-271</i>	✓	✓	—	—
<b>Cintiq 32 Pro - Pen &amp; Touch</b> <i>DTH-3220</i>	✓	✓	—	—

## Bridged Wacom Tablets

Bridged Wacom tablets should be used only in low-latency environments. Tablets that are bridged in network environments with high latency (greater than 25ms) will appear sluggish and difficult to use for artists, and are not recommended.

When connecting a Wacom tablet, bridged mode is used only if local termination is not available. To override this behavior, causing the Software Client for macOS to use bridged mode instead, add the device to the [Local Termination Blacklist](#).

 **Note: Graphics Agent for macOS does not support bridged Wacom tablets**

The Graphics Agent for macOS only supports local termination of Wacom devices.

The following Wacom tablet models have been tested and are supported on the Software Client for macOS:



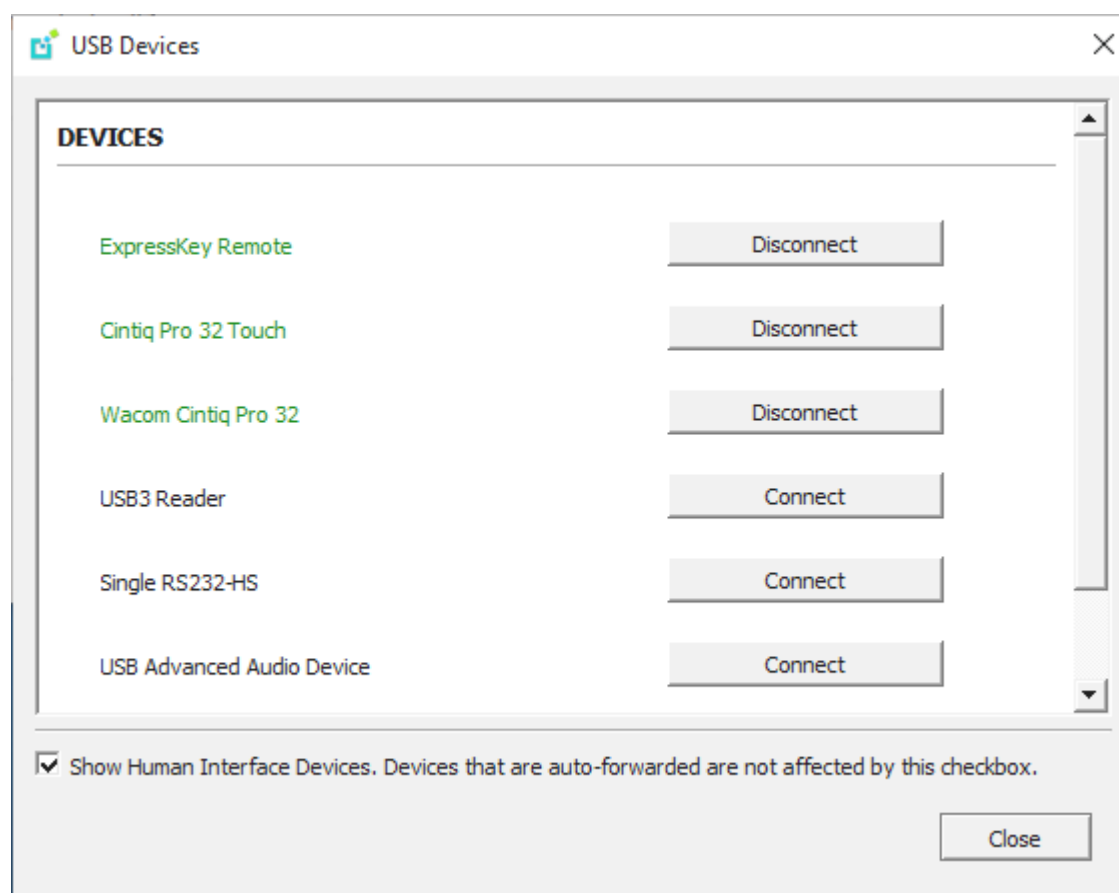
## Anyware client support for *bridged* Wacom tablets and the Software Client for macOS

	Anyware agents (Windows)	Anyware agents (Linux)	Anyware Graphics Agent for macOS	Remote Workstation Card
<b>Intuos Pro Small</b> <i>PTH-460</i>	✓	✓	—	✓
<b>Intuos Pro Medium</b> <i>PTH-660</i>	✓	✓	—	✓
<b>Intuos Pro Large</b> <i>PTH-860</i>	✓	✓	—	✓
<b>Cintiq Pro 16</b> <i>DTH-167</i>	✓	✓	—	—
<b>Cintiq Pro 16</b> <i>DTH-1621</i>	✓	✓	—	—
<b>Cintiq 22</b> <i>DTK-2260</i>	✓	✓	—	✓
<b>Cintiq 22HD</b> <i>DTK-2200</i>	✓	✓	—	✓
<b>Cintiq 22HDT - Pen &amp; Touch</b> <i>DTH-2200</i>	✓	✓ <i>Ubuntu only</i>	—	✓
<b>Cintiq Pro 24</b> <i>DTK-2420</i>	✓	✓	—	✓
<b>Cintiq Pro 24 - Pen &amp; Touch</b> <i>DTH-2420</i>	✓	✓	—	✓
<b>Cintiq Pro 27</b> <i>DTH-271</i>	✓	✓	—	—
<b>Cintiq 32 Pro - Pen &amp; Touch</b> <i>DTH-3220</i>	✓	✓	—	✓

## Connecting Cintiq Pro 32 Tablets

The Wacom Cintiq Pro 32 appears as *three* separate devices in the USB menu. You should connect the following USB devices to use this tablet:

- ExpressKey Remote
- Cintiq Pro 32 Touch
- Wacom Cintiq Pro 32



## Tablet Force Proportions

You can enable the **Tablet Force Proportions** feature of your Wacom tablet in a PCoIP session. This feature constrains the device to match the horizontal and vertical proportions of your display, ensuring that there is no undesired stretching of your drawing.

For example: if you draw a perfect circle on the device, with *tablet force proportions* enabled the display will show a perfect circle; when it is disabled, the circle could appear as an ellipse depending on the screen proportions.

When this mode is enabled, the entire active surface of the device may not be usable; only the portion of the device that matches the proportion of the screen will be active.

 **Note: Wacom driver setting must match**

The Wacom driver must also be configured to use force proportions, or this setting will have no effect.

**To enable or disable *Tablet Force Proportions*:**

From the Software Client for macOS in-session menu, select **View > Tablet Force Proportions** to toggle the setting.

## Known Issues

The following limitations apply to Wacom tablet support:

- Touch only works on the Cintiq Pro 32 Pen & Touch (DTH-2420). Touch functionality is not supported for any other Wacom tablet.
- ExpressKey Remote does not work on the Wacom Cintiq Pro 32 (DTH-3220). You should still connect this device when connecting the Wacom tablet.
- There are cursor limitations when working with the Wacom Cintiq 22HD (DTK-2200) and Wacom Cintiq Pro 24 (DTK-2420) for both bridged and locally terminated devices.
- Control buttons on the Wacom Cintiq Pro 32 (DTH-3220) do not function when locally terminated.
- Anyware Clients are not compatible with NoMachine and No Machine USB drivers. For information on how to uninstall NoMachine USB drivers, see [No Machine's knowledge base](#).

 **Important: Wacom devices must be connected to the session for full feature support**

Locally-terminated Wacom tablets must be connected to the PCoIP session using the Software Client for macOS's in-session menu in order to use pressure sensitivity and other supported features. If a device is plugged into a USB port but is *not* connected to the session, it will behave as a simple pointer device; this creates a confusing situation where the device initially appears to work, but expected features do not function.

# Installation

This section describes how to install and uninstall the Anyware Software Client for macOS.

## Before You Begin

Before installing a Anyware Software Client:

- You must be logged in as an administrator to the client machine.
- Close any existing Anyware Software Client applications.

## Installing the Anyware Software Client

1. Download the **PCoIPClient.dmg** disk image file on the Mac machine.
2. Double-click the file to mount the volume.
3. Accept the license agreement by clicking **Agree**.
4. In the *PCoIPClient* volume window, drag the **PCoIPClient** icon into the **Applications** folder icon to install the program.
5. To optionally create an alias on the desktop or the dock:
  - Double-click the **Applications** folder icon to open the folder.
  - Drag the client application to the desktop or dock.
6. During installation, when prompted, grant the required permissions. A prompt will appear requiring you to grant **Screen Recording** permission to **Anyware Client**. The **Accessibility** prompt appears after you action the **Screen Recording** prompt.
  - a. On the **Screen Recording** prompt that appears, click **Open System Settings**.
  - b. Go to **Privacy & Security**, and turn on **Screen Recording** for **Anyware Client**.
  - c. On the **Accessibility** prompt that appears, click **Open System Settings**.
  - d. Go to **Privacy & Security**, and turn on **Accessibility** for **Anyware Client**.

7. Confirm that **Anyware Client** has been granted the required permissions:
  - a. Go to **System Settings > Privacy & Security > Screen Recording**.
  - b. Ensure that screen recording is enabled for **Anyware Client**.
  - c. Go to **System Settings > Privacy & Security > Accessibility**.
  - d. Ensure that accessibility is enabled for **Anyware Client**.
8. To eject the volume when you are finished, drag it to the trash.
9. Restart the machine.

## Installing the Software Client in Silent Mode

The following section outlines how to install the Anyware Software Client in silent mode. Note that you must authorize the application to run in silent mode.

### **Note: Permissions Require GUI**

In order to grant **Screen Recording** and **Accessibility** permissions, the macOS client machine must display a graphical user interface. During installation, you must launch Anyware Client.app to grant user permissions.

1. Attach the `.dmg` file:

```
yes | hdiutil attach <pcoip client installer>.dmg
```

2. Delete the current Anyware Client:

```
rm -R '/Applications/PCoIPClient.app'
```

3. Install the new Anyware Client:

```
cp -R '/Volumes/<pcoip client installer>/PCoIPClient.app' /Applications
```

4. During installation, when prompted, grant the required permissions. A prompt will appear requiring you to grant **Screen Recording** permission to **Anyware Client**. The **Accessibility** prompt appears after you action the **Screen Recording** prompt.
  - a. On the **Screen Recording** prompt that appears, click **Open System Settings**.
  - b. Go to **Privacy & Security**, and turn on **Screen Recording** for **Anyware Client**.
  - c. On the **Accessibility** prompt that appears, click **Open System Settings**.
  - d. Go to **Privacy & Security**, and turn on **Accessibility** for **Anyware Client**.
5. Confirm that **Anyware Client** has been granted the required permissions:
  - a. Go to **System Preferences > Security & Privacy > Screen Recording**.
  - b. Ensure that screen recording is enabled for **Anyware Client**.
  - c. Go to **System Preferences > Security & Privacy > Accessibility**.
  - d. Ensure that accessibility is enabled for **Anyware Client**.
6. Unmount the drive afterwards:

```
yes | hdiutil unmount <pcoip client installer>
```

7. Restart the machine.

## Uninstalling the Anyware Software Client

- Navigate to the **Applications** folder and drag the PCoIPClient program to the trash. -OR- Right-click the application and select **Move to Trash**.

### Troubleshooting PCoIP Session Connection Issues

If you encounter issues with your PCoIP Session, please see the following KB article: <https://help.teradici.com/s/article/1027>. This article details some potential causes and fixes for common connection issues.

# Downloading the macOS Update

Anyware Clients are equipped to check for new updates and send notifications that appear as banners if an update is available. Clicking the banner redirects to the product download page, from where you can download the client installer.

1. Open Anyware Client, and click the Info icon in the top-left corner.
2. On **Anyware Client | About** pop-up, check if an update is available.
3. If an update is available, the **Update now** link will appear. Click this link to go to the product download page.
4. Proceed with installation of the client as described in the **installation topic**.

## **Note: More About the Update**

If the client is up to date, the **Release notes** link becomes available on the **Anyware Client | About** pop-up dialog. If the client is unable to access an update, the **Try again** link will appear on the **Anyware Client | About** pop-up dialog.

# Upgrading the macOS Client

## Updating the Software Client Using the Installation Package

1. Download the macOS installer on the machine on which the macOS client is installed.
2. Upgrade the macOS client by [running the macOS installer](#). You **do not need to uninstall** your current version; your settings will be preserved.

## Updating the Software Client in Silent Mode

1. Uninstall the existing macOS client:
  - a. Navigate to the **Applications** folder and drag the PCoIPClient program to the trash.  
-OR- Right-click the application and select **Move to Trash**.
2. Once that is done, [perform a fresh install of the client](#).



# Connecting

## Connecting to Remote Desktops

The Software Client for macOS can connect to any remote host with a Anyware agent installed and configured, or a Remote Workstation Card. Remote hosts can be Windows, macOS, or Linux, and connections can be made directly (client direct to host) or brokered through Anyware Manager or a Connection Manager.

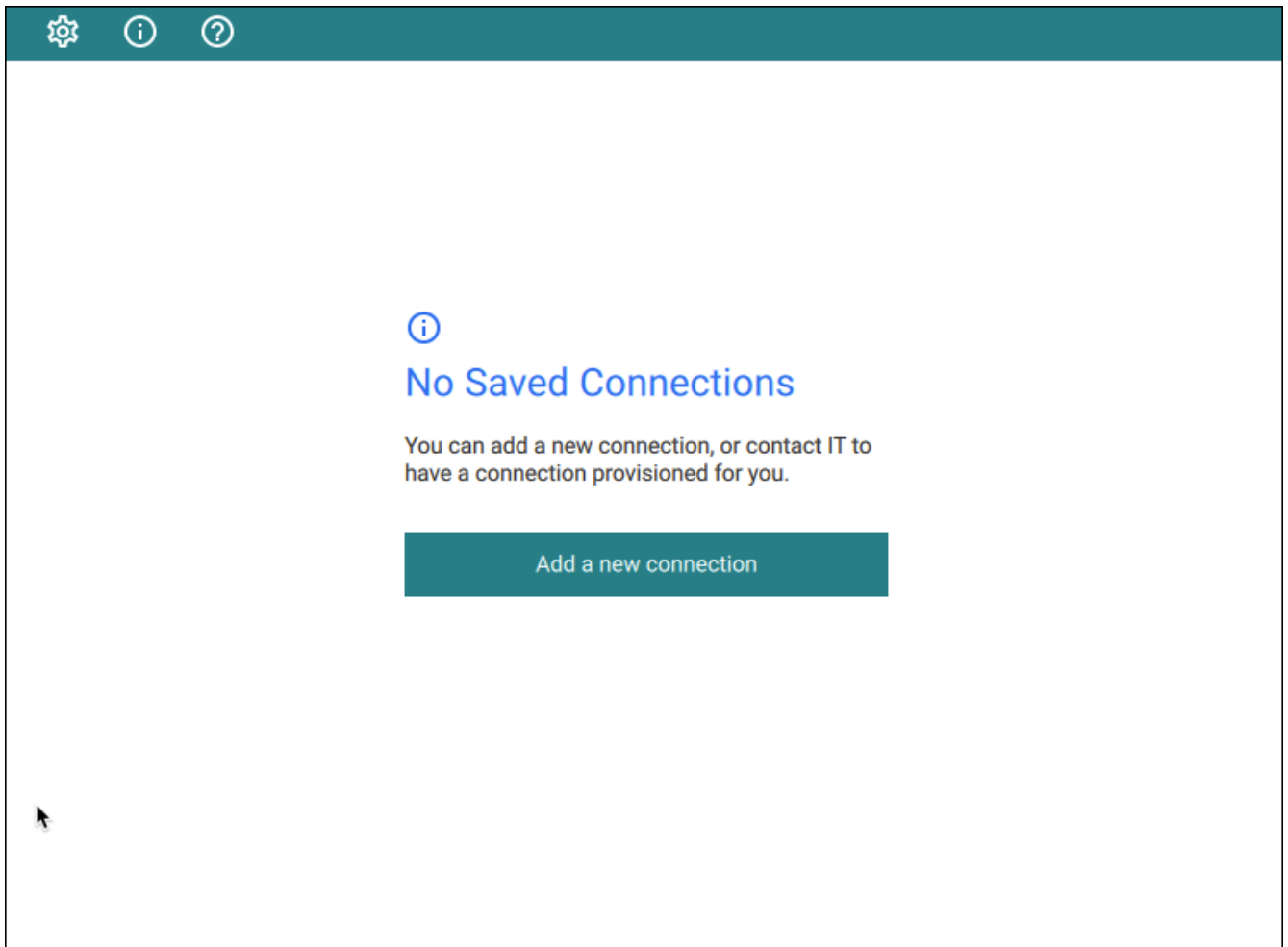
 **Note: Remote Workstation Card connections**

Connections to Remote Workstation Cards require preparation on the remote machine before they will work. For details, see [Preparing for PCoIP Remote Workstation Card Connections](#).

## Creating Your First Connection

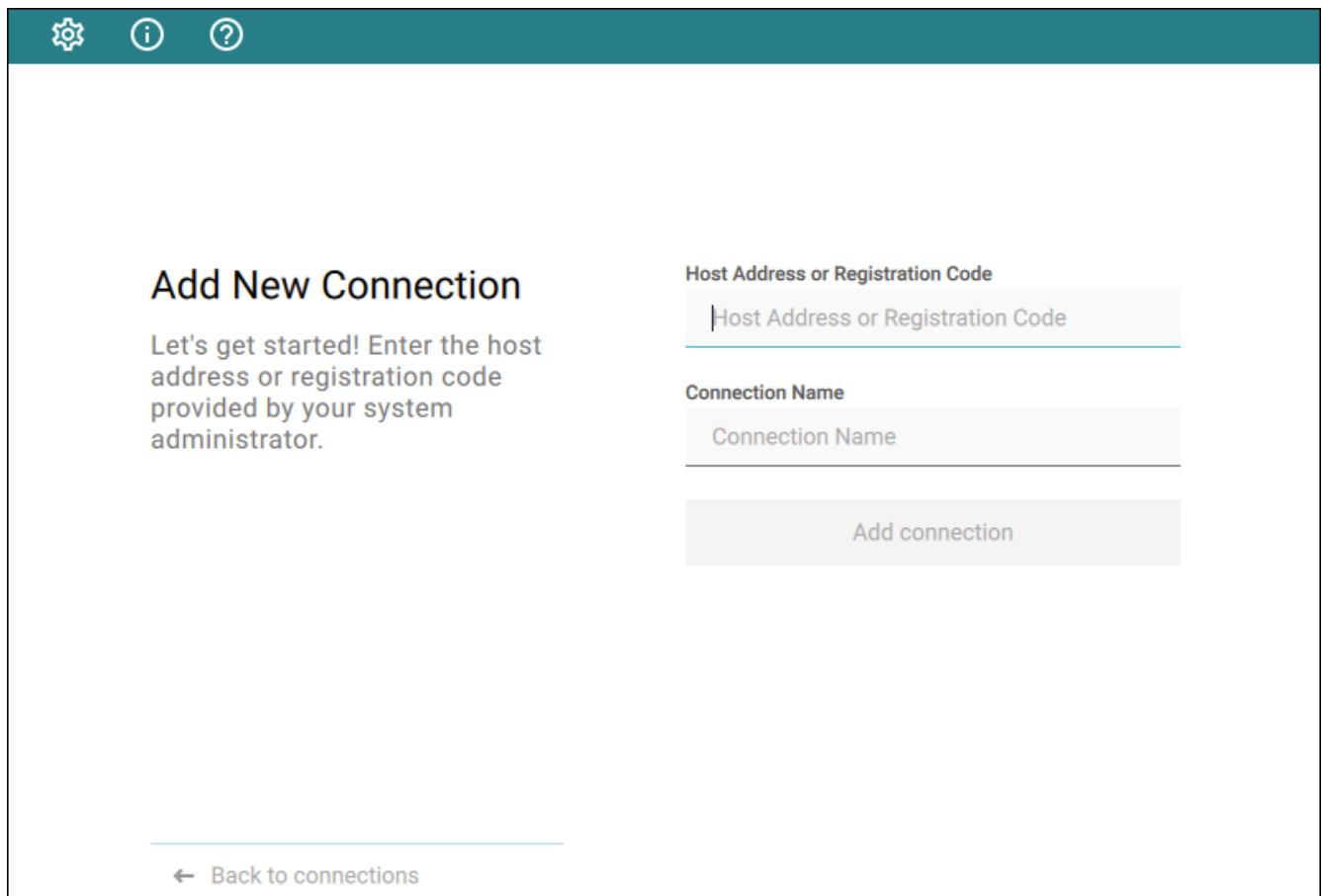
The first step is to create a *connection* to either your agent (for direct connections) or to your connection manager (for managed deployments).

1. Launch the Software Client for macOS.
2. If this is your first connection, the Software Client for macOS will prompt you to create one:



Click **Add a new connection** to proceed.

3. In the *Add New Connection* pane, there are two fields to provide:



**Add New Connection**

Let's get started! Enter the host address or registration code provided by your system administrator.

**Host Address or Registration Code**

Host Address or Registration Code

**Connection Name**

Connection Name

Add connection

← Back to connections

- **Host Address or Registration Code:** Enter the address of the remote system you want to reach (you should have this information from your system administrator). This field accepts IP addresses, domain names, and registration codes, as in these examples:

- *An IP address:* 123.456.789.012
- *A domain name:* remote-desktops.example.com
- *A registration code:* a1b2c3!@#

 **Note: Amazon WorkSpaces registration codes**

If you are connecting to an Amazon WorkSpaces desktop, provide your WorkSpaces registration code in this field.

- **Connection Name:** Provide a name for this connection. This can be anything; you will use this name to select this connection in future sessions. You can always change it later.

4. Click **Add connection**.

Once this is done, you'll see the connection you created shown as a clickable button. You can add as many connections as you like, by clicking **+ Add a new connection** at the bottom of the *Connect* pane.

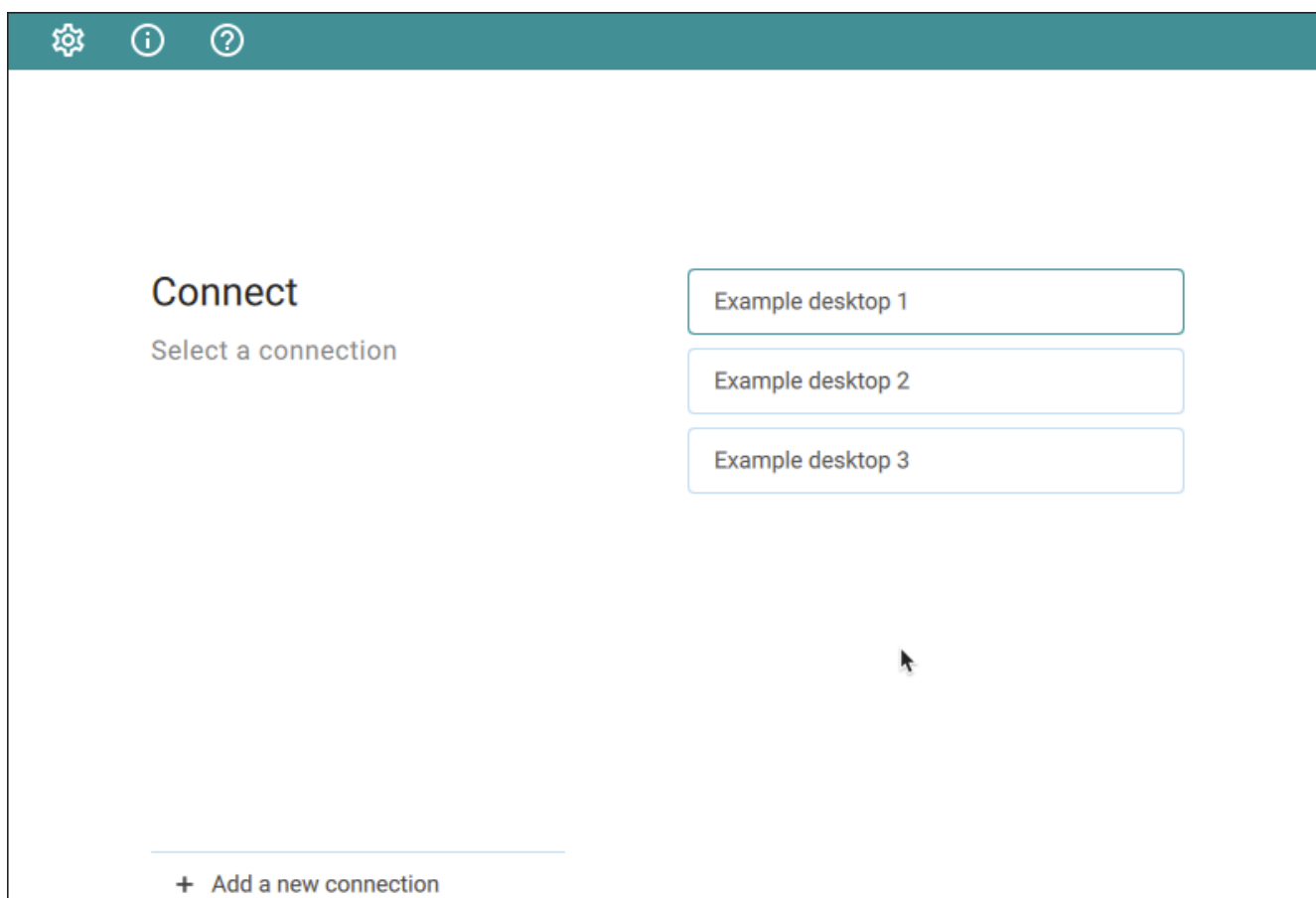
#### **Tip: Difference from previous workflows**

The connections you save here are to *brokers*, or to *direct desktop connections*. If you have multiple desktops behind a single broker, you will still have to choose your desired desktop after authenticating with the broker. In the previous interface, you could save connections at any stage of the process, including to individual desktops.

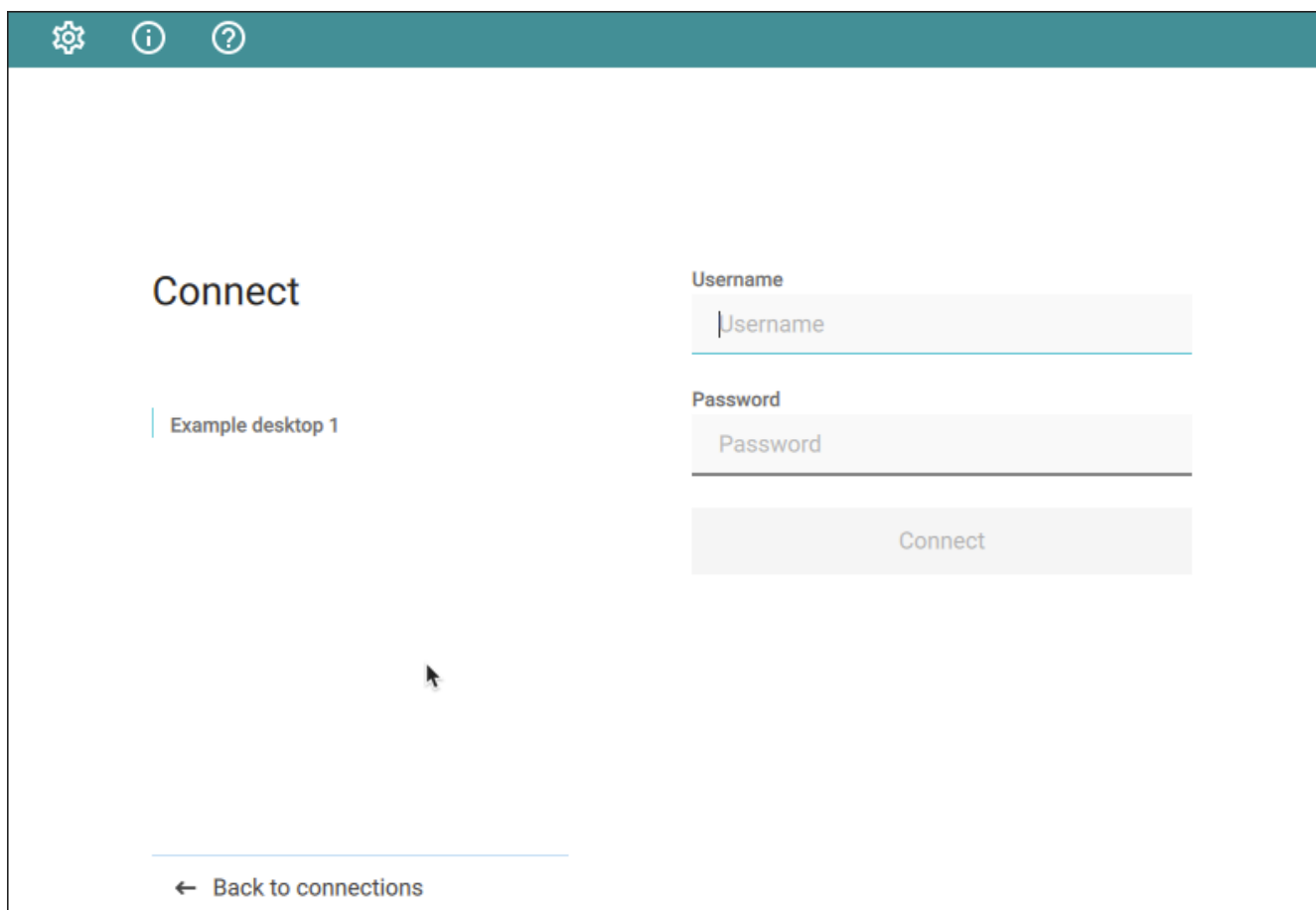
If you have existing saved connections from previous releases, they will continue to work when you upgrade to this client version. However, if they are deleted, they cannot be re-created.

## Connecting to a Session

1. Assuming you have created at least one connection, the Software Client for macOS will now look something like this:



2. Click the name of the connection you want. Next, provide your username and password:



The screenshot shows a 'Connect' dialog box. On the left, under the heading 'Connect', there is a list of connections with 'Example desktop 1' selected. On the right, there are two input fields: 'Username' and 'Password'. Below these fields is a 'Connect' button. At the bottom left, there is a link that says '← Back to connections'.

 **Note: About authentication credentials**

For **managed connections**, the authentication screen and validation that happens here is managed by HP Anyware or by your connection broker. The credentials are supplied to you by your system administrators, and are usually your corporate credentials.

For **direct connections** where no broker is present, use the credentials for your user account on the remote machine.

3. If your system is configured for multi-factor authentication, you will see a *Multi-Factor Authentication* screen next. The actual view shown here depends on your MFA implementation; in this example, the MFA screen accepts a passcode or sends a push:

Multi-Factor Authentication

Example desktop 1

Passcode

Submit Passcode

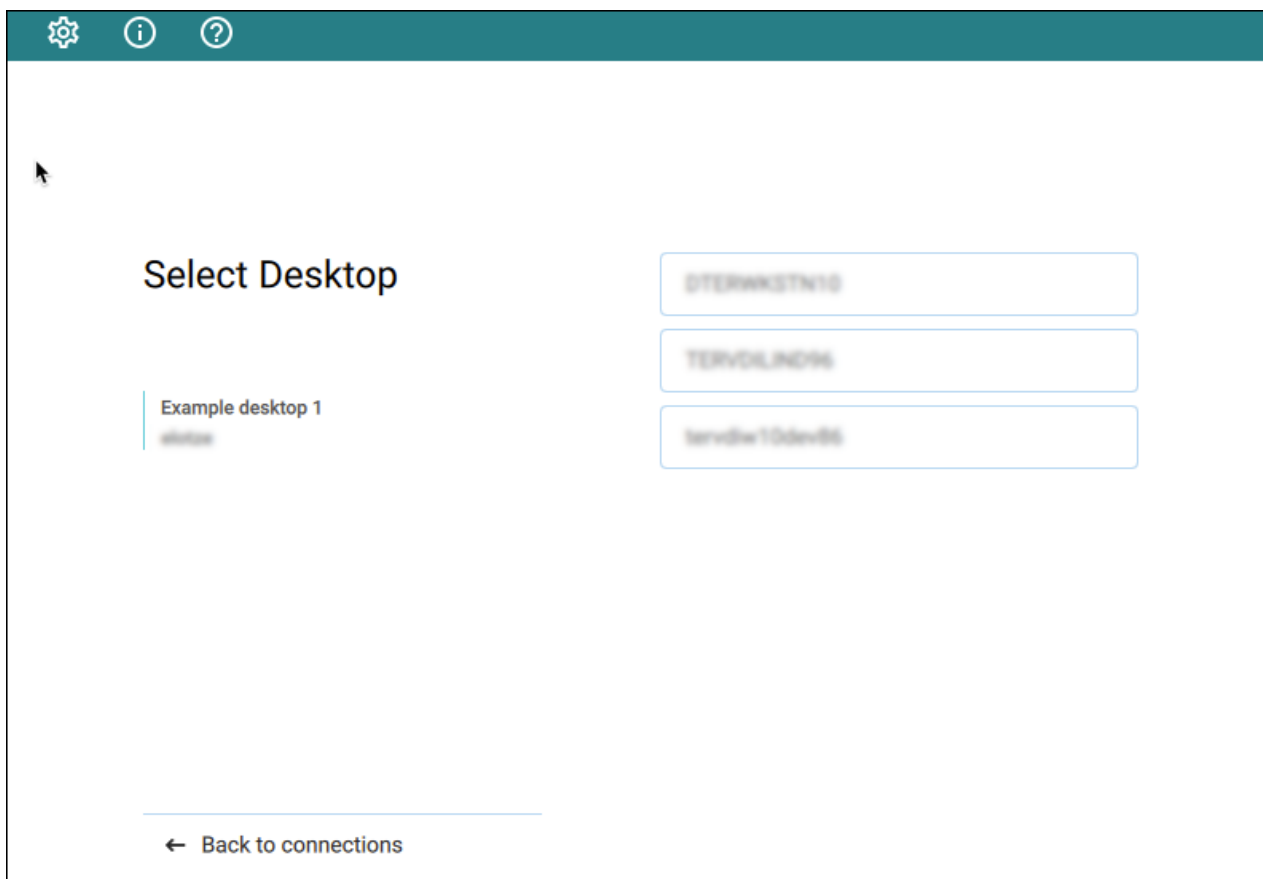
or

Send Me a Push

← Back to connections

4. Once your credentials are accepted:

- **If you have a single desktop** available, your connection credentials will be used to automatically log into it and your session starts immediately.
- **If you have multiple desktops** available, the Software Client for macOS shows you a list of desktops. Click the desktop you want to connect to.



Once you are connected, your PCoIP session will begin. The connection will use the display mode you last used (windowed, fullscreen one monitor, or fullscreen all monitors), unless altered by a launch-time [configuration](#).

There may be a delay of a few seconds before you have control of your mouse and keyboard; this is normal.

## Managing Connections

1. On the **Saved connections** window, click the vertical ellipsis next to the connection to reveal the context menu.
2. To rename the connection, select **Edit**.
3. Update the **Host Address or Registration Code** or the **Connection Name** as necessary.
4. Click **Save**.
5. To delete the connection, from the context menu, click **Delete**.

### **Note: More About the Manage desktops option**

The **Manage desktops** option in the context menu is used to rename desktop labels and restart desktops in scenarios where **a single desktop** is associated with a connection. For more information, see [Changing remote desktop labels](#) and [Restarting remote desktops](#).

## Managing Desktops

You can manage the desktops belonging to each of your defined connections. The following actions are available, when supported by the desktop:

- [Rename](#) the desktop's label in the client.
- [Restart](#) the remote desktop (if supported).
- [Display information](#) about the desktop, including its resource name and protocol.

To use these features, first display the list of desktops belonging to the connection, then select the action you want from the available desktops. These procedures are described next.


## Display the List of Desktops

Desktop management options require you to authenticate with the connection that owns them.

### **Tip: Connections with multiple desktops**

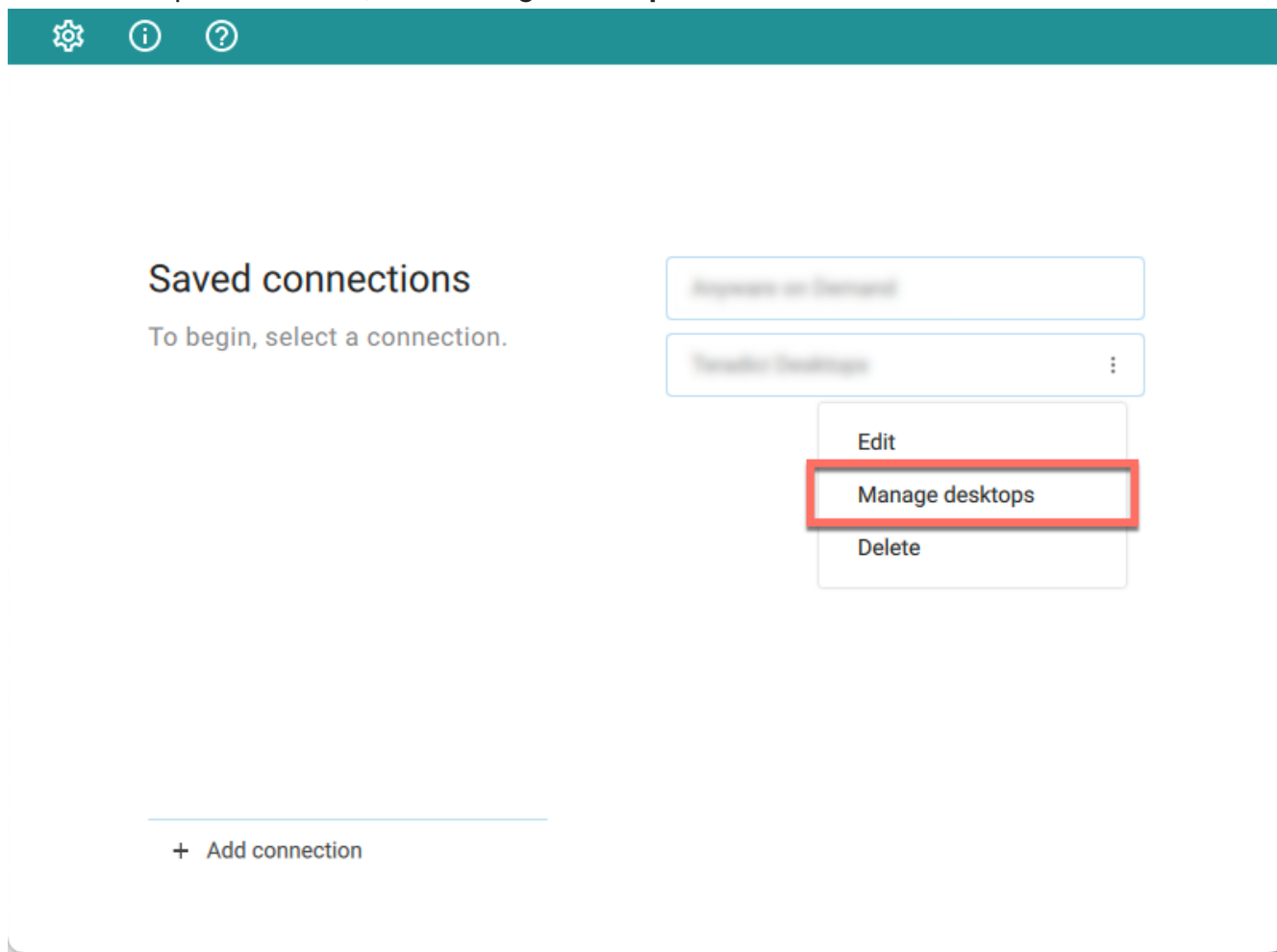
If you have multiple desktops, you can also click on a connection directly instead of following the procedure shown here. Single-desktop users are not shown a desktop list after authenticating, and must follow this procedure to manage their desktop.

### **To access the desktop management options:**


1. From the list of connections, click the vertical expansion icon  beside the connection you want to work with.



2. From the dropdown menu, click **Manage Desktops**:



You will be asked to authenticate with the connection.

Once authenticated, you will see the list of desktops belonging to the connection. To manage one of the desktops, click the vertical expansion icon  beside the *desktop* you want to work with, and choose one of the following options.

## Rename a Desktop

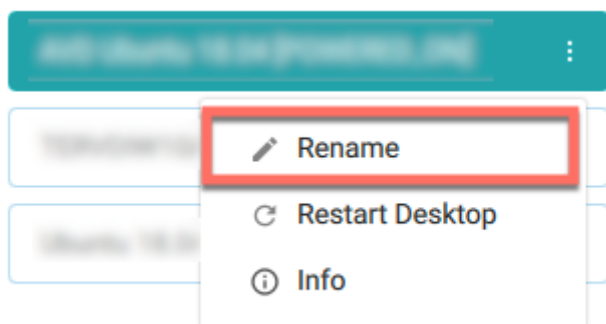
By default, the Software Client for macOS displays the *machine names* of your remote desktops. These names can often be automatically-generated strings that are difficult to identify or differentiate. You can modify the name shown in the desktop list to give them human-friendly names that are easier to understand.

**Note: Only labels are changed**

This procedure changes the label shown in the client interface. It does not change the desktop's machine name.

**To change a desktop label:**

1. Display the desktop list as described [above](#).
2. Click **Rename**:



3. Provide a new name to use in the desktop list. Note that once this is done, the default machine name will no longer be visible; if you need to see it later, see [View Desktop Information](#).

## Restart a Desktop

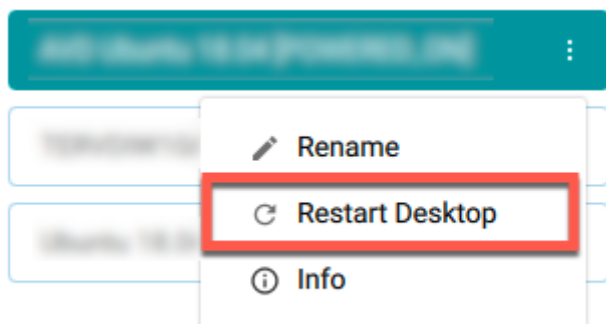
You can send a restart command to a remote desktop from the client interface, if supported by your remote system.

**Note: Not all deployments support this feature**

The restart option is only be available if your remote system supports it. If it does not, the option will be disabled.

**To restart a remote desktop:**

1. Display the desktop list as described [above](#).
2. Click **Restart Desktop**:



The remote desktop will be restarted. Note that it will be unavailable for connections until the restart is complete, which may take several minutes.

## View Desktop Information

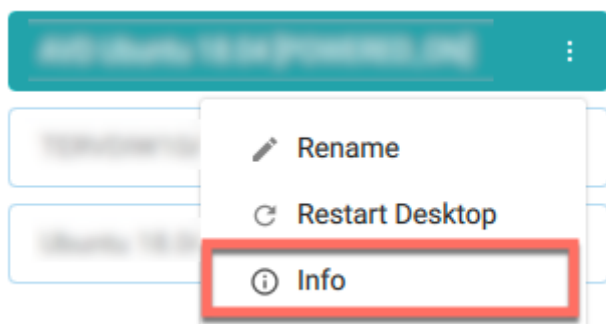
You can view detailed information about each of your available remote desktops, including resource names, IDs, and protocols.

### **Tip: Desktop machine names**

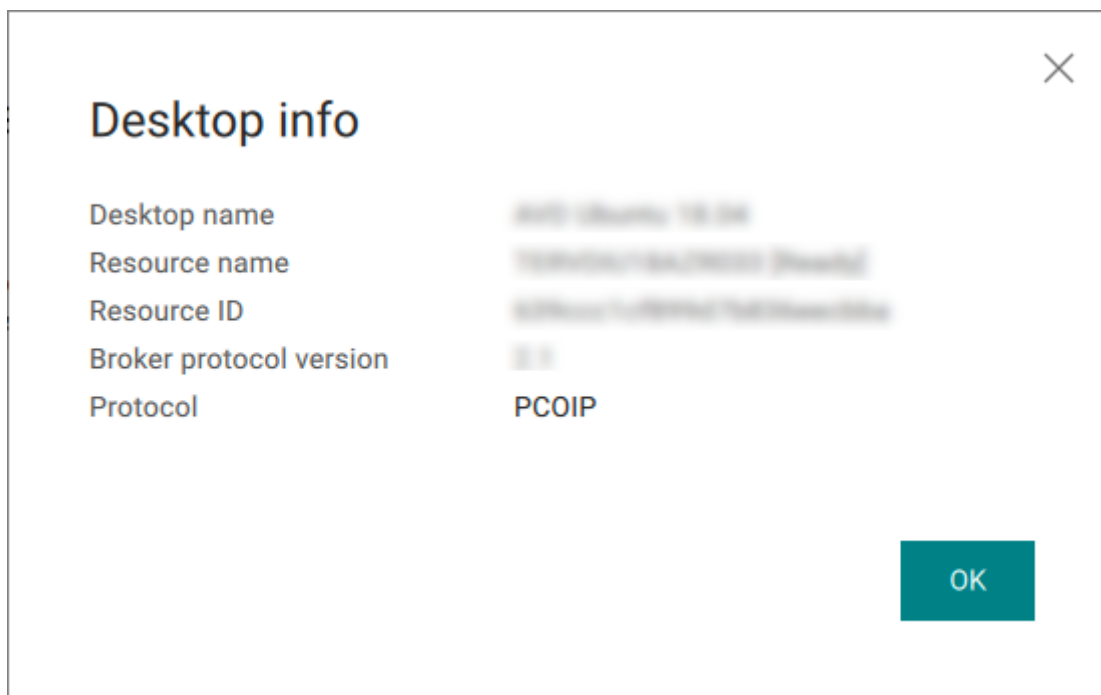
If you have [renamed a desktop](#), the original machine name is the *resource name* shown here.

### To view desktop info:

1. Display the desktop list as described [above](#).
2. Click **Info**:



3. Review the displayed information.



4. To dismiss the info window, click **OK** or click the close button in the top corner.

#### **Some Keystrokes Will not Be Interpreted Correctly**

Keystrokes of special keys sent by clients might not be interpreted correctly by agents. This happens when the clients and the agents are running different operating systems, and the special keys are unique to the operating system of the clients. For example, the Numlock keystroke sent by a Windows client does not work on a macOS agent. This is by design.

#### **Note: Troubleshooting PCoIP Session Connection Issues**

If you encounter issues with your PCoIP Session, see the following KB article: <https://help.teradici.com/s/article/1027>. This article details some potential causes and fixes for common connection issues.

# Connecting to PCoIP Remote Workstation Cards

You can connect to remote workstations equipped with a Remote Workstation Card, and with Remote Workstation Card Software (for Windows or Linux) installed.

Refer to [System Requirements](#) for supported versions.

## Initial Workstation Configuration

Before you can connect to your remote workstation for the first time, you must install software and make some configuration changes. These actions only need to be taken once for each remote workstation in your system:

- **Record the MAC address of the Remote Workstation Card**

Before you install the Remote Workstation Card, **record the MAC address of the Remote Workstation Card**; this will allow you to log into the card to configure its settings. Type `https://pcoip-host-<MAC_ADDRESS>.mydomain` where `<MAC_ADDRESS>` is the MAC address of your Remote Workstation Card and `mydomain` is the local domain of your network. This step is important as the host driver function is disabled by default, so the Remote Workstation Card Software will not pick up information about the Remote Workstation Card, such as the MAC address. The MAC address enables you to connect to the Remote Workstation Card to view the IP address and enable the host driver function.

For more information on IP and MAC information relating to the Remote Workstation Card, see [How do I find the IP address of my newly installed Anyware Zero Client or Remote Workstation card?](#) in the knowledge base.

- **Install the Remote Workstation Card Agent:** To connect to a Remote Workstation Card machine with a Anyware Software Client, the *Remote Workstation Card Agent* software must be installed.
- **Verify accessibility:** Both the NIC of the workstation and the NIC of the Remote Workstation card need to be accessible by the Anyware Software Client. They can be on different local networks as long as both are accessible by the Anyware Software Client. If they are both behind a NAT and accessed by the Anyware Software Client then the Remote Workstation Card Agent must send the NAT'ed address to the Anyware Software Client when connecting.
- **Enable monitor emulation for the video ports on your remote workstation:** If monitor emulation is not enabled, you may see blank gray screens when you connect from the Anyware Software Client.

To enable monitor emulation, log in to the card's Administrator Web Interface (AWI) and select **Enable Monitor Emulation on Video Port n** from the *Configuration > Monitor Emulation* menu. For more information, see the [Remote Workstation Card Administrators' Guide](#).

- **Disable temporal dithering:** Temporal dithering causes blurriness, heavy packet loss, and high CPU usage on the Anyware Software Client machine.
- **Linux workstations: configure Remote Workstation Card Software to Start Automatically:** To configure the Remote Workstation Card Software to start automatically, log into the workstation using a Anyware Zero Client or directly from a local mouse and keyboard, and modify the workstation startup script to launch the Remote Workstation Card Software. For details, see Installing Remote Workstation Card Software Binary RPM in the [PCoIP® Remote Workstation Card Software for Linux User Guide](#).

Once the remote workstation is properly configured, you can use the Software Client for macOS to connect to it.

## Connecting to a Remote Workstation Card through the command line

You can connect directly to a Remote Workstation card from a Anyware Software Client by launching the client from the command line. For details, see [hard host](#) in client configuration.

## Remote Workstation Card Limitations

Not all features with the Software Client are fully supported when connecting to a Remote Workstation Card. The following section outlines these limitations against certain features.

**Audio:** Remote Workstation Card uses a hardware based audio protocol which is not fully supported on the Software Client.

**Topology:** Single display configurations will work. There may be disruptions in the forms of black bars or scroll bars on the client if the Remote Workstation Card does not support the display configuration on the client.

**USB:** Connecting USB devices to the Remote Workstation Card is not supported.

**Performance:** The Remote Workstation Card does not support PCoIP Ultra enhancements.

## Connecting Remotely using NAT or VPN

The same principles that apply for Anyware Zero Clients apply to Anyware Software Clients when connecting to multiple hosts through a WAN. Connections from a Anyware Software Client to a Remote Workstation Card across a WAN will require a VPN or NAT setup with enterprise level NATing devices. For information on how to connect a Anyware Software Client to a Remote Workstation Card installed in a Windows host computer, see [Connections from Software Clients](#) in the Remote Workstation Card Administrators' Guide.

# Disconnecting a Session

## To disconnect a PCoIP session:

1. If you are in a full-screen mode, reveal the Software Client for macOS menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for macOS menu bar, select **Connection > Disconnect**.

To quickly disconnect from a session, press **Ctrl + Alt + F12**. On Mac machines, press **Ctrl + Option + F12**.

### **Tip: Mac Laptops Might Require Additional Key Press**

On Mac laptops, you might need to press the **Fn** key, along with **Ctrl + Option + F12**.

Quitting the Anyware Client application will also disconnect the current session.



# In-session actions

## Display Modes

When you connect to a PCoIP session, the Software Client for macOS shows your remote desktop as one or more displays. The number of displays it shows is constrained by your local system's available monitors (and the PCoIP protocol itself, which supports up to four monitors).

You can choose whether the Software Client for macOS shows your remote session as a single display in a resizable [window](#), or as [one](#) or [many](#) full-screen displays.

You can also [add or remove local displays](#) during a session.

You can switch between three display modes as needed during a session. Note that some of these modes are system-dependent; for example, if your local system has only one monitor, you will not see options for multiple displays.

- [Windowed mode](#): A single display shown in a window.
- [Full Screen All Monitors](#): All available local monitors are used in full-screen mode to show the remote desktop.
- [Full Screen One Monitor](#): A single display shown full-screen on the local system.

## Windowed Mode

In Windowed mode, the Software Client for macOS provides a single window, resizable and movable, which contains the remote desktop. The remote desktop will rescale to fit your window dimensions if you change them.

### To use windowed mode:

1. Reveal the Software Client for macOS menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for macOS menu bar, select **View > Leave Fullscreen**.

## Full Screen Modes

In *full-screen* modes, the Software Client for macOS expands to fill either [one local display](#) or [all of your local displays](#).

In both full-screen modes, the Software Client for macOS menu bar is hidden. To reveal it, move your mouse cursor to the top of the display and hover for a moment.

### **Tip: Quickly switch to full-screen mode**

You can quickly switch from windowed mode to whichever full-screen mode you used last by pressing `ctrl` + `alt` + `Enter`.

### **Important: Enable *Displays have separate Spaces***

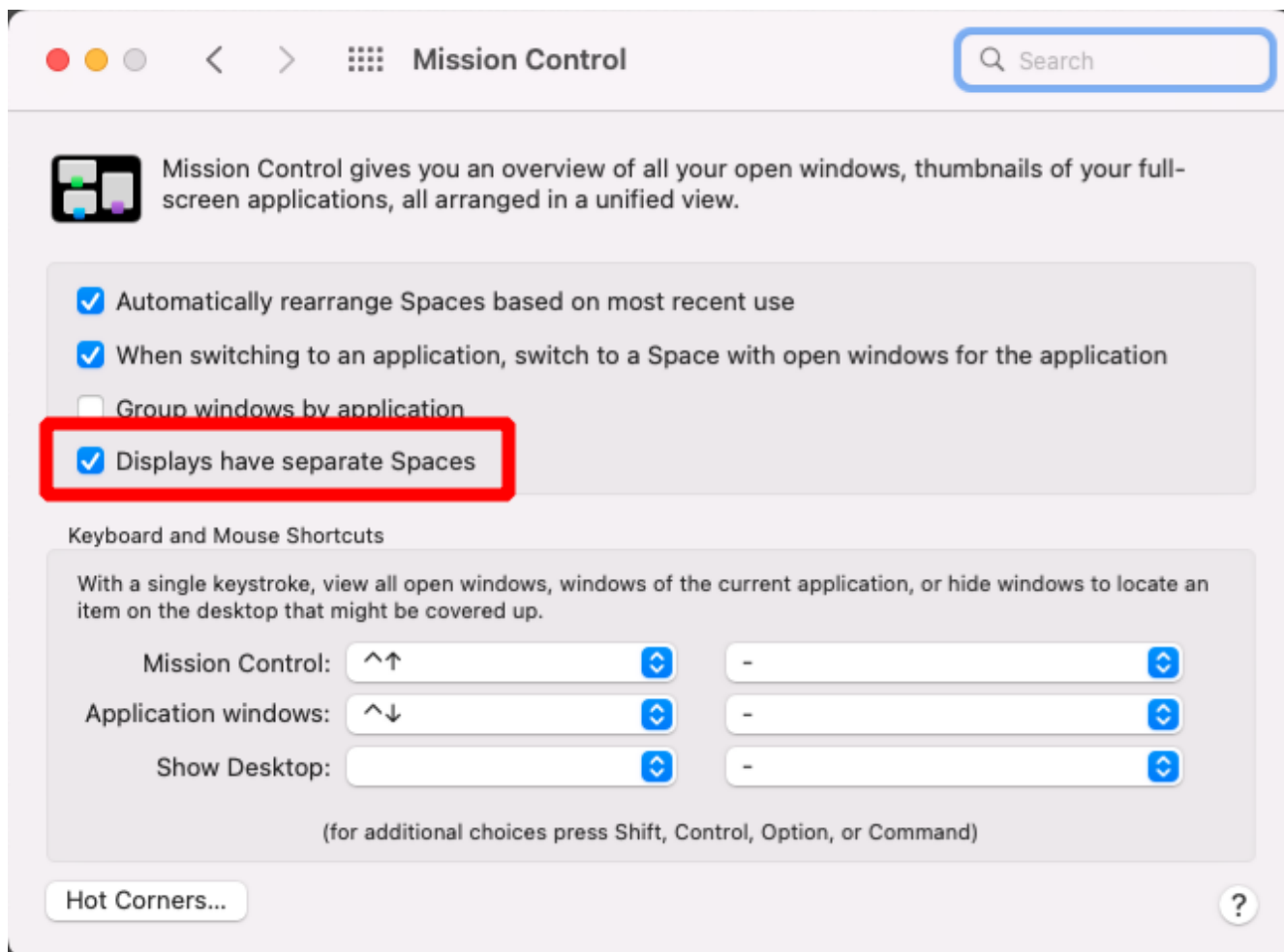
*Displays have separate Spaces* must be enabled for full-screen behavior to work as expected. See [Enable \*Displays have separate Spaces\*](#).

## ENABLE *DISPLAYS HAVE SEPARATE SPACES*

Full-screen modes extend macOS Mission Control functionality. To work as expected, *Displays have separate Spaces* in Mission Control settings must be enabled.

### **To enable *Displays have separate Spaces*:**

1. Open *System Preferences*....
2. Click **Mission Control** in the preferences window.
3. In the Mission Control settings window, find and check the box beside **Displays have separate Spaces**.



If you do not enable *Displays have separate Spaces*, each remote display may appear on a Space with black screens on the other displays.

## FULL SCREEN ALL MONITORS

In *full screen all monitors* mode, the application expands to present full-screen remote displays on *all* of your local monitors. The remote desktop will map a remote display to each of your local displays.

You will only see this option if your local system has multiple displays.

### To use Full Screen All Monitors mode:

1. If you are in *full-screen one monitor* mode, reveal the Software Client for macOS menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for macOS menu bar, select **View > Fullscreen All Monitors**.

## FULL SCREEN ONE MONITOR

In *full screen one monitor* mode, the presents a single full-screen remote display on one of your monitors.

If you switch from *Full Screen All Monitors* to *Full Screen One Monitor*, all open windows and applications will be moved onto the single display.

### **Tip: Monitor selection**

The local monitor chosen for full-screen display depends on the mode you are switching from:

- If switching from *windowed* mode, the client's current display becomes full-screen.
- If switching from *full screen all monitors* mode, the display used to select *fullscreen one monitor* mode becomes full-screen.
- If using the green menu bar button to enable full screen mode, the monitor the window was on will become full-screen.

### To use Full Screen One Monitor mode:

1. If you are in a full-screen mode already, reveal the Software Client for macOS menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for macOS menu bar, select **View > Fullscreen One Monitor**.

### **Note: Systems with only one display**

If your local machine has only one display, the menu option will say **Show Fullscreen**.

## Adding or Removing Displays

You can add or remove local displays during a PCoIP session. If you are using [full screen all monitors](#) mode, you must [detect](#) the changes before they will be effective. Note that in the case of removing monitors, this could mean that some applications or information is inaccessible until the *detect monitors* command is issued.

## Detecting Monitors

If the local display configuration changes during a session—for example, if you attach a new local monitor, or disconnect an old one—the display mapping between the local and remote topographies is no longer accurate, leading to unpredictable display behavior. You must refresh the display mapping to accurately show the new configuration.

### To synchronize local display changes:

1. If you are in a full-screen mode already, reveal the Software Client for macOS menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for macOS menu bar, select **View > Detect Monitors**.










The local display configuration will be synchronized with the remote. The local displays may flicker or go black momentarily while the remote system updates its display topography.

# Mission Control in PCoIP Sessions

macOS provides a number of methods for activating Mission Control. Some of these methods are reserved by the Software Client for macOS to allow local use of Mission Control, and others are forwarded to the remote desktop, where the remote macOS system can use them.

The following table describes which key combinations and gestures are reserved by the local client machine and which are sent to the remote host. These are the default invocation methods; if keys or gestures have been remapped, use the modified equivalent.

All **local** methods invoke Mission Control on the client Mac, and all **remote** methods invoke it on the remote macOS host.

Activation Method	Local or Remote Mission Control
Press <b>Mission Control</b> key on a keyboard with a Mac layout (normally  )	Local
Swipe up with three or four fingers on an Apple Trackpad.	Local
Double-tap an Apple Magic Mouse with two fingers	Local
Select <b>Local Mission Control</b> from the Software Client for macOS menu bar, or press  +  + 	Local
Press  +  on keyboard	Remote
Press  +  , type <code>Mission Control</code> and press  (while in-session)	Remote

Mission Control commands and gestures have no effect on Windows or Linux desktops.

# Connecting USB Devices

Remote desktops can use USB devices that are attached to the client, using a process called *redirection*. USB devices are not automatically redirected to the remote desktop; they must be specifically connected to the session.

## **Note: Excludes Mice and Keyboards**

Normal Human Interface Devices (HID), such as keyboards and mice, are always connected and used by the remote desktop. This page describes using non-HID USB devices such as tablets or cameras.

## Important considerations

- **USB functionality depends on Anyware Agent configuration:** The remote Anyware agent must be configured to allow USB redirection. If it is not, only HID devices like keyboards and mice will be used, and the *Connection > USB Devices* option will not be visible in the Software Client for macOS menu bar.
- **Local Termination and Bridging:** Most USB devices are *bridged* to the host, which means their input is sent directly to the host machine for processing. Certain devices, including ePadLink Signature Pads and some Wacom tablets, connect using a different method called *local termination*. This mode does some pre-processing of device information locally at the client before forwarding to the host, resulting in increased responsiveness and better tolerance of high-latency networks.  
The mode chosen is automatic, unless overridden. See [Wacom Tablets](#) for information about which Wacom tablets are supported.
- **Persistence:** USB device connections do not persist across multiple PCoIP sessions. You must connect your USB device each time you connect.
- **NoMachine USB Drivers:** Anyware Clients are not compatible with NoMachine and No Machine USB drivers. For information on how to uninstall NoMachine USB drivers, see [NoMachine's knowledge base](#).

## Connect a USB Device

### **One-time Anyware Software Client for macOS login**

The first time you connect a USB device on a newly-installed Software Client for macOS, you must enter an administrator's credentials. You only need to do this once on each new client installation.

### **To Connect a USB device:**

1. Attach the USB device you want to connect to your local machine.
2. Select **Connection > USB Devices** from the Anyware Software Client menu.

A list of all USB devices connected to your client machine appears. The list includes both external devices you plug in and integrated devices such as laptop cameras.

The name shown in the list is self-reported by the device; some devices will identify themselves only as *USB Device*.

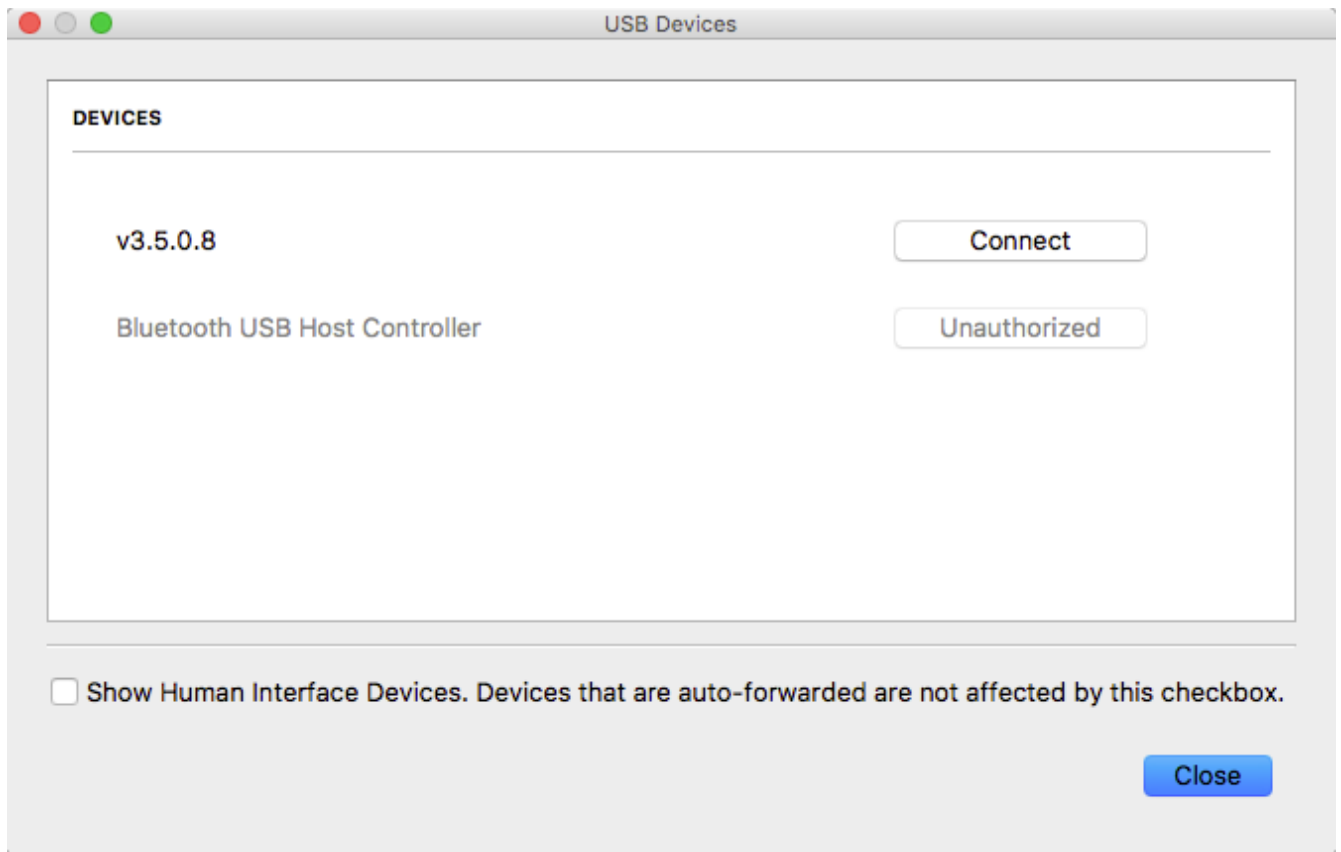
### **Important: Connecting special HID devices**

Because most Human Interface Devices (HIDs) are automatically processed by the Software Client for macOS, they do not appear on this list even if they use a USB connection. However, certain HID devices—like 3D mice and Wacom tablets—actually do require processing on the remote host, and will not work as expected unless connected to the session.

To show these hidden HID devices and allow them to be connected, enable the **Show Human Interface Devices** checkbox. You may also need to perform additional configuration steps or install drivers on the remote machine.

3. Click **Connect** beside the USB device you want to use.

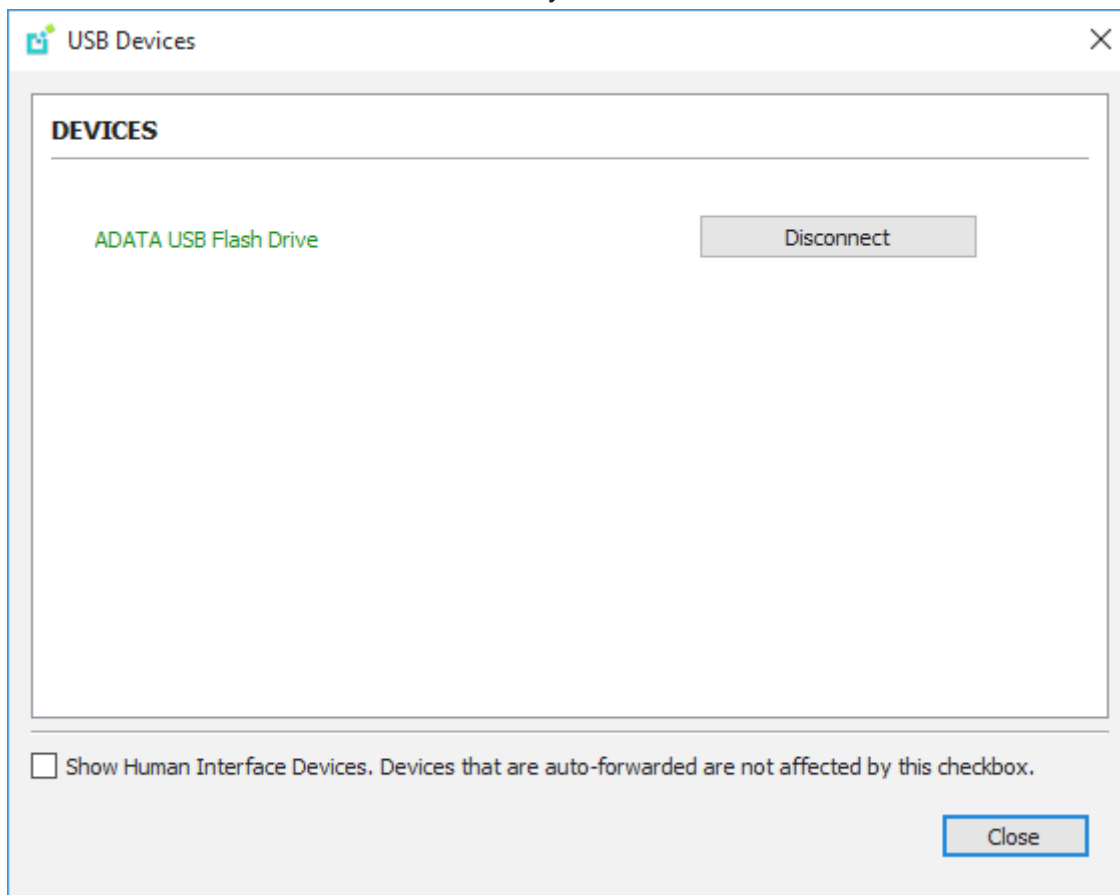




## Disconnect a USB Device

1. Select **Connection > USB Devices** from the Anyware Software Client menu.

2. Click **Disconnect** beside the USB device you want to disconnect.



## Automatically Forward All USB Devices

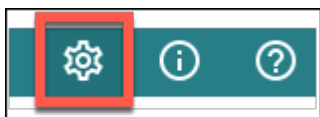
Automatic forwarding allows you to bridge all non-HID USB devices without requiring a manual connection step.

### **Note: Auto-forwarded devices can be disconnected from the client**

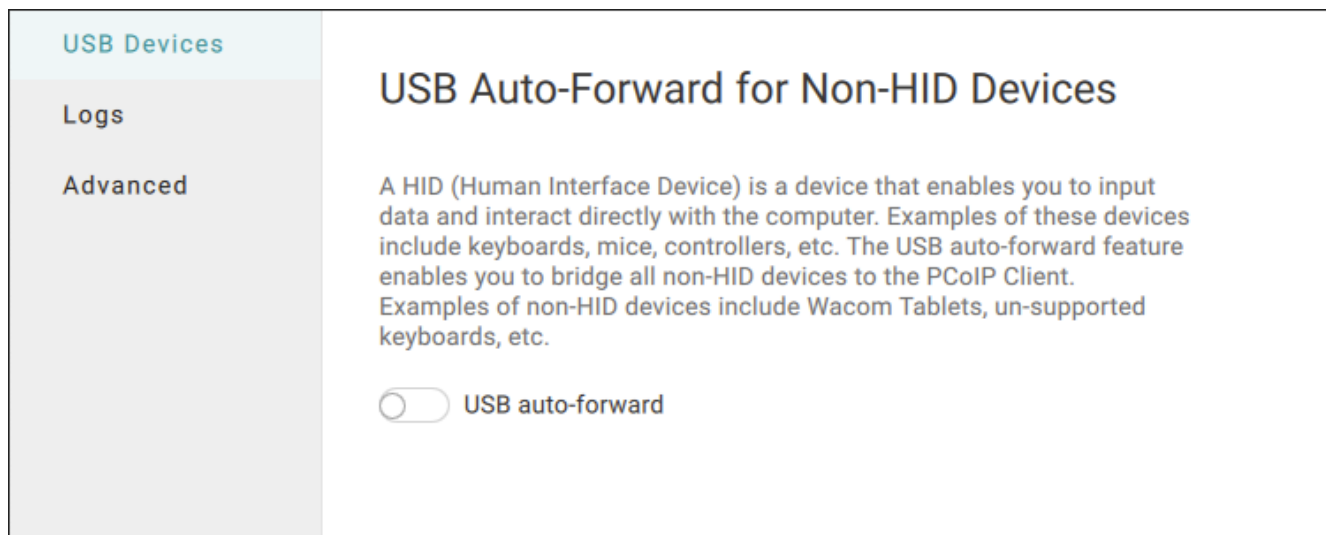
Devices that are automatically forwarded can still be disconnected and reconnected via the Software Client for macOS interface.

### **To enable automatic USB forwarding in the pre-session interface:**

1. Disconnect any active PCoIP sessions and return to the pre-session interface.
2. Click the gear icon to open the settings window:



3. Click **USB Devices** in the left side menu, then enable **USB auto-forward** in the *USB Auto-Forward for Non-HID Devices* panel.



#### To enable automatic USB forwarding programmatically:

To enable automatic forwarding programmatically, launch the client using either the command-line or URI methods and use the `usb-auto-forward` flag. For more information, see [USB Auto-Forward](#) in the Configuration section.

## Automatically Forward Devices by Vendor ID/Product ID

You can automatically forward specific devices to the remote host without requiring a manual connection step (devices not specified can still be connected manually, as shown [above](#)).

#### **Note: Auto-forwarded devices can be disconnected from the client**

Devices that are automatically forwarded can still be disconnected and reconnected via the Software Client for macOS interface.

Devices are identified by their Vendor ID and Product ID (VID and PID, respectively) which together make a unique identifier. You can specify up to 20 devices to automatically connect using this method. If more than 20 devices are provided, only the first 20 will be accepted. The rest will be ignored, and noted in logs.

Invalid VID/PID pairs are discarded, and noted in logs.

To enable automatic forwarding by Vendor ID and Product ID, launch the client using either the command-line or URI methods and use the `vidpid-auto-forward` setting, providing the VID/PID pairs for the devices you want to connect. For more information, usage, and examples, see [Vidpid Auto-Forward](#) in the Configuration section.

## Identifying Vendor and Product IDs

If you do not know the Vendor ID and Product ID of the device you want to automatically forward, you can discover them using the client logs.

### To discover the Vendor and Product IDs:

1. Unplug all USB devices.
2. Launch the Software Client for macOS.
3. Plug in the device.
4. Close the Software Client for macOS.
5. [Find the most recent Anyware Client log file](#).
6. In a log viewer or text editor, look for lines containing `MGMT_USB :Device`, and `VID=`. In this example, there are two entries with `MGMT_USB :Device`; we want the first line, which also contains the `VID` and `PID` assignments:

```
2040-12-12T20:36:46.117Z e0f9e9e9e-866f-1038-test-ac87a3007abc LVL:2 RC:
0      MGMT_USB :Device 0x00010001 VID=0x18a5PID=0x0302
2040-12-12T20:36:46.117Z e0f9e9e9e-866f-1038-test-ac87a3007abc LVL:2 RC:
0      MGMT_USB :Device 0x00010001 Name=TEST Serial=012345ABCDE
pp=000222222
```

7. VID and PID assignments appear like this: `VID=0x<VID_VALUE>PID=0x<PID_VALUE>`. *The VID and PID values we need are the strings **after** 0x.*

Continuing the example, `VID=0x18a5PID=0x0302` means the VID we want is `18a5`, and the PID is `0302`.

8. The VID/PID pair is expressed as `<VID>, <PID>`. Following our example, this device would be specified as `18a5, 0302`.
9. Provide this (and others, if applicable) VID/PID pair to [Vidpid Auto-Forward](#) when launching via command line or URI, as indicated above.

# Configuring Wacom Tablets

This section outlines how to configure your Wacom tablet through the Anyware Client session. There are two available features within the Anyware Client that can be used to configure the monitor display and orientation.

## **USB Connection Instructions**

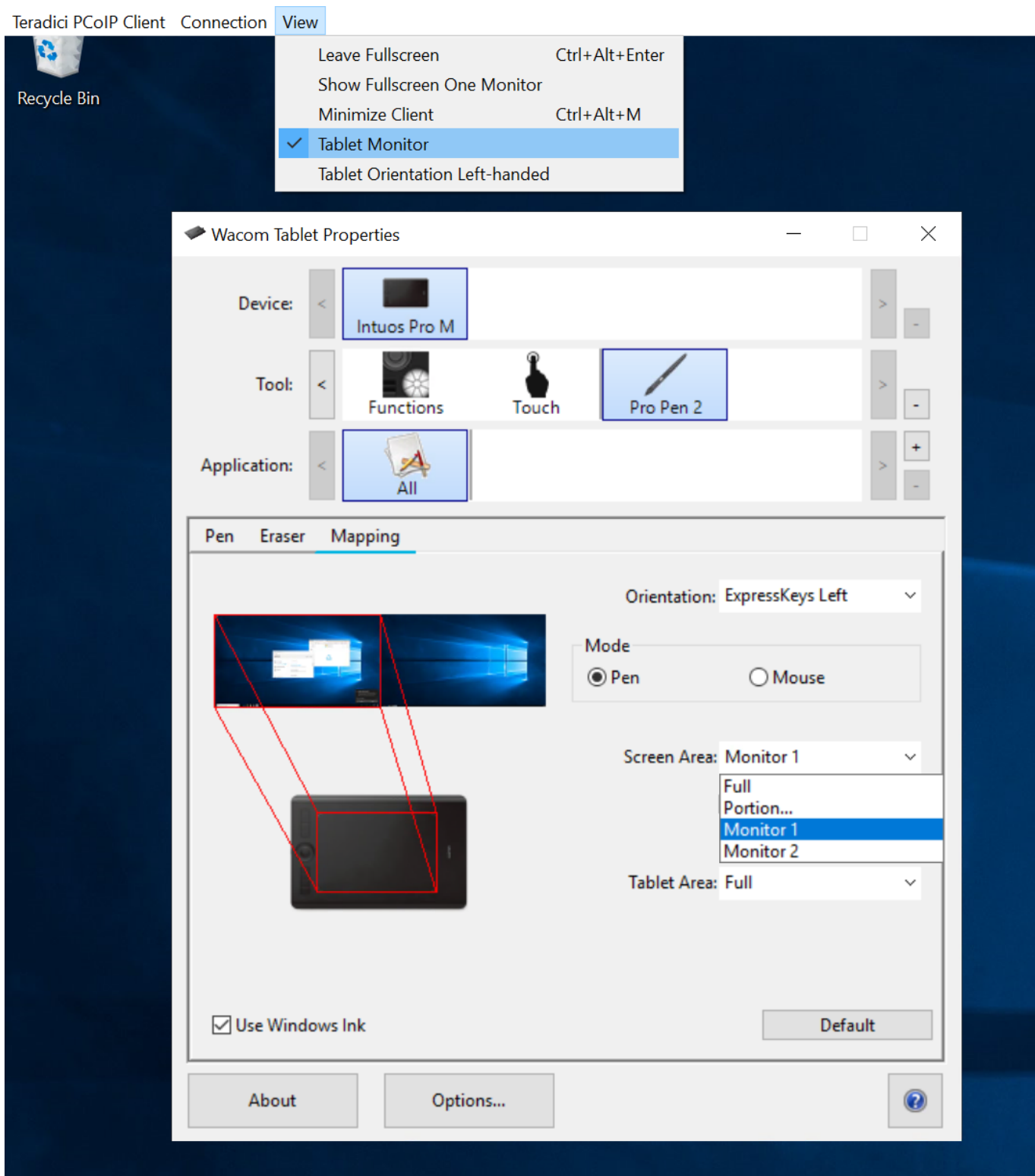
Before you carry out the Wacom tablet monitor configurations below, you must connect to the device by following the instructions outlined in the [Connecting to USB Devices](#) section.

## Wacom Tablet Monitor

The Tablet Monitor feature enables you to select the monitor you want to use with your Wacom tablet. You can change between using a pen or mouse and select the orientation position.

### **To configure Tablet Monitor settings:**

1. Select **View** from the in-session options bar.
2. Check the **Tablet Monitor** option.
3. Open **Wacom Tablet Properties** from the Wacom Desktop Center.
4. Select your device, tool and application.
5. Select your screen area from the dropdown menu.



## Tablet Orientation Left-handed

The left-handed orientation configures the tablet for a left-handed orientation. Select **ExpressKeys Right** for a left-handed orientation, and **ExpressKeys Left** for a right-handed orientation. Rotate the tablet to the desired orientation.

**To configure Tablet Orientation:**

1. Select **View** from the in-session options bar.
2. Check the **Tablet Orientation Left-handed** option.
3. Open **Wacom Tablet Properties** from the Wacom Desktop Center.
4. Select your device, tool and application.
5. Select your orientation from the dropdown menu.

Teradici PCoIP Client Connection View

- Leave Fullscreen Ctrl+Alt+Enter
- Show Fullscreen One Monitor
- Minimize Client Ctrl+Alt+M
- Tablet Monitor
- ✓ Tablet Orientation Left-handed

Wacom Tablet Properties

Device: Intuos Pro M

Tool: Functions Touch Pro Pen 2

Application: All

Pen Eraser Mapping

Orientation: ExpressKeys Right

Mode:  Pen

Screen Area: Monitor 1

Force Proportions

Tablet Area: Full

Use Windows Ink

Default

About Options...



# Reset Virtual Desktop

The following section outlines how to reset a saved desktop in the Anyware Client. You can reset to a virtual desktop by following the steps outlined below:

1. Click the configure button and select **Edit** from the popup menu. Alt Text
2. Click **NEXT** on the initial saved connection screen. Alt Text
3. Enter your access credentials and click **SAVE**. Alt Text
4. Click the configure button and select **Reset**. If the **Reset** option is not available, then this feature is not supported by the Connection Manager. Alt Text

# Enhanced Audio and Video Synchronization

Enhanced Audio and Video Synchronization provides improved full-screen video playback, reducing the difference in delays between the audio and video channels and smoothing frame playback on the client. This improves lip sync and reduces video frame drops for video playback.

This feature introduces a small lag in user interaction responsiveness when enabled. Using enhanced audio and video synchronization will reduce the maximum frame rate.

AV Lock is enabled on a per-display basis, so you can dedicate individual displays to playback without impacting responsiveness on the others.

## To use AV Lock:

1. If you are in full-screen mode, reveal the menu bar on the display you want to enhance by moving the mouse cursor to the top of the screen.
2. On the display you want to enhance select **View > AV Lock** to toggle the enhanced sync mode.

### Persistent Display Topology

The Enhanced Audio and Video Synchronization feature is persistent across sessions from the same client, provided that the display topology has not changed.

## PCoIP Ultra AV-Lock

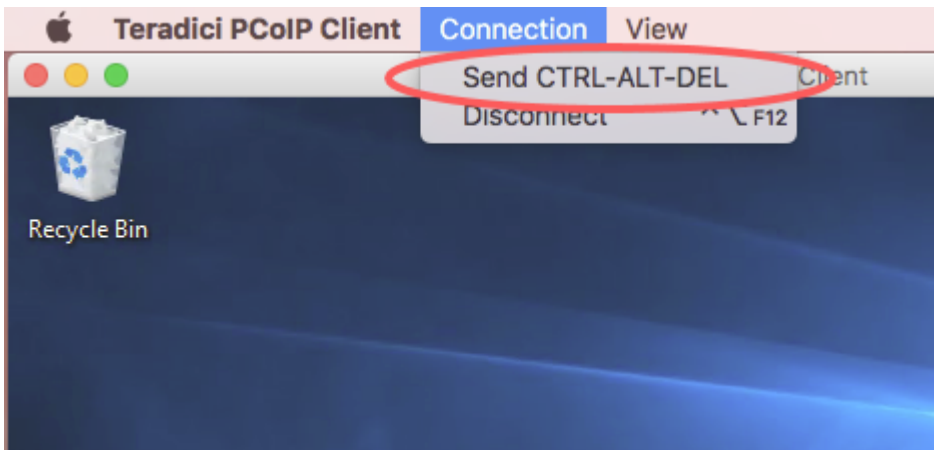
PCoIP Ultra AV-Lock enables regulated synchronization of audio and video frames. When audio is playing the video frames will be delayed to align with the audio sound track. When there is no audio playing the video frames will be presented to the user without delay. In some use cases, such as video editorial, audio video synchronization, it must be tolerant of variable network conditions that may be present with remote work.

PCoIP Ultra AV-Lock enables more regulated synchronization of audio and video frames compared to AV Lock that's described above. PCoIP Ultra AV-Lock is available with PCoIP Ultra CPU Offload, GPU Offload or Auto Offload. You must enable the High Performance Client mode for this feature to function correctly, for instructions on how to activate this High Performance Mode, see [High Performance Client](#).

To activate Ultra AV-Lock from the High Performance Client menu, under the menu "View - PCoIP Ultra AV-Lock", select the monitor you wish to activate Ultra AV-Lock on. Monitors with Ultra AV-Lock activated will be indicated with a checkmark in the menu. This may be switched on/off for individual monitors in-session, and will be remembered for future sessions as long as the monitor topology remains the same.

# Sending a Ctrl-Alt-Del Command

To send the Ctrl-Alt-Del keyboard command to a remote workstation, select the **Connection > Send CTRL-ALT-DEL** menu option.



# Configuration Guide

## Configuring the Anyware Software Client for macOS

The Software Client for macOS provides a number of configurable settings and behaviors, which allow the setting of user options, performance modes, and triggering actions like automated connections. These settings are not persistent and cannot be set via the user interface; they are set by launching the application using one of the methods described next.

To configure a client instance, you must launch it using one of these methods:

- [On the command line](#), with configuration values passed inline as flags
- [Via a URI](#), providing your configuration values in an encoded JWT string
- [via Config files](#), where advanced configuration values are set via configuration files

### **Note: Configuration Methods**

Not all options available via the configuration methods are the same. Some might also have different names.

## Setting Configuration Values on the Command Line

To set configuration values this way, launch the Software Client for macOS from a command prompt, and include the required options as flags. Multiple flags can be included in the same line. Use the following conventions when setting these parameters:

Type	Format
Boolean	No value is required; the flag implies "True"
Numeric	Provide the parameter and then the numeric value, separated by a space.
String	Provide the parameter and then the string value, separated by a space. Values can be wrapped in double quotation marks if they contain spaces.

The following example launches the client in full-screen mode, sets log level 3, and points to a connection broker at `broker.domain.com` (if your application is installed somewhere else, use your own path instead):

```
/Applications/PCoIPClient.app/Contents/MacOS/PCoIPClient --connection-broker
broker.domain.com --log-level 3 --full-screen
```

The available settings are shown [below](#).

## Setting Configuration Values via a URI

Using this method, the Software Client for macOS is launched using a URI with configuration options (and, optionally, connection credentials) encoded in a [JWT token string](#).

To use this method, create a URI with the following structure:

```
pcoip://[broker]/connect[?data={jwt}]
```

Where each segment shown above is:

Segment	Description
<code>pcoip://</code>	<b>Required.</b> This scheme is registered with the operating system and will launch the Software Client for macOS.
<code>broker</code>	Optional. FQDN of the connection broker to use. If the connection is not brokered, this can be omitted.
<code>/connect</code>	<b>Required.</b> Requests a connection with the parameters defined in "?data"
<code>?data={jwt}</code>	Optional. The string indicated by {jwt} here is a JWT payload, containing any required configuration settings and connection credentials. If all you want to do is launch the client with no options set, this can be omitted.

The JWT payload can contain both credential information and client configuration. To create the JWT payload:

1. Create your configuration and credentials as a JSON object, using available [configuration parameters](#) and [authentication credentials](#).
2. Encode the object as a JWT token.
3. Pass the token through the URI as the `data` parameter.

For example, the following JSON object would launch the client in full-screen mode, with log level 3:

```
{
  "fullscreen": true,
  "log-level": 3
}
```

Encoded, and pointing to a connection broker at `broker.domain.com`, this would result in a URI similar to the following:

```
pcoip://broker.domain.com/connect?
data=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJmdWxsc2NyZWVuIjp0cnVlLCJsb2ctbGV2ZV
```

The available settings are shown [below](#).

## Configurable Settings

The following settings can be configured on the Software Client for macOS.

### General Settings

These settings affect the client's behavior both in and out of PCoIP sessions.

#### LANGUAGE

Sets the user interface language.

Options	Default	Type
Interface language	English	string (short code or ISO code; see next table for options)

## Supported language options:

Language	Short code	ISO code
Chinese Simplified	cn	zh_CN
English	en	en_US
French	fr	fr_FR
German	de	de_DE
Italian	it	it_IT
Japanese	ja	ja_JP
Korean	ko	ko_KR
Portuguese (Iberian)	pt	pt_PT
Spanish	es	es_ES

## Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--locale</code>	–	<code>--locale zh_CN</code>
URI	–	–	–	–

If the `locale` parameter is present but the argument is invalid or missing, the Software Client for macOS displays a *Parameter parsing error* and lists the valid settings, then exits (the client will not start).

## Connection Settings

These settings control how the Software Client for macOS connects to PCoIP sessions.

### CONNECTION BROKER

The connection broker's URL.

Note that this parameter is used by the command line only; when using the URI method, the connection broker URL is part of the URI (not part of the configuration JWT payload).

Values	Default	Type
The URL for the connection broker, if present	–	string



## Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--connection-broker</code>	<code>-b</code>	<code>-b broker.domain.com</code>
URI	–	–	–	–

## DESKTOP

The name of the desktop to connect to.

Values	Default	Type
The name of a desktop to connect to	–	string

## Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--desktop</code>	–	<code>--desktop myDesktop</code>
URI	✓	<code>desktop</code>	<code>vm</code>	<code>{vm: "myDesktop"}</code>

## DOMAIN

The domain to send to the connection broker.

Options	Default	Type
The name of the domain to provide to the connection broker.	–	string

## Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--domain</code>	<code>-d</code>	<code>--domain domain.example.com</code>
URI	✓	<code>domain</code>	<code>dom</code>	<code>{dom: "domain.example.com"}</code>

## HARD HOST

If connecting to a Remote Workstation Card (also known as a *hard host*), provide its URL using this parameter.

This option is ignored if the `connection-broker` url is provided.

Options	Default	Type
The URL for the Remote Workstation Card.	–	string

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--hard-host</code>	<code>-h</code>	<code>-h rwc.example.com</code>
URI	–	–	–	–

## PASSWORD

The password sent to the Connection Broker, for logging into a desktop. **Transmitting passwords this way is not recommended.**

### Note: Command-line only

Passwords can only be sent via the command line. You cannot send a password in a JWT payload.

Options	Default	Type
A string password.	Not set	string

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--password</code>	<code>-p</code>	<code>-p mypassword</code>
URI	–	–	–	–

## SESSION ID

This setting launches the JSESSIONID. This parameter is only available via JWT; it cannot be used on the command line.

Options	Default	Type
The session ID to launch.	Not set	boolean

### Usage

Method	Valid	Full	Alias	Example
Command Line	–	–	–	–
URI	✓	sessionid	sid	{sid: exampleSessionID}

## USERNAME

The username sent to the Connection Broker.

Options	Default	Type
The username to pass to the connection broker	Not set	string

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	--username	-u	-u myUsername
URI	✓	username	usr	{usr: "myUsername"}

## USB Settings

These settings control how USB devices connect to PCoIP sessions, including rules for which devices are allowed to be forwarded.

## DISABLE USB

USB devices are available by default. Use this flag to disable USB connections. This will not prevent simple human input devices like mice or keyboards from connecting.

Options	Default	Type
<code>true</code> : disabled	false (USB enabled)	boolean
<code>false</code> : enabled		

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--disable-usb</code>	–	<code>--disable-usb</code>
URI	✓	<code>disable-usb</code>	<code>nousb</code>	<code>{nousb: true}</code>

## USB AUTO-FORWARD

This setting auto-forwards all non-HID devices to the host.

Options	Default	Type
<code>True</code> : Auto-forward USB devices	False (do not auto-forward)	boolean
<code>False</code> : Do not auto-forward USB devices		

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--usb-auto-forward</code>	–	<code>--usb-auto-forward</code>
URI	✓	<code>usb-auto-forward</code>	<code>uaf</code>	<code>{uaf: true}</code>

#### Note: This setting is available in the user interface

This setting is also available in the client's pre-session user interface, by clicking the gear icon and selecting **USB Devices**.

## VIDPID AUTO-FORWARD

To auto-forward specific devices, provide their VID and PID values separated by a comma ( , ). Multiple values can be provided, separated by spaces. Enclose the list in quotation marks.

Options	Default	Type
The list of VID,PID values to auto-forward	Not set	string

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--vidpid-auto-forward</code>	–	<code>--vidpid-auto-forward "aa11,bb22 cc33,dd44"</code>
URI	✓	<code>vidpid-auto-forward</code>	<code>vaf</code>	<code>{vaf: "aa11,bb22 cc33,dd44"}</code>

If you are not sure of the device's ID values, see [Identifying Vendor and Product IDs](#) for instructions.

## VIDPID BLACK LIST

To block specific devices from auto-forwarding at all, provide their VID,PID values as a space-separated list using this parameter.

This setting overrides `usb-auto-forward` and the USB dialog in the client interface.

Options	Default	Type
The list of VID,PID values to block	Not set	string

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--vidpid-black-list</code>	–	<code>--vidpid-black-list "aa11,bb22 cc33,dd44"</code>
URI	✓	<code>vidpid-black-list</code>	<code>vbl</code>	<code>{vbl: "aa11,bb22 cc33,dd44"}</code>

If you are not sure of the device's ID values, see [Identifying Vendor and Product IDs](#) for instructions.

## Session Behavior Settings

These settings control the client's behavior once a session is connected.

### FULLSCREEN MODE

Fullscreen mode enables the display topology to support multiple monitors as an extended desktop.

If both `fullscreen` and `windowed` parameters are sent, the client will launch in Windowed mode.

Options	Default	Type
<code>true</code> : full screen <code>false</code> : windowed	Not set (uses client's last-set mode)	boolean

#### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--fullscreen</code>	<code>-f</code>	<code>-f</code>
URI	✓	<code>fullscreen</code>	<code>full</code>	<code>{full: true}</code>

### WINDOWED MODE

Launches the client in windowed mode.

If both `fullscreen` and `windowed` parameters are sent, the client will launch in Windowed mode.

Options	Default	Type
<code>True</code> : Launch in windowed mode <code>False</code> : Do not request windowed mode	<code>False</code> (does not request windowed mode)	boolean

#### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--windowed</code>	<code>-w</code>	<code>-w</code>
URI	✓	<code>windowed</code>	<code>win</code>	<code>{win: true}</code>

## Log Settings

These settings control logging functionality, including verbosity and file location.

### LOG FOLDER

A custom location for client log files.

Options	Default	Type
A valid system path to a folder	Not set	string

#### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--log-folder</code>	–	<code>--log-folder path/to/folder</code>
URI	–	–	–	–

### LOG ID

A unique ID that will identify sessions in all PCoIP log files (including those created by other components like agents and a connection manager).

Options	Default	Type
A unique session identifier	Not set	string

#### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--log-id</code>	–	<code>--log-id abcde1234</code>
URI	–	–	–	–

## LOG LEVEL

Sets the log level. This parameter will override any existing configuration values.

Options	Default	Type
0 : Critical 1 : Error 2 : Info 3 : Debug 4 : Verbose	Not set	integer

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--log-level</code>	<code>-l</code>	<code>-l 2</code>
URI	✓	<code>log-level</code>	<code>logl</code>	<code>{logl:2}</code>

 **Note: This setting is available in the user interface**

This setting is also available in the client's pre-session user interface, by clicking the gear icon and selecting **Logs**.

## LOG PREFIX

A user-defined prefix for log files. This value will be prepended to the timestamp in the log file name, like this:

```
<log-prefix value><timestamp>
```

Log files are saved in the location provided by `log-folder`.

Options	Default	Type
A prefix to use in generated log file names	Not set	string



## Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--log-prefix</code>	–	<code>--log-prefix example-prefix</code>
URI	–	–	–	–

## Advanced Settings

### ⚠ Caution: General use of these settings is not recommended

These settings are intended for specific use cases, and can drastically alter the behavior of the Software Client for macOS. Unless you understand what these settings do, and have a clear need to use them, they should be avoided.

### DISABLE HOTKEYS

Session convenience hot keys, such as `Ctrl + Delete + F12` (which disconnects a PCoIP session) are available to users by default. Use this flag to disable all hotkeys.

Options	Default	Type
<code>true</code> : disabled <code>false</code> : enabled	false (hotkeys enabled)	boolean

## Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--disable-hotkeys</code>	–	<code>--disable-hotkeys</code>
URI	✓	<code>disable-hotkeys</code>	<code>nohot</code>	<code>{nohot: true}</code>

## DISABLE MENU BAR

The Anyware client menu bar is available to users by default. Use this flag to disable the menu bar, preventing users from accessing it or executing any of its functionality.

Options	Default	Type
<code>true</code> : disabled <code>false</code> : enabled	false (menu bar enabled)	boolean

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--disable-menubar</code>	–	<code>--disable-menubar</code>
URI	✓	<code>disable-menubar</code>	<code>nomenu</code>	<code>{nomenu: true}</code>

## ENABLE SCALING

This setting enables scaling on the Anyware Client without having to specify the desktop resolution. This can only be configured on a single display. This is off by default.

Options	Default	Type
<code>true</code> : scaling enabled <code>false</code> : scaling disabled	false (scaling disabled)	boolean

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--enable-scaling</code>	–	<code>--enable-scaling</code>
URI	✓	<code>enable-scaling</code>	<code>scale</code>	<code>{scale: true}</code>

## FORCE NATIVE RESOLUTION

This setting sets the resolution of the Client monitor to the native resolution when the session client is launched. This can only be configured on a single display.

**Note: Windows client only**

This parameter is only available on Windows clients. It will have no effect if provided to a Linux or macOS client.

Options	Default	Type
<code>true</code> : force enabled <code>false</code> : force disabled	false (Resolution force disabled)	boolean

*Usage*

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--force-native-resolution</code>	–	<code>--force-native-resolution</code>
URI	✓	<code>force-native-resolution</code>	<code>native</code>	<code>{native: true}</code>

**MAINTAIN ASPECT RATIO**

This setting maintains the display aspect ratio between the host and the Client. Maintaining the aspect ratio in this way can result in letterboxing if the two devices are naturally different.

This can only be configured on a single display.

Options	Default	Type
<code>true</code> : Maintain aspect ratio <code>false</code> : Do not maintain aspect ratio	False (does not maintain aspect ratio)	boolean

*Usage*

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--maintan-aspect-ratio</code>	–	<code>--maintain-aspect-ratio</code>
URI	✓	<code>maintain-aspect-ratio</code>	<code>aspect</code>	<code>{aspect: true}</code>

## QUIT AFTER DISCONNECT

If this is enabled, disconnecting from the PCoIP session will immediately quit the Software Client for macOS. The pre-session interface will not be available after disconnecting.

Options	Default	Type
<code>True</code> : Quit on disconnect	False (does not quit on disconnect)	string
<code>False</code> : Do not quit, show pre-session UI on disconnect		

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--quit-after-disconnect</code>	–	<code>--quit-after-disconnect</code>
URI	✓	<code>quit-after-disconnect</code>	<code>qad</code>	<code>{qad: true}</code>

#### Note: Quit After Disconnect is Automatically Set

`Quit After Disconnect` is automatically selected when the following parameters are specified:

- Username
- Password
- Domain
- Connection Broker
- Desktop

## SET HOST RESOLUTION

This setting locks the resolution of your host application display.

Provide the value as a string, made up of the *horizontal resolution*, the letter "x", and the *vertical resolution*. For example, "1024x768".

This can only be configured on a single display.

Options	Default	Type
A fixed resolution the host must use.	Not set	string

### Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--set-host-resolution</code>	–	<code>--set-host-resolution 1024x768</code>
URI	✓	<code>set-host-resolution</code>	<code>res</code>	<code>{res: "1024x768"}</code>

## Setting Configuration Values via Config files

### Setting Configuration Values via Config files

Certain advanced configuration values are set via configuration files, rather than via the user interface, command line, or URI methods. These files are read and implemented by the Software Client for macOS when it launches.

Configuration files can be saved in a *system-scoped* location, for settings that should apply to any Anyware client launched on a device, or a *user-scoped* location, for settings that should apply to specific users. **If a setting is found at both levels, the user scope takes precedence.**

Configuration files do not exist until a user changes a persistent setting via the user interface. If that has not occurred, you must create the file, either manually or using a deployment script.

### Setting Config Values

Configuration values are set via plist settings. Each setting is specified by a write command:

#### User-scope setting:

```
defaults write "com.teradici.Teradici PCoIP Client" <Key> <value>
```

## System-scope setting:

```
sudo defaults write "/Library/Preferences/com.teradici.Teradici PCoIP Client.plist" <Key> <value>
```

For example, the following file would add the USB device identified by the VID/PID pair `18a5,0302` to the local termination blacklist, causing it to revert to *bridged* connections:

```
defaults write "com.teradici.Teradici PCoIP Client" localtermination_black_list "18a5,0302"
```

## Config File Locations

Depending on the desired scope, write settings to the `plist` file in one (or both) of these locations. Remember that the user-scoped file takes precedence over the system-scoped file:

Scope	Location
System	/Library/Preferences/com.teradici.Teradici PCoIP Client.plist
User	~/Library/Preferences/com.teradici.Teradici PCoIP Client.plist

## Disabling H.264 Hardware Decoding

1. Open the Terminal app on the Mac client.
2. Run the following command:

```
defaults write ~/Library/Preferences/com.teradici.Teradici\ PCoIP\ Client.plist pcoip.enable_hw_h264=0
```

# Securely Passing Parameters via the Command Line

In addition to passing arguments via the Command Line, you can also provide parameters via the standard input stream using the `--ask-extra-args-as-json` parameter. This approach is preferred when you want to pass sensitive data, such as user credentials, to the `pcoip-client` process. The `--ask-extra-args-as-json` parameter accepts arguments as JSON strings, thereby ensuring that user data is prevented from being recorded in the shell history.

To launch the client, using the `--ask-extra-args-as-json` parameter:

1. From the CLI, run the following command:

```
pcoip-client --ask-extra-args-as-json
```

2. When the following prompt appears, provide the required arguments as a JSON string:

```
Arguments should be specified with '-' prefixes and flags specified under a 'flags' section.  
For example: {"--username": "alice", "flags": ["--use-egl"]}  
For a more detailed description of the format, please see the help by using flag --help.  
Please enter extra arguments (as JSON):
```

These arguments are passed through the standard input of the `pcoip-client` process, and are not recorded in the command history or process list.

## JSON String Format

The JSON string should consist of key value pairs, such that the keys are the names of the command line parameters and the associated values are the values of the parameters.

- The keys in the JSON object must be strings enclosed within quotes.
- The parameters may be specified in long form, for example, `--username`. They can also be specified as short form. For example, `-u`.

- Parameters can be of the following types: string, boolean, or numeric.
- The JSON object cannot contain new lines. It can contain spaces and tabs.
- Flags such as `--help` and `--use-egl` that have no associated values can be included as values in the special "flags" array.

Here are some examples of valid JSON strings, which can be passed to the client from standard input of the `pcoip-client` process:

```
{ "-u": "<username>", "-p": "<password>", "--connection-broker":  
"<connectionManager>", "--domain": "<domain>", "--log-level": 3 }
```

```
{ "--connect-tag": "<encodedConnectTag>", "--session-id":  
"<encodedSessionId>" }
```

```
{ "flags" : ["--use-egl" ] }
```



# Preventing Devices From Using Local Termination

By default, supported Wacom devices use *local termination* automatically to provide improved responsiveness and tolerance of high-latency networks. Local Termination does not support all advanced Wacom features; if you depend on one of these unsupported features, you can fall back to *bridged* mode by adding your device to a blacklist. This will pass all tablet data to the remote host for processing, which will make the full suite of functionality available at the cost of decreased performance and sensitivity to latency.

To add a device to the local termination blacklist, add the `localtermination_black_list` setting and the VID/PID pairs for the devices you want to limit (separate multiple VID/PID pairs with spaces):

```
defaults write "com.teradici.Teradici PCoIP Client"  
localtermination_black_list "<vid1>,<pid1> <vid2>,<pid2> ..."
```

...where `<vid1>,<pid1> <vid2>,<pid2>` represent VID/PID pairs of devices to be put on the local termination blacklist.

If you do not know the Vendor ID and Product ID for the device you want to blacklist, use the method shown in [Identifying Vendor and Product IDs](#).

## Troubleshooting HID Local Termination Blacklist

There is no user-facing indication of which mode a device is using to connect. If you are troubleshooting a connection and need to understand which mode is being used, inspect the Anyware agent logs for a session. If the device is using local termination, you will see lines similar to these:

```
pcoip server log: `LVL:2 RC: 0 MGMT_KMP :Client added HoIP device (id:  
0x000a0005) with vendor id=0x056a, product id=0x0391`  
pcoip client log: `LVL:2 RC: 0 MGMT_USB :HoIP supported device detected (Vid:  
0x056a, Pid: 0x0391), using HoIP protocol for local termination'
```

# Customizable Session Features

The following PCoIP session features can be customized:

- Session Menu Bar Visibility
- Disable Hot Keys
- Windowed or Fullscreen Mode
- Set Host Resolution
- Image Scaling
- Maintain Aspect Ratio

## Examples show command-line usage

The examples shown here invoke the Anyware Software Client via the command line. You can also set these priorities when invoking the Anyware Software Client programmatically.

## Session Menu Bar Visibility

To enhance the user experience the Anyware Session Client enables the menu bar by default, however some use cases may require that it be disabled, or hidden, in order to prevent the user from accessing menu functionality. To disable the menu bar feature use the parameter `disable-menubar`.

## Disable Hot Keys

To improve usability, session hot keys, such as **Ctrl+Delete+F12** (which disconnects a PCoIP session) are available to users by default. The parameter for this feature is `disable-hotkeys`.

## Windowed or Fullscreen Mode

Depending on your application needs, you can display the PCoIP session in either windowed or fullscreen mode. Fullscreen mode allows the display topology to support multiple monitors as an extended desktop; windowed mode gives you the flexibility to display multiple application windows in parallel and switch between them quickly. Windowed mode improves the user experience, as well as

resulting in an increase in performance. Windowed mode is the default mode, and to activate fullscreen mode use the `full-screen` parameter.

## Set Host Resolution

Normally, the session client opens with arbitrary window dimensions. In some cases, you may wish to lock the resolution of your host application displays. This ensures the user's viewing experience is consistent across different monitors and their native resolutions. The parameter for this feature is `set-host-resolution`.

- **Host Resolution Limitations:** It is only possible to specify one target resolution for all displays. The host resolution will not perform to its optimal capability if you have monitors with different resolutions.

## Image Scaling

The image scaling feature enables scaling on the client without having to specify the desktop resolution. You can apply image scaling when the resolution of the client monitor is not the same as the resolution provided by the host. This feature provides a smoother process for image scaling on the client. The parameter for this feature is `enable-scaling`.

## Maintain Aspect Ratio

If the host and client aspect ratios do not match, and this parameter is not used then the display will be stretched to fit. The parameter for this feature is `maintain-aspect-ratio`. If the native aspect ratios of the host's display and the client's display do not match, the host's aspect ratio will be preserved and will appear in the client with black bars either on the sides or top and bottom of the display.

## Anywhere Client Keyboard Handling

When the Software Client for macOS is the foreground application, it captures system-level keyboard shortcuts such as `⌘ + tab` and `⌘ + space`, sending them to the remote machine; **they will not be actioned on the local Mac**. This behavior is enabled by default with the `mac_system_shortcut_capture` OS setting.

Additionally, the `⌘` key is no longer mapped to the `ctrl` key, even if the `remap_cmd_to_ctrl` setting is enabled.

You must [enable accessibility permissions](#) on the Software Client for macOS in order for the keyboard to function in the PCoIP session.

The `mac_capture_all_keys` setting captures all keys and modifiers on the Anyware Software Client system when the Software Client for macOS is in focus, except for the `fn` keys when they are enabling special functions such as keyboard brightness, volume, etc. This setting is enabled by default.

The `remap_cmd_to_ctrl` setting is a pre-existing setting which controlled whether the command key would map to Control, or the Windows (Super on Linux) key. This setting is disabled by default. It can be enabled if necessary by first disabling the `mac_system_shortcut_capture` and `mac_capture_all_keys` setting.

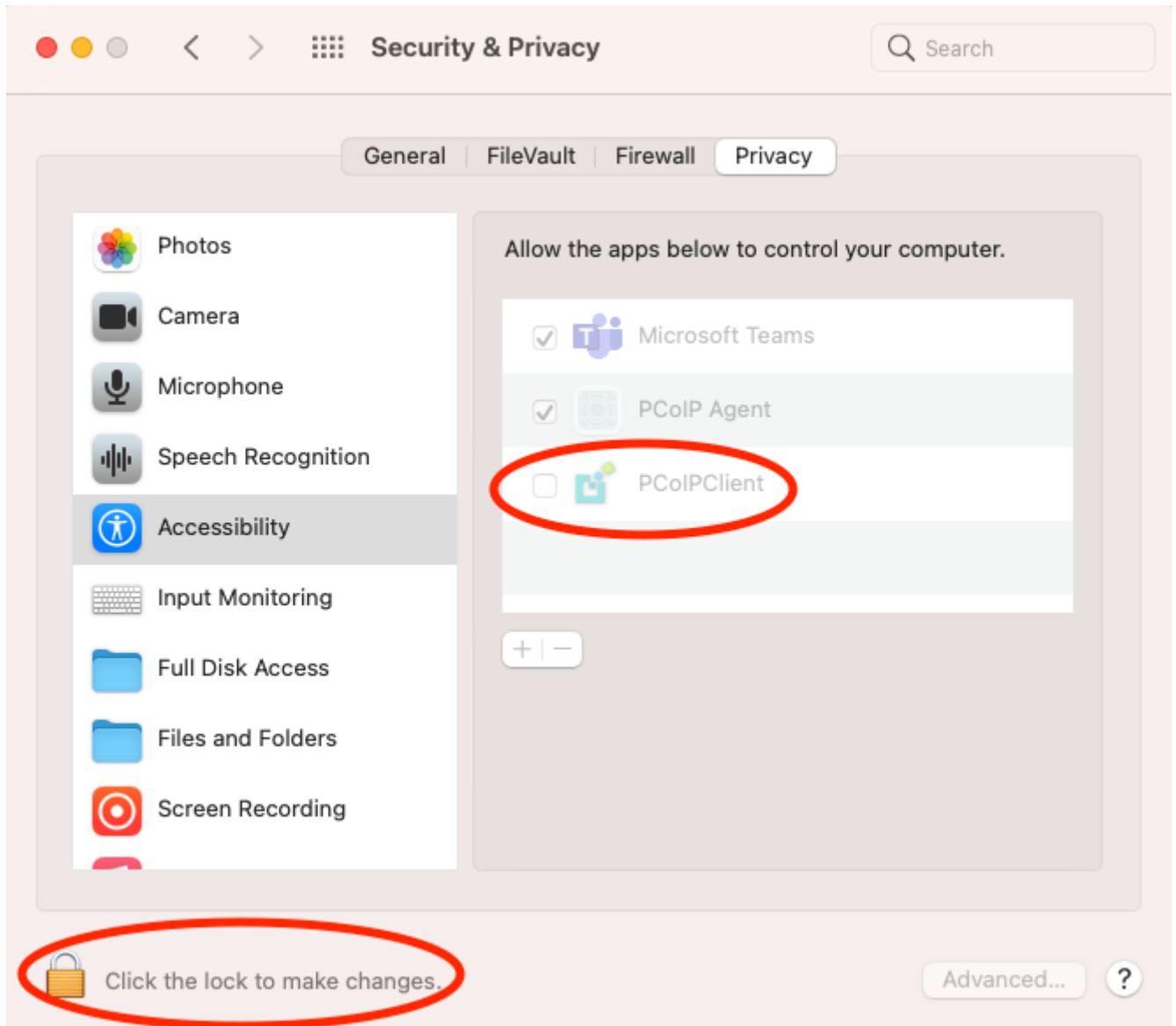
## ENABLING ACCESSIBILITY PERMISSIONS FOR ANYWARE CLIENT

The Software Client for macOS must be granted the Accessibility permission in order to properly handle and transmit local keyboard actions. If the Software Client for macOS is not authorized, the keyboard will not function in a PCoIP session.

When the Anyware Client is launched for the first time, you are prompted to authorize the Accessibility permission. **This prompt only appears once.** If authorization is declined, the Accessibility permission must be granted manually from *System Preferences*.

### To manually grant accessibility to the Software Client for macOS:

1. Open **System Preferences**.
2. Click on **Security & Privacy**.
3. Select the **Privacy** tab.
4. Select the **Accessibility** option.
5. Click the Lock icon on the bottom left corner and authenticate using your password or touch ID.
6. Click the check mark beside **Anyware Client** as shown next:



# Security Guide

## Anyware Software Client Security Modes

The Anyware Software Client uses certificates to verify the identity of the host to which it connects. The security mode is configured by the `security_mode` setting in the **Anyware Client** configuration file or by setting its value in the pre-session user interface.

Three security mode options are available:

Level	Setting value	Description
High	2	Full verification is required; users cannot connect unless a certificate can be verified.
Medium	1	Warn but allow (default). If the certificate cannot be verified, warn the user, but allow them to connect.
Low	0	Always allow; verification is not required.

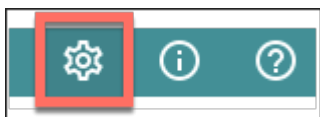
### PCoIP sessions are always encrypted

Your PCoIP session is still encrypted and secure if you connect with security mode 0 or 1. The red padlock icon indicates that the certificate presented by the host is not signed by a trusted certificate authority in the client's certificate store, not that the session is insecure.

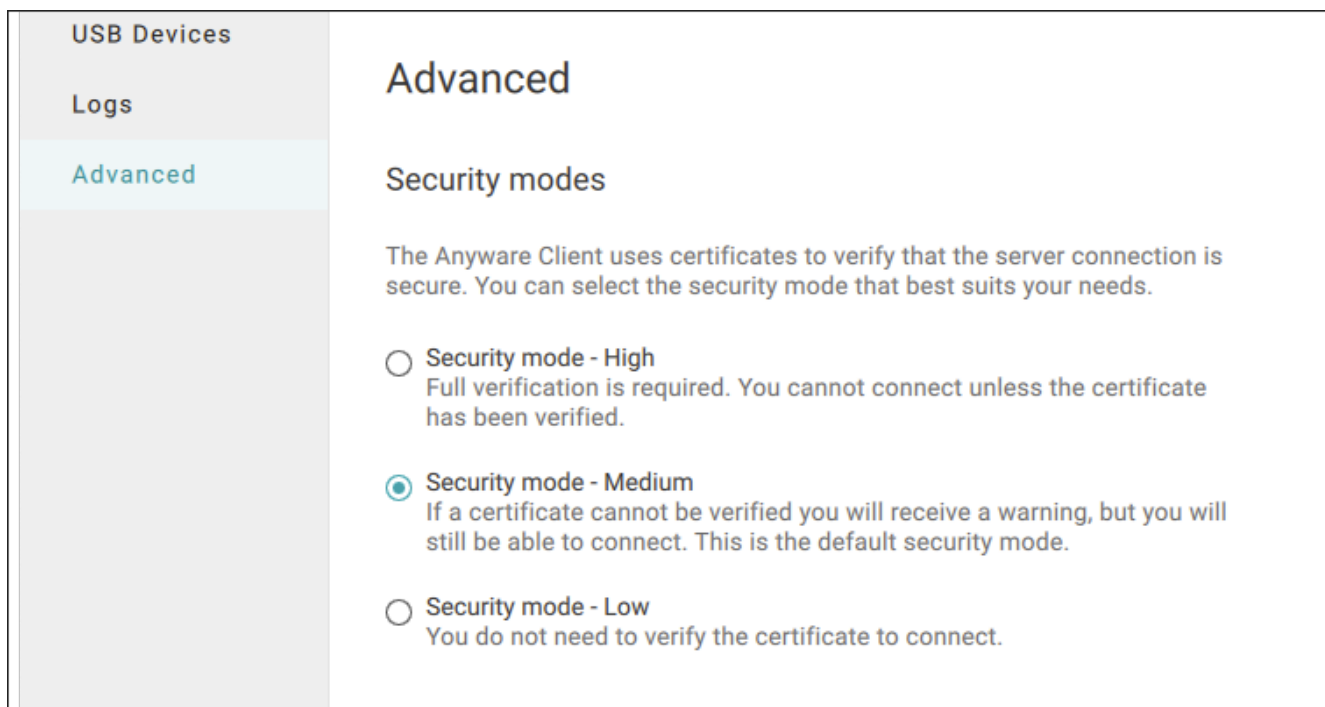
## Setting the Security Mode

**To set the security mode using the pre-session interface:**

1. Disconnect any active PCoIP sessions and return to the pre-session interface.
2. Click the gear icon to open the settings window:



3. Click **Advanced** in the left side menu, and find *Security Modes* in the right panel.
4. Select the desired security mode.



### To set the security mode programmatically:

1. Close the Software Client for macOS.
2. Open a terminal window and type the following command at the command line:

```
sudo defaults write "com.teradici.Teradici PCoIP Client" security_mode  
<value>
```

...where `<value>` is your desired security option (0, 1, or 2).

#### **Restart May Be Required**

You may be required to restart your machine for this change to take effect.

# Installing the Internal Root CA Certificate in a Anyware Client

Your root CA certificate must be installed in any Anyware client that will be used to connect to the Anyware Agent.

## Installing Root CA Certificates in the Anyware Software Client for macOS

### Important: Root CA Certificate must have a .crt extension

You must change the root CA certificate's extension from .pem to .crt before installing it on a Anyware Software Client.

In macOS, certificates are stored in the Keychain Access application.

### To import your root CA certificate in the Anyware Software Client for macOS:

1. Copy your root CA certificate file (\*.crt) to the Mac client desktop.
2. Double-click **Applications > Utilities Keychain Access.app** to open Keychain Access.
3. Select **File > Import Items**.
4. Navigate to the desktop and then select your root CA certificate.
5. In the Destination Keychain drop-down menu, select **System**, and then click **Open**.
6. If prompted, enter your Keychain Access password and then click **Modify Keychain**.
7. At the next screen, click **Always Trust** when asked whether you want your computer to trust certificates signed by this certificate.
8. If prompted, enter your Keychain Access password and then click **Update Settings**.

After the certificate installs successfully, it appears in the *System > Certificates* list.

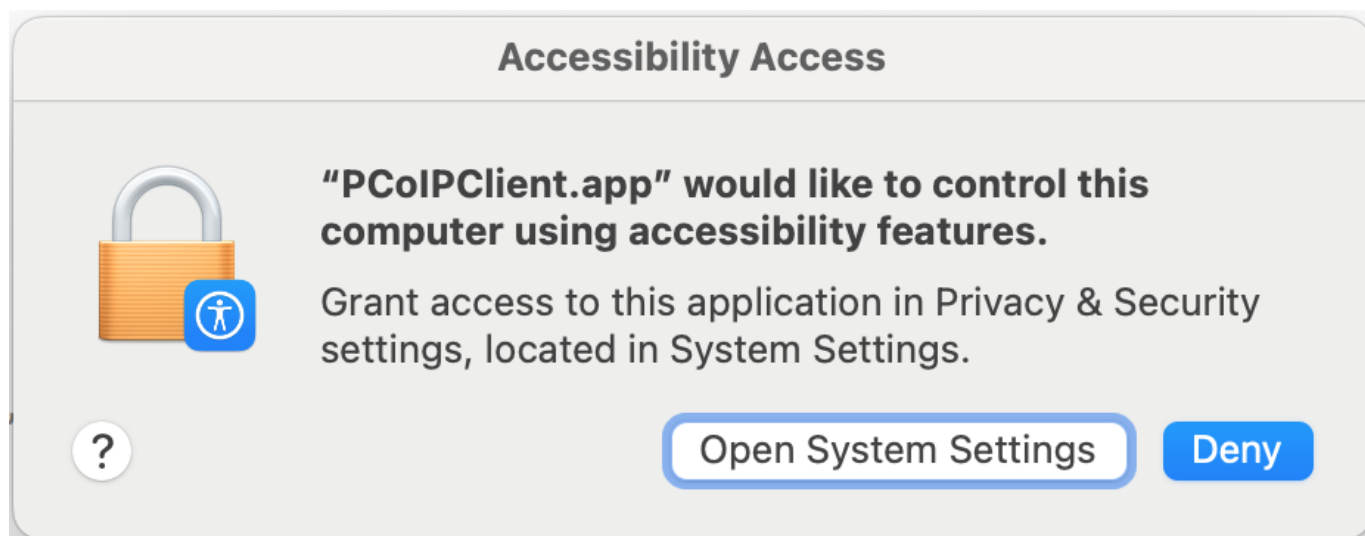


# Reference

## Enabling Accessibility Permissions for the Anyware Client

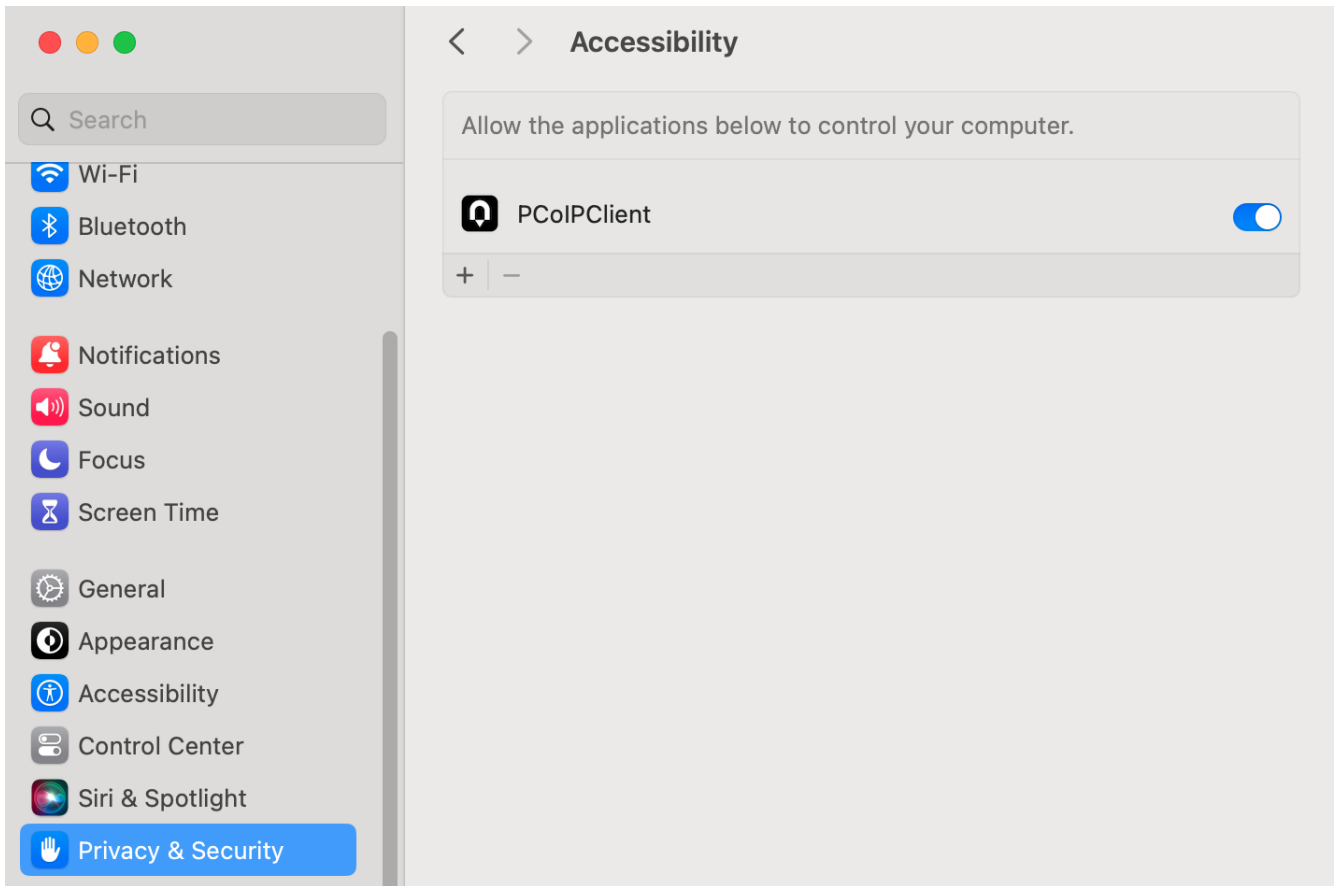
The Software Client for macOS must be granted the Accessibility permission in order to properly handle and transmit local keyboard actions. If the Software Client for macOS is not authorized, the keyboard will not function in a PCoIP session.

When the Anyware Client is launched for the first time, you are prompted to authorize the Accessibility permission. **This prompt only appears once.** If authorization is declined, the Accessibility permission must be granted manually from *System Settings*.



**To manually grant accessibility to the Software Client for macOS:**

1. Open **System Settings**.
2. Click **Privacy & Security**.
3. Select the **Accessibility** option.
4. Click the check mark beside **Anyware Client** as shown next:



# Capturing Keyboard Keys

The Anyware Software Client for macOS captures all keys and redirects them to the remote machine with the following exceptions:

- Anyware Client short cuts appearing under the **Connection** and **View** menus.
- Function Keys (F1 to F12) when in system mode.
- The Eject and Power keys.

When the PCoIP Sessions starts, and the Anyware Client is the focused foreground application, all keys, apart from from those outlined above, will be redirected to the remote machine.

## ⚠ Key Combinations Access Permissions

You must grant Accessibility permission, so that the Anyware Client can forward keyboard combinations to the remote workstation. This permission is enabled in the **Security and Privacy** tab on the macOS, as outlined in the screenshot below.

## Mapping Function Keys

You can enable Function keys on the PCoIP Software Client for macOS by going to **Apple > System Preferences > Keyboard** and selecting the function keys you wish to use as standard keys. When the system is configured to not use function keys the client does not get the function key codes from the system when the keys are pressed. In this instance the function keys are used for other system features such as turning the volume up and down.

# Troubleshooting and Support

## Support and Troubleshooting

If you encounter a problem installing or using the Software Client for macOS, there are a number of troubleshooting and support resources you can access.

- We maintain an extensive **knowledge base** which answers many questions and documents solutions to common problems. The knowledge base is part of the [Knowledge Center](#); click on the *Articles* tab to access it, or enter a search query in the search field at the top of the page.
- We host a **community forum**, allowing you to ask questions and get answers from other IT professionals and our support team, which monitors this channel. The forum is part of the [Knowledge Center](#); click on the *Discussions* tab to access it.
- If you need more help, open a [support ticket](#) and our support team will engage with you directly.

## Creating a Support Bundle

Our support team may request a support bundle from you. The support file is an archive containing logs, diagnostic data, and system information that helps the team diagnose problems.

### To create a support file:

1. Open a terminal window.
2. Launch the support bundler:

```
sudo /Applications/PCoIPClient.app/Contents/Resources/pcoip-client-support-bundler
```

The support bundler will collect diagnostic information and logs, and bundle them into a .tar.gz archive in the user's home directory. Support bundle files look like this: supportbundle-client-2021-04-21T21212112Z.tar.gz.

## Finding Your Client Version

You can find your Software Client for macOS version number from the pre-session interface, or, if you're already in a session, from the client menu bar.

- **Pre-session:** If you are not in a session:

- a. Click the Info icon in the top left of the client interface. The **Anyware Client | About** pop-up dialog appears displaying version information.

- **In-session:** If you *are* in a session:

- a. Find or reveal the client menu bar
- b. Select **Anyware Anyware Client > About Anyware Anyware Client**.
- c. Find the version number in the information window that appears.

# Client Logs

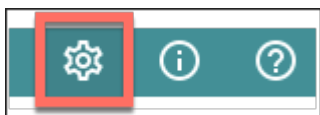
The Software Client for macOS writes log files that document its processes and interactions with other services such as brokers and agents. These files are invaluable in diagnosing problems. This page describes how logs are handled and where they can be found.

## Log Location

Software Client for macOS log files are located within the user's Home Library folder, which is hidden by default. The recommended way to access the log files folder is via Anyware Client, or in the Terminal app.

## Displaying log files in the PCoIP Client

1. Open the Anyware Client.
2. In the top-left corner, click the gear icon.



3. On the Anyware | Settings window, click logs.
4. click **Show in folder** to display the logs in **finder**.

## Displaying log files using the Terminal App

1. To open a terminal window, go to **Applications > Utilities**, and then double-click **Terminal**.
2. Navigate to the log folder by running the following command:

```
cd ~/Library/Logs/Teradici/PCoIPClient
```

3. Type `ls` to display the list of log files.
4. To view the contents of a log file, use any macOS command-line editor to open it.

## Log Levels

Log verbosity is defined by a level, represented by an integer from 0 to 3:

Level	Description
0	<b>Critical</b> messages only
1	<b>Error</b> messages and higher
2	<b>Info</b> messages and higher ( <i>default setting</i> )
3	<b>Debug</b> messages and higher

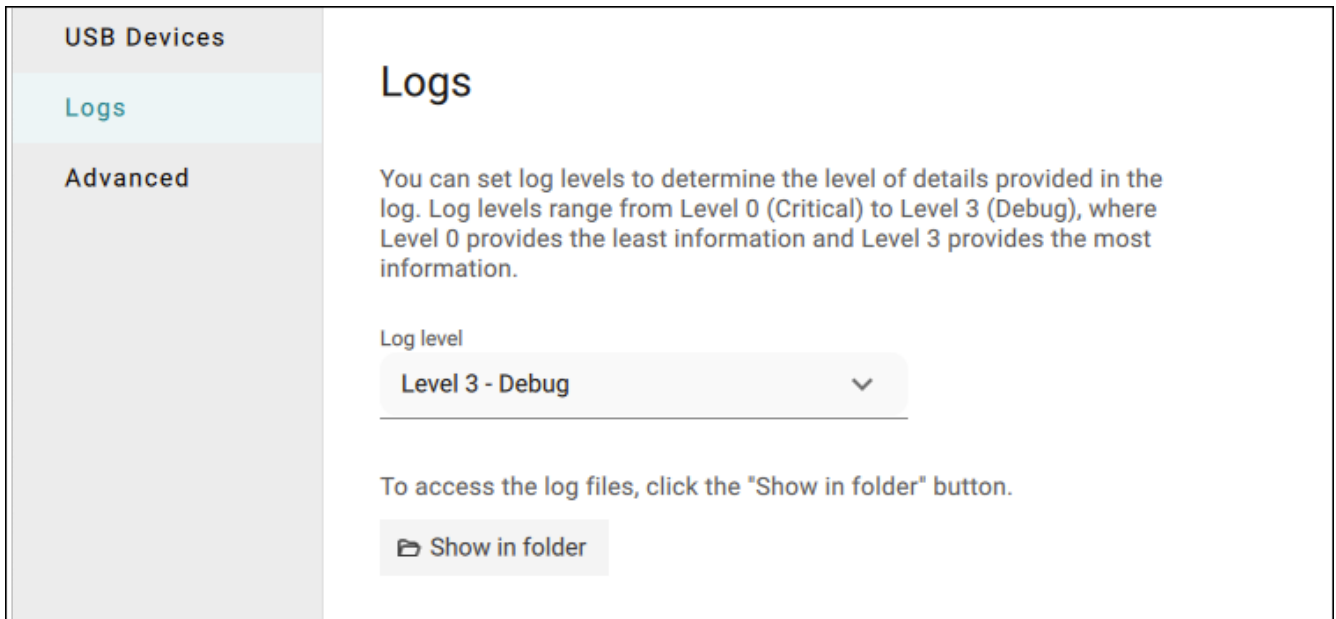
The log level can be changed either from the pre-session interface, or programmatically from the Command Prompt.

### **Tip: Reporting Issues to Support**

When reporting an issue to support, set the log level to 3 (debug), reproduce the issue, and then create a support bundle. This ensures that the required details are captured, making diagnostics more effective.

## Setting the Log Level in the Pre-session Interface

1. Disconnect active PCoIP sessions and return to the pre-session interface.
2. Click the gear icon in the top-left corner to open the **Anyware | Settings** window.
3. Click **Logs** in the left pane.
4. Under **Log level**, specify the desired log level.



## Setting the Log Level Programmatically

1. Launch the Software Client for macOS from the Command Prompt. Include the `log-level` flag as a part of the command.

The following example launches the client in full-screen mode, sets the log level to `3`, and points to a connection broker at `broker.domain.com`.

```
/Applications/PCoIPClient.app/Contents/MacOS/PCoIPClient --connection-broker  
broker.domain.com --log-level 3 --fullscreen
```