

Welcome to PCoIP Software Client for Linux

Welcome to the Software Client for Linux Administrators' Guide.

PCoIP Software Clients are applications that establish PCoIP sessions with remote Windows, Linux, or macOS desktops. Connections can be made to PCoIP 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 Linux. 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 Linux.

Additional Documentation

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

For more information about HP Anyware, including detailed information on included PCoIP components as well as HP Anyware plans, see the [Teradici Cloud Access Architecture Guide](#).

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

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

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

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

What's New in This Release

The PCoIP Software Client for Linux 22.07 introduces the following features and enhancements:

- **HP Anyware:** With this release, Teradici CAS is now **HP Anyware**. HP Anyware brings Teradici CAS and ZCentral Remote Boost together into a single solution, starting with enhancements for the collaboration feature.
- **Collaboration Enhancements:** There are two major improvements to collaboration in this release:
 - The PCoIP Client for Software Client for Linux now supports **GPU Offload** and **Auto Offload** PCoIP Ultra modes in collaboration sessions, if the connected PCoIP agent also supports them.
 - Mouse visibility has also been added in this release; Guest collaborators can now see the host's cursor movements during a collaboration session.

See [Collaboration](#) for more information on these enhancements.

- **URI-launched session configuration improvements:** When launching the Software Client for Linux via a URI, you can now use most of the same properties available to command-line launches in your JWT payload. For more information, see [Command Line Parameters](#).

System Requirements

The following table outlines the system requirements for the PCoIP Software Client for Linux:

System	Version Required
PCoIP Software Client Operating System	<ul style="list-style-type: none"> • Ubuntu 18.04 • Ubuntu 20.04 • RHEL/CentOS 7.9 (<i>Technical Preview</i>)
Compatible PCoIP Agents	<p>The Software Client for Linux can connect to any PCoIP agent. Some features require specific agent versions; see the Feature Support section of this guide for details.</p> <p>We recommend always using the same version of PCoIP agent and PCoIP client.</p>
Compatible PCoIP Remote Workstation Cards ¹	TERA22x0 with firmware 20.04+ and PCoIP Remote Workstation Card Software for Windows or Linux 20.04+.
Supported IP versions	IPv4 and IPV6.

Note: h264 hardware decode

The Software Client for Linux supports h264 hardware decode under limited conditions; see [H.264 Hardware Decode](#) for more information.

Hardware System Requirements

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

- For up to dual 1920 x 1080 display configuration Teradici recommends 1.6 GHz dual core processor or higher with at least 4 GB RAM.

- For up to dual 4K/UHD Teradici recommends a 3.0 Ghz quad core processor or higher with at least 2 x 4 GB RAM.
-

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

Audio Support

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

The PCoIP Client provides an enhanced audio and video synchronization (A/V Sync) 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.

For more information on the A/V Sync feature, see [Enhanced Audio and Video Synchronization](#).

Collaboration

The PCoIP Ultra Collaboration feature enables a user to share their PCoIP session with a remote guest collaborator using a PCoIP Software Client. While connected, the guest collaborator can view the screen output and hear the audio output of the shared PCoIP session.

When discussing this feature, we'll refer to the first user as the *host collaborator*, and the second user who joins the session as the *guest collaborator*.

Feature Support, Requirements and Limitations

- The PCoIP Ultra Collaboration feature is supported when connecting from any PCoIP software client to any PCoIP agent.
- When connecting to a PCoIP standard agent, PCoIP Ultra CPU Offload is *required*.
- When connecting to a PCoIP graphics agent 22.07 or later, PCoIP Ultra CPU Offload, GPU Offload, and Auto Offload are supported.
- *Collaboration Mouse Visibility* only works when the host collaborator and all guest collaborators are using a PCoIP Client in **Standard Client** mode. The *high performance client* mode does not support mouse visibility.

The features described on this page are only supported when both PCoIP Clients and PCoIP Agents are running on version 22.07 or later.

Enabling and Hosting a Collaboration Session

For information and steps on how to enable collaboration, and how to host a collaboration session, see the PCoIP Agent documentation linked below. The instructions for enabling and hosting collaboration will vary based on the PCoIP Agent you use. You should select the instructions that apply to the PCoIP Agent that you are connecting to:

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

Joining a Collaboration Session

The guest collaborator can join the PCoIP session once they have received the invite link and invite code from the host collaborator. Invite links and codes are generated on the remote PCoIP agent machine; for instructions, refer to the agent administrators' guides linked above.

1. Open a web browser and go to the invite 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 *PCoIP Client* application. Allow the browser to open the PCoIP Client.
3. When the PCoIP Client opens, it will prompt you for your name and the Collaboration Invitation Code. The value you enter for your name is used to tell the host who is joining; the Collaboration Invitation Code is the six digit number provided by the host. Enter both values and click **Submit**.
4. Once the host collaborator accepts your connection request, the Collaboration screen share will start.
5. To leave the collaboration session, select **Connection > Disconnect** from the PCoIP Client menu.

Mouse Visibility

Collaboration Mouse Visibility allows the guest collaborator to see the host's mouse cursor movements within a collaboration session. This feature is only available when both collaborators are using a PCoIP client 22.07 or newer, and the PCoIP agent is also version 22.07 or later.

Currently, mouse visibility only works in the default *standard client* mode. *High performance client* mode does not support mouse visibility. See [High Performance Client](#) for instructions to enable or disable high performance client mode.

Future releases will add the ability for the Guest Collaborator to take control of the session mouse and keyboard.

Displays

The PCoIP 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

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

Supported Installer Languages

The PCoIP Client installer supports the following languages:

- French
- German
- Spanish
- Simplified Chinese
- Traditional Chinese
- Japanese
- Portuguese
- Italian
- Korean
- Russian
- Turkish

PCoIP Ultra

The PCoIP Client provides support for PCoIP Ultra, the latest protocol enhancements from Teradici. PCoIP Ultra is optimized for truly lossless support with bit-exact color accuracy and preservation of content detail at the highest frame rates.

PCoIP Ultra protocol enhancements propels our industry-recognized performance into the future of remote computing, with faster, more interactive experience for users of remote workstations working with high-resolution content.

PCoIP Ultra enhancements are controlled on the PCoIP Agent. There is no configuration required on the PCoIP Client.

PCoIP Ultra is appropriate for specific use cases

For most users, the default PCoIP protocol will provide the best possible experience. Carefully review the recommended use cases in the next section to determine whether you should enable it.

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

When to Enable PCoIP Ultra

PCoIP Ultra is appropriate for users with the following requirements:

Auto Offload: Achieves the best balance between color accuracy and network efficiency. 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.

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 optimization Offload: PCoIP encoding is always offloaded to a GPU. Appropriate for users who demand the highest possible CPU efficiency.

For all other scenarios, Teradici recommends that you leave PCoIP Ultra disabled.

Requirements

To take advantage of PCoIP Ultra, you need:

- A PCoIP Agent (any type), 21.03 or later
- A PCoIP Software Client (any type), 21.03 or later
- The CPUs on both the agent and the client machines must support the AVX2 instruction set.

Enabling PCoIP Ultra

PCoIP Ultra is disabled by default, and must be enabled on the PCoIP agent. The method used to do this varies by agent type; consult the following documentation for instructions:

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

Auto-Offload with PCoIP Ultra

When using a PCoIP 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 PCoIP graphics agent and the PCoIP software client are capable of both CPU and GPU offload.

The PCoIP Ultra offload mode is set on the PCoIP agent; PCoIP Ultra Auto Offload requires a PCoIP Graphics Agent. Refer to the appropriate documentation for instructions:

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

PCoIP Codec Indicator

When enabling PCoIP Ultra there will be an onscreen indicator at the bottom left corner of the screen. PCoIP Ultra CPU optimization is indicated with a dark blue dot. PCoIP Ultra GPU optimization is indicated by a magenta dot.

To disable this codec, update the `pcoip.codec_indicator` parameter:

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

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

H.264 Hardware Decode

The PCoIP Software Client for Linux supports H.264 hardware decode for selected hardware configurations by using the PCoIP Client to enable the decode. For information on this, see [H.264 Hardware Decode](#).

Printing Support

The following are the printing options available with the PCoIP Client:

- **Local USB Printing:** Printing to a USB printer locally attached to the Client device.
- **Remote Network Printing:** Enables printing to a network printer on the host machine's network. Not suitable in situations where the PCoIP Software Client device is not on the same network as the host device.
- **Cloud Printing:** This is access to external Cloud Services that are set-up on your local workstation and network. Once these services have been correctly configured they can be used by the PCoIP Software Client.
- **Local Network Printing:** Enables printing from the host machine to a printer in the PCoIP Client machine's local area network. This method is suitable for printing when host and client are not on the same network or for identifying and printing to local printers that exist in multi-site organizations.

Support for each of these methods varies depending on which PCoIP agent the Software Client for Linux connects to. The Software Client for Linux printing support is as follows:

	Windows agents	Linux agents	macOS agents
Local USB Printing	—	—	—
Remote Network Printing	✓	—	—
Local Network Printing	✓	—	—
Cloud Printing	✓	—	—

USB Support

PCoIP 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 PCoIP Agent.

USB Redirection

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

Isochronous USB device support

Some USB devices with time-sensitive information, such as webcams, are supported when connecting to the PCoIP Agent for Linux.

Additionally, Teradici's technology partners provide solutions to expand peripheral support. For more information, look for partners listed under Peripherals on the [Teradici Technology Partners](#) page.

Wacom Tablet Support

The Software Client for Linux 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 PCoIP agent (any type), and a supported Software Client for Linux.

PCoIP client support for *locally terminated* Wacom tablets and the Software Client for Linux

	PCoIP Standard Agent for Linux	PCoIP Graphics Agent for Linux	PCoIP Standard Agent for Windows	PCoIP Graphics Agent for Windows	PCoIP Remote Workstation Card
Intuos Pro Small <i>PTH-460</i>	✓	✓	✓	✓	—
Intuos Pro Medium <i>PTH-660</i>	✓	✓	✓	✓	—
Intuos Pro Large <i>PTH-860</i>	✓	✓	✓	✓	—
Cintiq 22HD <i>DTK-2200</i>	✓	✓	✓	✓	—

	PCoIP Standard Agent for Linux	PCoIP Graphics Agent for Linux	PCoIP Standard Agent for Windows	PCoIP Graphics Agent for Windows	PCoIP Remote Workstation Card
Cintiq Pro 24 - Pen Only <i>DTK-2420</i>	✓	✓	✓	✓	—
Cintiq 22 <i>DTK-2260</i>	✓	✓	✓	✓	—
Cintiq 22HDT - Pen & Touch <i>DTH-2200</i>	—	—	—	—	—
Cintiq Pro 24 - Pen & Touch <i>DTH-2420</i>	✓	✓	✓	✓	—
Cintiq Pro 32 - Pen & Touch <i>DTH3220</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 Linux 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 Linux:

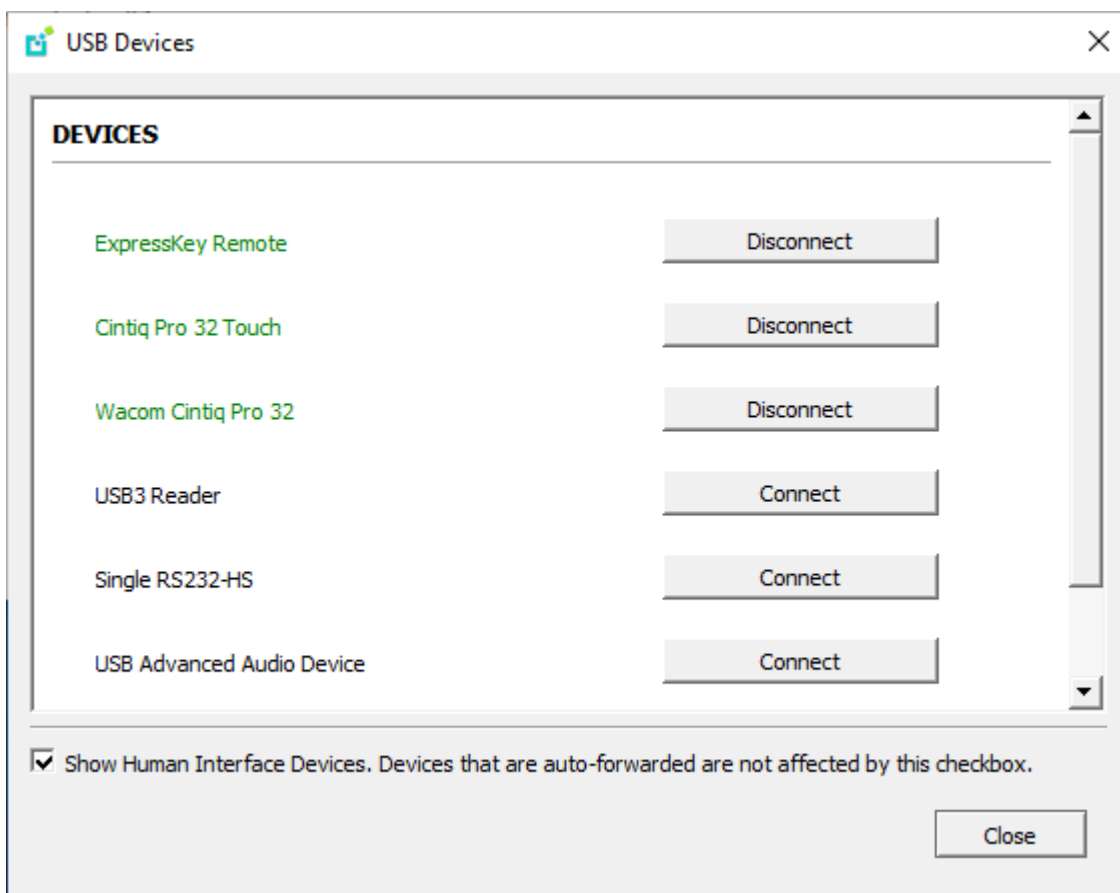
PCoIP client support for *bridged* Wacom tablets and the Software Client for Linux

	PCoIP Standard Agent for Linux	PCoIP Graphics Agent for Linux	PCoIP Standard Agent for Windows	PCoIP Graphics Agent for Windows	PCoIP Remote Workstation Card
Intuos Pro Small <i>PTH-460</i>	✓	✓	✓	✓	—
Intuos Pro Medium <i>PTH-660</i>	✓	✓	✓	✓	—
Intuos Pro Large <i>PTH-860</i>	✓	✓	✓	✓	—
Cintiq 22HD <i>DTK-2200</i>	✓	✓	✓	✓	—
Cintiq Pro 24 - Pen Only <i>DTK-2420</i>	✓	✓	✓	✓	—
Cintiq 22HDT - Pen & Touch <i>DTH-2200</i>	✓	✓	✓	✓	—
Cintiq Pro 24 - Pen & Touch <i>DTH-2420</i>	✓	✓	✓	✓	—
Cintiq Pro 32 - Pen & Touch <i>DTH3220</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



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.
- PCoIP 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](#).

Webcam Support

The Software Client for Linux now supports USB webcams when connecting to a PCoIP Agent for Windows. USB webcams can now be used while in the remote desktop, including with applications such as Microsoft Teams or Zoom.

For detailed information which models have been tested and the performance metrics associated with these models see [here](#). This knowledge base article also deals steps on how to test and verify other webcam models.

This feature is enabled by default.

Requirements

Webcam support requires the following:

- Software Client for Linux, 21.07+
- PCoIP Standard Agent for Windows or PCoIP Graphics Agent for Windows, 21.03+
- USB-attached webcam.

Notes and Limitations

- Webcams must be connected via USB. Webcams that are not USB, such as embedded laptop webcams, are not supported.
- Linux agents are not supported.
- PCoIP Software Client for macOS is not supported.
- If the browser on the remote desktop terminates when a webcam is connected, you must disable the webUSB setting in Chrome by running the following command in the search bar of the Chrome browser:

```
chrome://flags/#enable-webusb-device-detection
```

Open the Chrome menu and disable the webUSB flag.

Setup

On the PCoIP Software Client, connect the webcam as described in [USB Bridging of Webcams](#).

Console Game Controller Support

PCoIP Software Clients are compatible with the following console game controllers:

- PS4
- PS5
- Logitech F310 gamepad

The following console game controllers are supported with the PCoIP Zero Client:

- Xbox One 2015
- Xbox One
- Xbox One S
- Xbox One Bt
- Xbox One Elite

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.

In fact while in relative mouse mode, the mouse cursor is not visible as the position of the mouse is not important, the mouse is only being used to control movements - up/down or left/right.

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.

This feature is currently supported with the following components:

Relative Mouse Support	Supported
PCoIP Software Client for Windows	✓
PCoIP Software Client for Linux	✓
PCoIP Software Client for macOS	✓
PCoIP Tera2 Zero Client 6.4 (Requires Configuration to enable)	✓
PCoIP Standard Agent for Windows	✓
PCoIP Graphics Agent for Windows	✓

The following components do not support this feature:

- PCoIP Standard Agent for Linux

- PCoIP Graphics Agent for Linux
- PCoIP Graphics Agent for macOS
- PCoIP Software Clients in High Performance Mode

Enabling Relative Mouse

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

Enabling from the Menu Tab

The following steps outline how to enable relative mouse from the menu tab, while connected to a supported PCoIP Agent with a supported PCoIP 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 PCoIP 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 PCoIP Agent with a supported PCoIP Client, press `ctrl+alt+r`. This will toggle the feature on and off. This will only work if you are connected to a PCoIP Agent version that supports relative mouse.

Azure Virtual Desktop

From version 2021.07, the Software Client for Linux for Linux supports connections to both PCoIP and Azure Virtual Desktop (AVD) sessions on Ubuntu 20.04. Users can choose to use the PCoIP protocol when connecting to remote desktops for high performance graphics-intensive workloads or use AVD for less graphics intensive, multi-session workloads via the RDP protocol.

The AVD Client uses RDP protocol and does not require a PCoIP Agent to be installed for basic connectivity to AVD. The PCoIP Client requires installation of a PCoIP Standard Agent or Graphics Agent.

Connections with RDP are brokered by Azure, and are authenticated using the Microsoft Account linked to your Azure profile.

When using the Software Client for Linux to connect to AVD using RDP, the following features are supported:

- Support for single display.
- Support for windowed and full screen modes.
- Keyboard and mouse inputs.
- Audio output for stereo only.

See [Connecting to Azure Virtual Desktops](#) and [Azure Virtual Desktop Keyboard Shortcuts](#) for more information on using the PCoIP Software Client with AVD.

Installing the Software Client for Linux on Ubuntu

To install the PCoIP Software Client for Linux software:

In this section, you will learn how to install and uninstall the Software Client for Linux on Ubuntu. There are a few prerequisites to complete before a PCoIP Software Client for Linux installation will work.

Prerequisites

- These instructions assume you have already built the desktop machine, and that the machine meets the client's requirements.
- You must be have super user (root) privileges and be able to issue `sudo` commands.
- Ensure a graphical environment has been installed/configured on the Software Client system by running the following command:

```
sudo systemctl get-default  
graphical.target
```

A desktop environment is required

Before proceeding, install a desktop environment of your choice. Kubuntu distributions are bundled with KDE; you can install KDE from other distributions by using this command:

```
sudo apt install kubuntu-desktop
```

To install Mate Desktop, use this command:

```
sudo apt install ubuntu-mate-desktop
```

These commands are provided as a convenience; there is no requirement for KDE or Mate Desktop. Any desktop environment will work.

Installing the PCoIP Software Client for Linux

To install the PCoIP Software Client for Linux:

1. Install the Software Client for Linux repository, using the script on our [download site](#).

teradici-repo Package

If you do not install the teradici-repo package then you will not be able to successfully install the PCoIP Software Client. You may be experiencing this issue if you see an error message stating **Unable to locate pcoip-client**. Please ensure you download and install the repo.

2. Install the PCoIP Software Client for Linux:

```
sudo apt update
sudo apt install pcoip-client
```

3. Launch the *pcoip-client* to create default configuration files and then quit the client.

Refer to the reference section for additional information, such as [Disabling the Virtual Terminal Functionality](#) and configuring [Linux Keyboard Shortcuts](#).

Kernel Network Configuration

The `pcoip-configure-kernel-networking.sh` script is installed with the PCoIP Software Client for Linux. This script tunes the kernel networking configuration to facilitate the network performance required by the Client. You need to run this script after installing the PCoIP Software Client for Linux.

Run the following command:

```
sudo pcoip-configure-kernel-networking --persistent
```

The script contains the following parameters:

- `rmem_max` : A kernel parameter that controls the maximum size of receive buffers used by sockets.
- `rmem_default` : A kernel parameter that controls the default size of receive buffers used by sockets.
- `ipv4.udp_mem` : A kernel parameter that controls the maximum total buffer-space to allocate.
- `netdev_max_backlog` : A kernel parameter that controls the maximum size of the receive queue.

`rmem_max` size

This parameter must be at least as large as `rmem_default` /

The values of these parameters can be viewed on the command line when the script is run, as outlined in the example below:

```
# cat /etc/sysctl.d/01-pcoip-client.conf
net.core.rmem_max = 32000000
net.core.rmem_default = 32000000
net.ipv4.udp_mem = 1000000 2000000 4000000
net.core.netdev_max_backlog = 2000
```

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.

Installing the Software Client in Silent Mode

To install the Software Client for Linux in silent mode, use the following command:

```
sudo apt install -y <pcoip-client deb package>
```

Uninstalling the PCoIP Software Client for Linux

To uninstall the PCoIP Software Client for Linux

To uninstall the PCoIP Software Client for Linux:

```
sudo apt-get remove pcoip-client
```

Updating the PCoIP Software Client for Linux

Updates to the PCoIP Software Client for Linux will be published on a regular basis. New stable builds will be produced approximately every three months.

To upgrade to the latest version, use the following two commands:

```
sudo apt update  
sudo apt install pcoip-client
```

Connecting to an Anyware Desktop

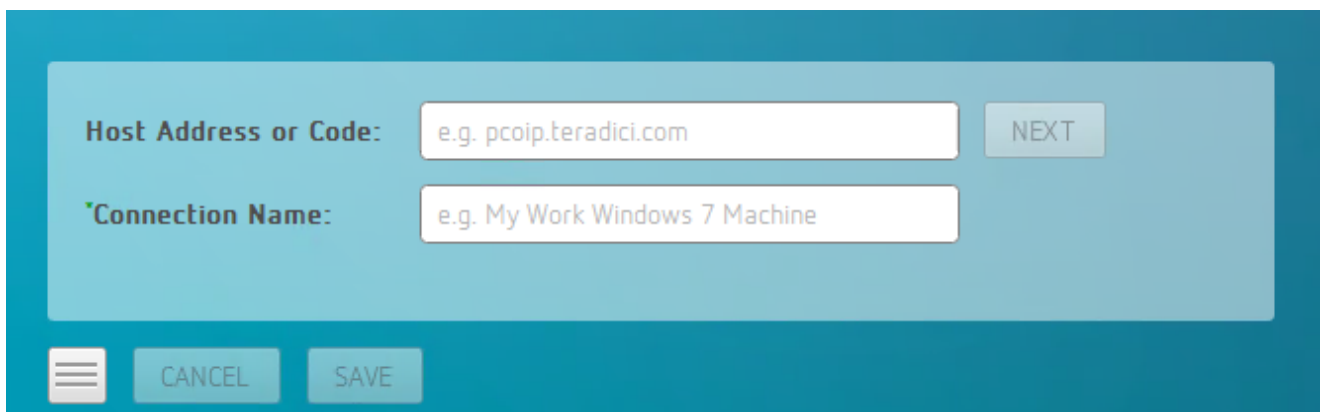
You can connect to remote Windows, macOS, or Linux hosts with a PCoIP agent installed. Connections can be made directly from the PCoIP client machine to the PCoIP agent machine, *or* via a connection manager in enterprise deployments.

The connection process is the same in either case.

To connect to a remote Anyware desktop:

1. Launch the Software Client for Linux application.
2. In the **Host Address or Code** field, provide the address you will connect to. It will be one of the following:
 - For **direct connections**, where you are connecting directly to the remote machine, provide the address of the remote machine itself.
 - For **managed connections**, where a connection manager is used, provide the address of the connection manager. In this scenario, the connection manager handles the connection to the desktop.

The address can be an IP address or a FQDN (fully-qualified domain name).



Tip: Saved connections

If you want to save this connection for use later, provide a name for it in the **Connection Name** field. You will have the option to save the connection later.

3. Click **NEXT**.

4. Provide your login credentials:

- a. Select your domain from the dropdown list on the left side (it will be pre-selected if there is only one available)
- b. Enter your credentials in the username and password fields.
 - For direct connections, these will be the credentials for your user account on the remote machine.
 - For managed connections, these will be your corporate credentials.
- c. Click **LOGIN**.

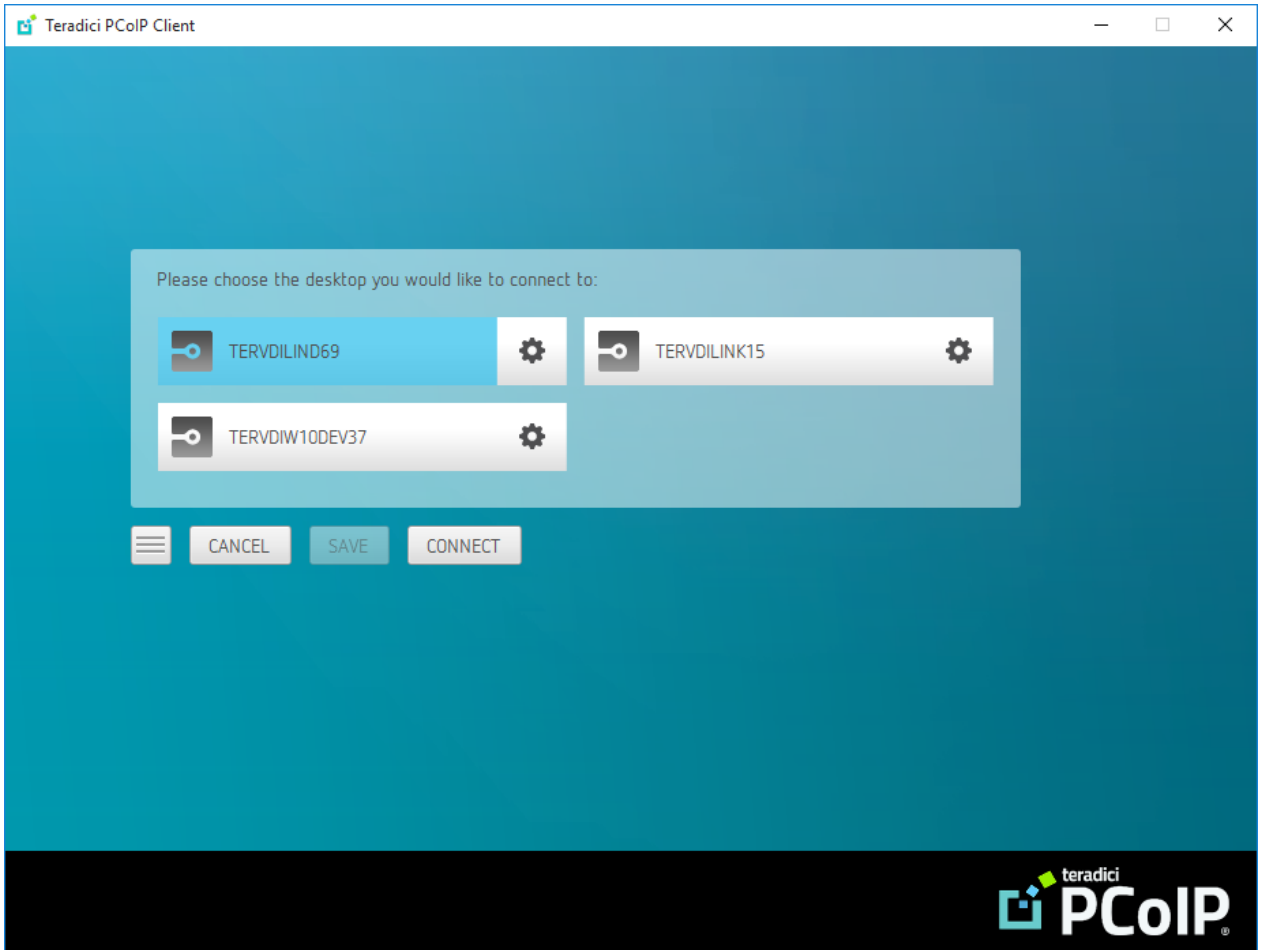
i About the Security Padlock Indicator

The login screen displays a red padlock indicator when accessing a PCoIP agent desktop that uses default self-signed certificates. The icon indicates that the software's certificate is not signed by a trusted certificate authority (CA).


You can use your own CA to create a certificate and then install the appropriate files at each end. If the client trusts your internal CA, a green padlock icon displays on the screen instead.

5. Next, complete the connection:

- **Single desktop users:** If you have only a single available desktop, the client will connect to it automatically. You will not see the screen shown next.
- **Multiple desktop users:** If you have multiple desktops available, a screen like this one will list them for you:



Click on the desired desktop to select it, then click **Connect**.

 **Tip: Saving connections**

If you provided a connection name in step 1, you will have the option to save the connection

 **Note: A short delay in responsiveness is normal**

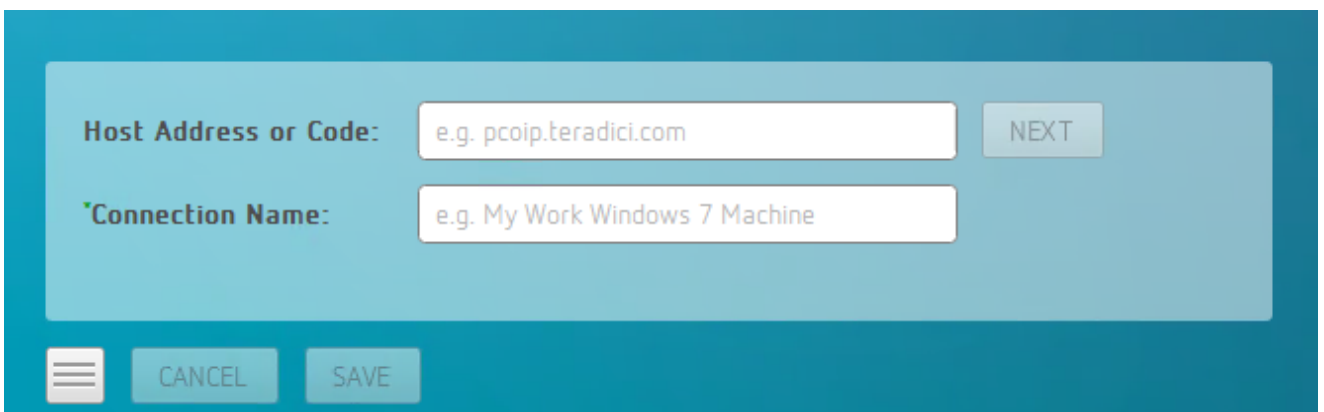
When a session is first connected, it may take a few seconds before you have control of the keyboard and mouse.

Connecting to Amazon Workspaces

Connections to Amazon Workspaces desktops can use either Active Directory or an existing Radius server to provide multi-factor authentication (MFA).

Connecting to an Amazon Workspaces desktop:

1. Launch the Software Client for Linux application.
2. In the *Host Address or Code* field, enter your *Amazon Workspaces* registration code:

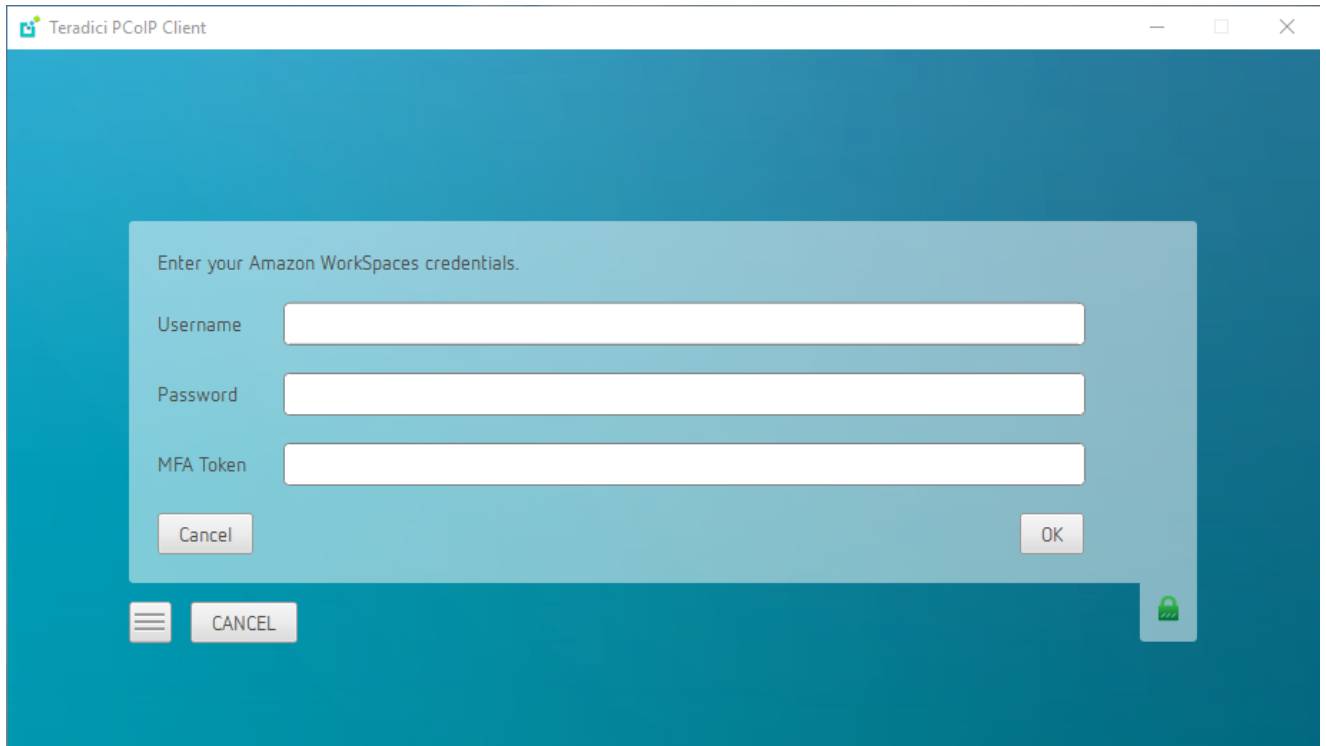


The screenshot shows a dialog box with a teal background. It contains two input fields: "Host Address or Code:" with the example text "e.g. pcoip.teradici.com" and "Connection Name:" with the example text "e.g. My Work Windows 7 Machine". A "NEXT" button is positioned to the right of the first field. At the bottom of the dialog, there is a hamburger menu icon, a "CANCEL" button, and a "SAVE" button.

If you want to save this connection, enter a name in the Connection Name field here.

3. Click **NEXT**.

4. On the next screen, enter your Amazon Workspaces username, Password and MFA token and then click **OK**.



If your credentials are accepted, the PCoIP connection is established and your desktop appears.

About the Security Padlock Indicator

The login screen displays a red padlock indicator when accessing a PCoIP agent desktop that uses default self-signed certificates. The icon indicates that the software's certificate is not signed by a trusted certificate authority (CA). You can use your own CA to create a certificate and then install the appropriate files at each end. If the client trusts your internal CA, a green padlock icon displays on the screen instead. To learn more about certificates, see the PCoIP agent administrators guides listed in the Teradici Cloud Access Architecture Guide.

Interface Delay

When a session is first connected, it may take a few seconds before you can take control of the keyboard and mouse. This is normal behavior.

Connecting to Azure Virtual Desktops

The Software Client for Linux supports connections to both PCoIP and Azure Virtual Desktop (AVD) sessions. Users can choose to use the PCoIP protocol when connecting to remote desktops for high performance graphics-intensive workloads or use AVD for less graphics intensive, multi-session workloads via the RDP protocol. Connections with RDP are brokered by Azure, and are authenticated using the Microsoft Account linked to your Azure profile.

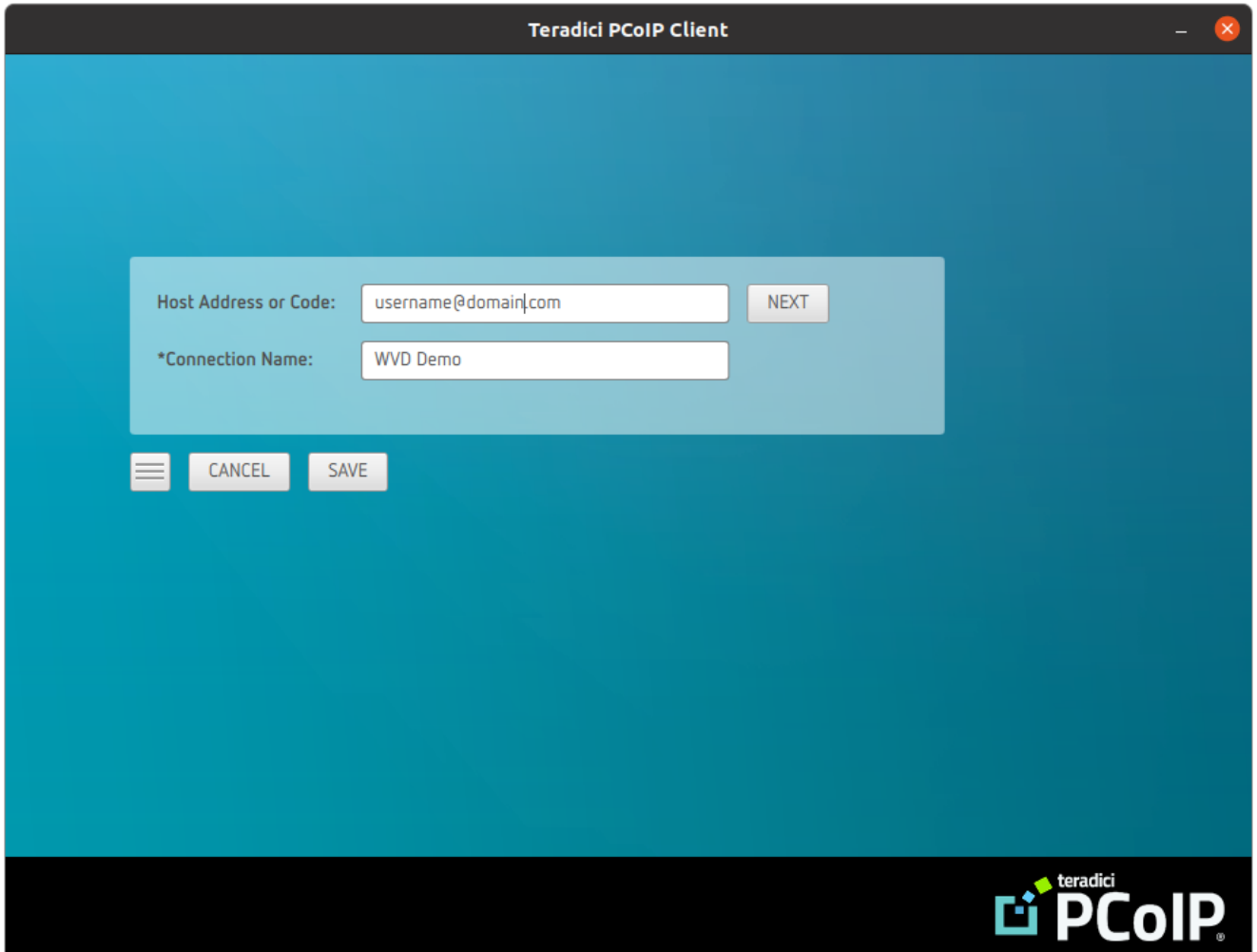
AVD Connectivity Support

The PCoIP Software Client for Linux only supports AVD connectivity on Ubuntu 20.04

To connect to a Azure Virtual Desktop (AVD)

1. Double-click the PCoIP Client desktop icon from Ubuntu Desktop Applications to launch the application.

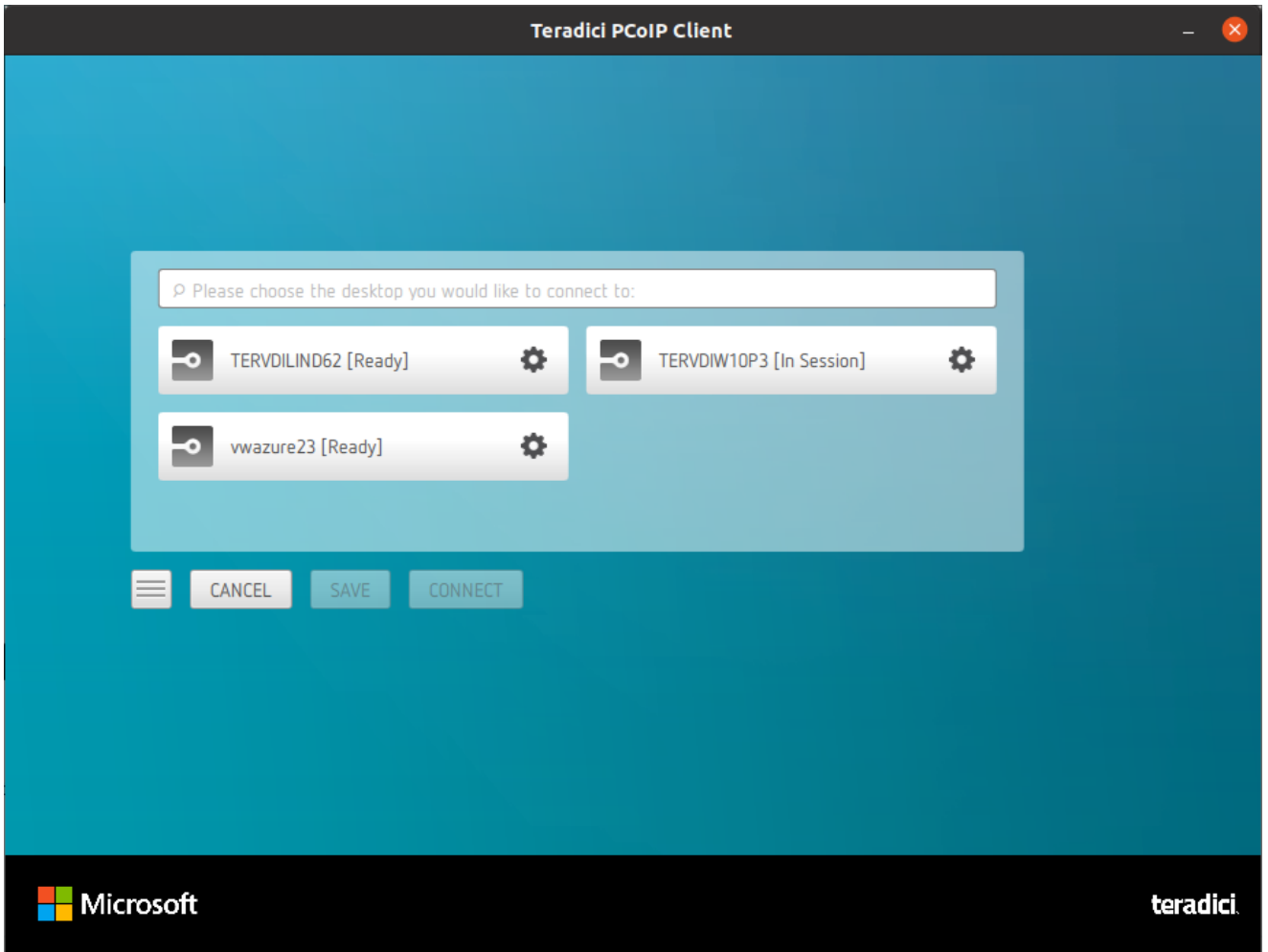
2. In the *Host Address or Code* field enter your email address that is associated with your Azure profile.



If you want to save this connection later for easy recall, enter a name in the *Connection Name* field and click **SAVE**.

3. Click **NEXT** to proceed with the connection to AVD.
4. The PCoIP Client will then reach out to AVD and present the OAuth login page for your company. Authenticate using your credentials.

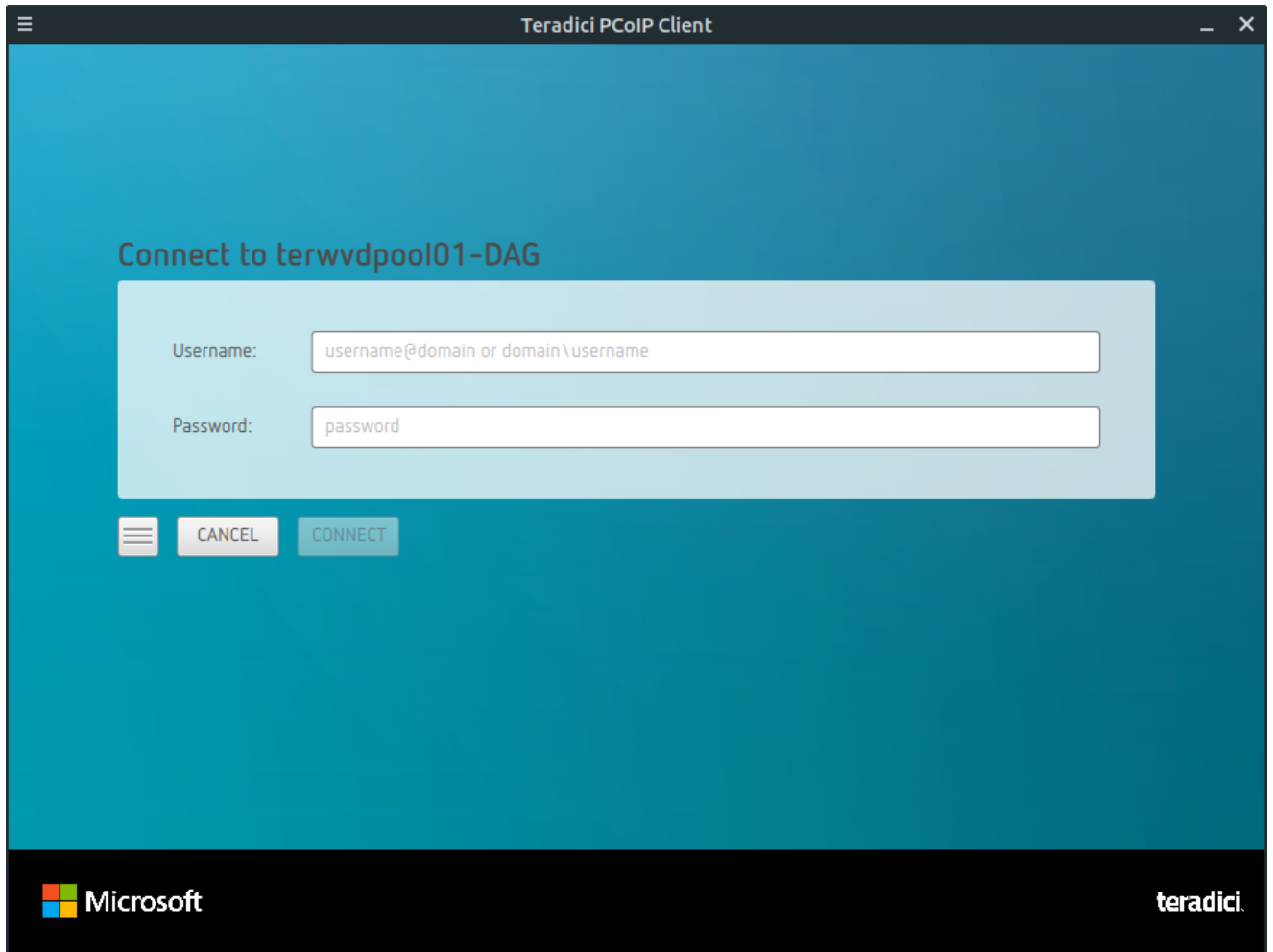
5. If you have more than one desktop available to connect to on AVD, select the resource you wish to use and click **CONNECT**.



If you have a single desktop associated with your profile, this step will be skipped and you will connect directly to that desktop.

6. Once the desktop is selected, you will be prompted to login to the desktop. This may be the same or different user account than you used to connect to AVD. Enter your user ID and

password and click **LOGIN**.



See [Azure Virtual Desktop Feature Support](#) and [Azure Virtual Desktop Keyboard Shortcuts](#) for more information on using the Software Client for Linux with AVD.

 **A short interface delay is normal**

When a session is first connected, it may take a few seconds before you can take control of the keyboard and mouse. This is normal behavior.

Connecting to PCoIP Remote Workstation Cards

You can connect to remote workstations equipped with a PCoIP Remote Workstation Card, and with PCoIP 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 PCoIP Remote Workstation Card**

Before you install the PCoIP Remote Workstation Card, **record the MAC address of the PCoIP 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 PCoIP 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 PCoIP Remote Workstation Card, such as the MAC address. The MAC address enables you to connect to the PCoIP 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 PCoIP Remote Workstation Card, see [How do I find the IP address of my newly installed PCoIP Zero Client or PCoIP Remote Workstation card?](#) in the knowledge base.

- **Install PCoIP Remote Workstation Card Agent**

To connect to a remote workstation with a PCoIP Remote Workstation Card using a PCoIP Software Client, the Remote Workstation Card Agent must be installed.

- **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 PCoIP 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 [PCoIP Remote Workstation Card Administrators' Guide](#).

- **Disable temporal dithering**

Temporal dithering causes blurriness, heavy packet loss, and high CPU usage on the PCoIP Software Client machine.

- **Linux workstations: configure PCoIP Remote Workstation Card Software to Start Automatically**

To configure the PCoIP Remote Workstation Card Software to start automatically, log into the workstation using a PCoIP Zero Client or directly from a local mouse and keyboard, and modify the workstation startup script to launch the PCoIP Remote Workstation Card Software. For details, see Installing PCoIP Remote Workstation Card Software Binary RPM in the [PCoIP® Remote Workstation Card Software for Linux User Guide](#).

Connecting to a Remote Workstation Card

Once the remote workstation is properly configured, you can connect to it from the PCoIP Software Client.

Workstation configuration is required before connecting

If you experience connection problems or degraded performance, make sure that the workstation is configured as described in Initial Workstation Configuration.

Connecting to a Remote Workstation Card via a PCoIP Software Client

The direct connection from the PCoIP Software Client to the PCoIP Remote Workstation Card is supported through the PCoIP Remote Workstation Agent software which needs to be installed on the workstation where the PCoIP Remote Workstation Card is installed. You must have a Remote Workstation Card Agent installed to enable a connection to a Remote Workstation Card.

Both the NIC of the workstation and the NIC of the PCoIP Remote Workstation card need to be accessible by the PCoIP Software Client. They can be on different local networks as long as both are accessible by the PCoIP Software Client. If they are both behind a NAT and accessed by the

PCoIP Software Client then the PCoIP Remote Workstation Card Agent must send the NAT'ed address to the PCoIP Software Client when connecting.

Anywhere Subscription

You need to have a valid Anyware Subscription to use the PCoIP Remote Workstation Card Agent.

Direct Connection to PCoIP Remote Workstation Cards

PCoIP brokering can now be used to connect to the Remote Workstation Card. You can still connect to a non-brokered Remote Workstation Card by connecting to the FQDN of the workstation instead of the FQDN of the Remote Workstation Card. This method of connection requires the Remote Workstation Card Agent to be installed on the workstation

Connecting to a PCoIP Remote Workstation Card through the command line

You can have a direct connection to a PCoIP Remote Workstation card, from a PCoIP Software Client, without requiring a PCoIP Remote Workstation Card agent installed on the host machine if you connect via the command line by using the `--hard-host` option with the IP address of your PCoIP Remote Workstation Card, for example:

```
pcoip_client.exe --hard-host 10.11.12.13
```

`10.11.12.13` is the IP address of the PCoIP Remote Workstation Card.

Connecting to a remote workstation with a Teradici PCoIP Remote Workstation Card installed:

1. Double-click the PCoIP Client desktop icon, alias, or program file (PCoIPClient) to launch the application.

The screenshot shows a configuration window with a teal background. At the top, there are two input fields. The first is labeled 'Host Address or Code:' and contains the text 'e.g. pcoip.teradici.com'. To its right is a 'NEXT' button. The second field is labeled 'Connection Name:' and contains the text 'e.g. My Work Windows 7 Machine'. Below these fields, there are three buttons: a menu icon (three horizontal lines), a 'CANCEL' button, and a 'SAVE' button.

- In the **Host Address and Code** box, enter the fully-qualified computer name or IP address of the remote workstation or the address of the PCoIP broker; this can be [Cloud Access Manager](#) or a third-party broker.
- Optional:* In the **Connection Name** box, enter a name for your connection. This field accepts any Unicode character.

The Connection Information can be saved

If you provide a connection name now, you will have the option of saving the connection after you are authenticated. Saved connections can be quickly recalled later, without manually re-entering connection information.

- Click **NEXT**.

A short interface delay is normal

When a session is first connected, it may take a few seconds before you can take control of the keyboard and mouse. This is normal behavior.

- If your desktop is locked upon connection and requires you to enter Ctrl+Alt+Delete to log in, select **Connection > Send CTRL-ALT-DEL** from the PCoIP Software Client menu bar.

PCoIP Remote Workstation Card Feature Compatibility

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

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

Topology: Single display configuration will work. There may be disruptions in the forms of black bars or scroll bars on the client if the PCoIP Remote Workstation Card does not support the display configuration on the client. The worst instance of this disruption will occur for some client configurations that don't work with the hard host configuration.

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

Performance: Updated to support PCoIP Ultra are not applicable to the RWC.


Connecting Remotely using NAT or VPN

The same principles that apply for PCoIP Zero Clients apply to PCoIP Software Clients when connecting to multiple hosts through a WAN. Connections from a PCoIP 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 PCoIP Software Client to a Remote Workstation Card installed in a Windows host computer, see [Connections from Software Clients](#) in the PCoIP 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 Linux menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for Linux menu bar, select **Connection > Disconnect**.

 **Tip: Quickly disconnect from a session**

To quickly disconnect from a session, press `Ctrl+Alt+F12`.

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

Using Saved Connections

Once you have saved a connection, you can use it to reconnect quickly.

To reconnect using your saved connection:

1. Launch the Software Client for Linux.
2. If you have saved connections previously, you will see them displayed now. The names shown here are the connection names you provided

Click the connection you need; you will proceed immediately to the authentication screen and then to the requested desktop.

Tip: Filtering results

If you have a large number of saved connections, you can filter the connections shown by typing keywords in the search bar at the top of the window.

Tip: Revealing saved connection URLs

If you need to see the connection URL associated with any of the saved connections, hover your mouse pointer over it. The URL will be shown in a tooltip.

To edit or delete a saved connection

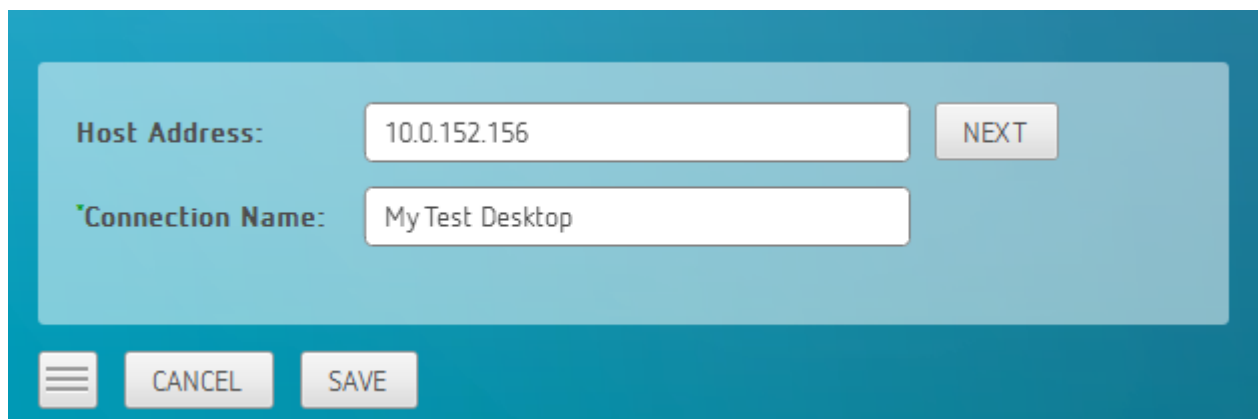
To edit or delete a saved connection, click its gear icon (found on the right end of the connection button) and choose the desired action from the dropdown menu.

Advanced Saved Connections

Administrators can save more complex desktop connections with the PCoIP Client. The following section outlines the connection scenarios that can be saved, and outlines the potential benefits of doing so.

Saved Broker Address

This configuration enables you to create a saved connection where only the broker address is saved. You need to enter your username when connecting to a remote host. Enter the host address and name the connection, then click **SAVE**.



The screenshot shows a configuration dialog with a teal background. It contains two input fields: 'Host Address' with the value '10.0.152.156' and 'Connection Name' with the value 'My Test Desktop'. A 'NEXT' button is positioned to the right of the 'Host Address' field. At the bottom of the dialog, there are three buttons: a menu icon (three horizontal lines), 'CANCEL', and 'SAVE'.

For more information on system components and connections using a broker, see [About PCoIP Sessions](#) section in the Windows Client SDK guide.

Pre-configured connections

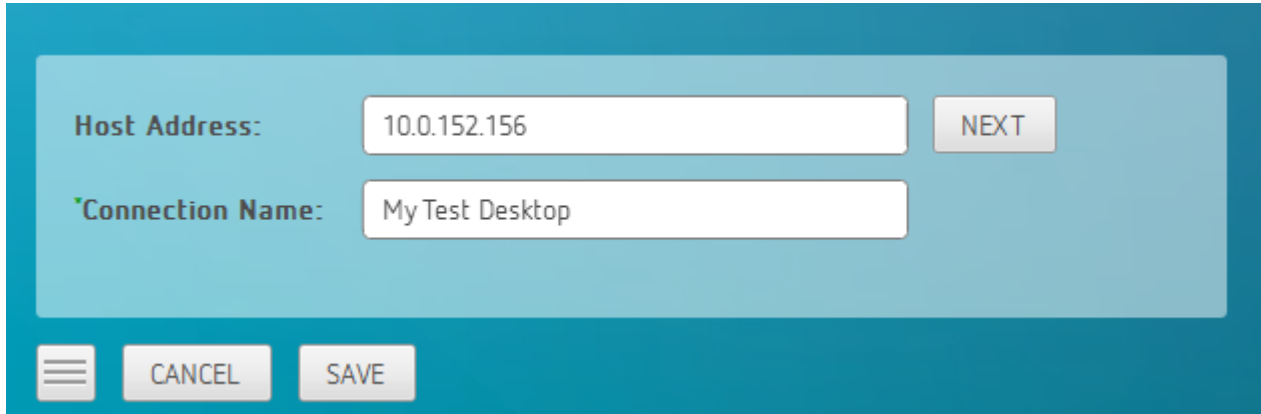
This partial save feature enables administrators to pre-configure connection information as a saved connection and bundle it with the client application. For example, administrators can save a connection with the FQDN of the PCoIP Connection Manager preset and then distribute this information to their deployed clients. As a result of this users would be able to skip past the initial domain screen and advance directly to their user authentication screen.

The administrator can find and distribute the connection info file located at `%APPDATA%\Teradici\PCoIP Client Connection Info.ini`

Multiple Desktops

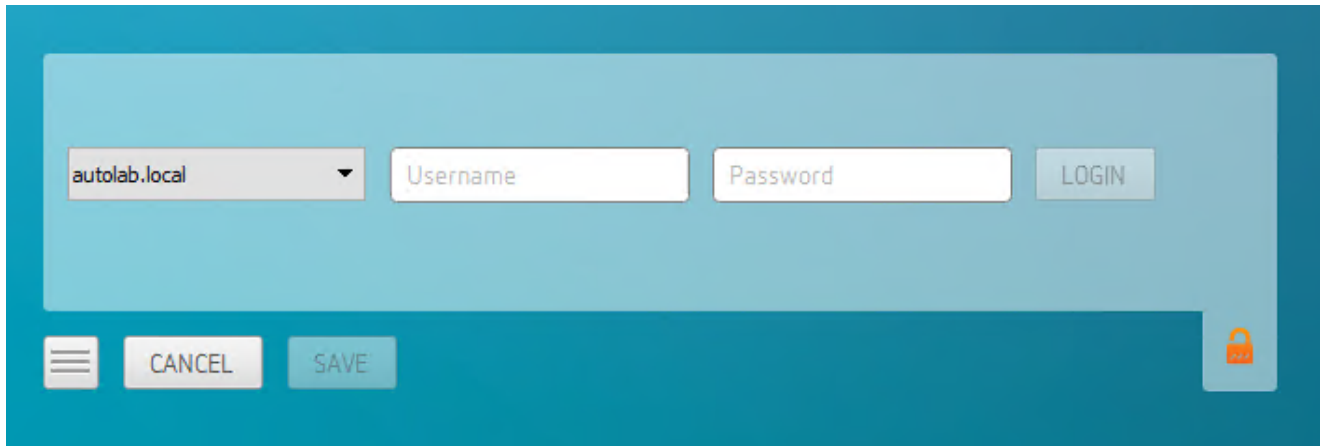
This configuration enables you to see and access a selection of desktop environments each time you connect.

1. Enter the host address and name the connection



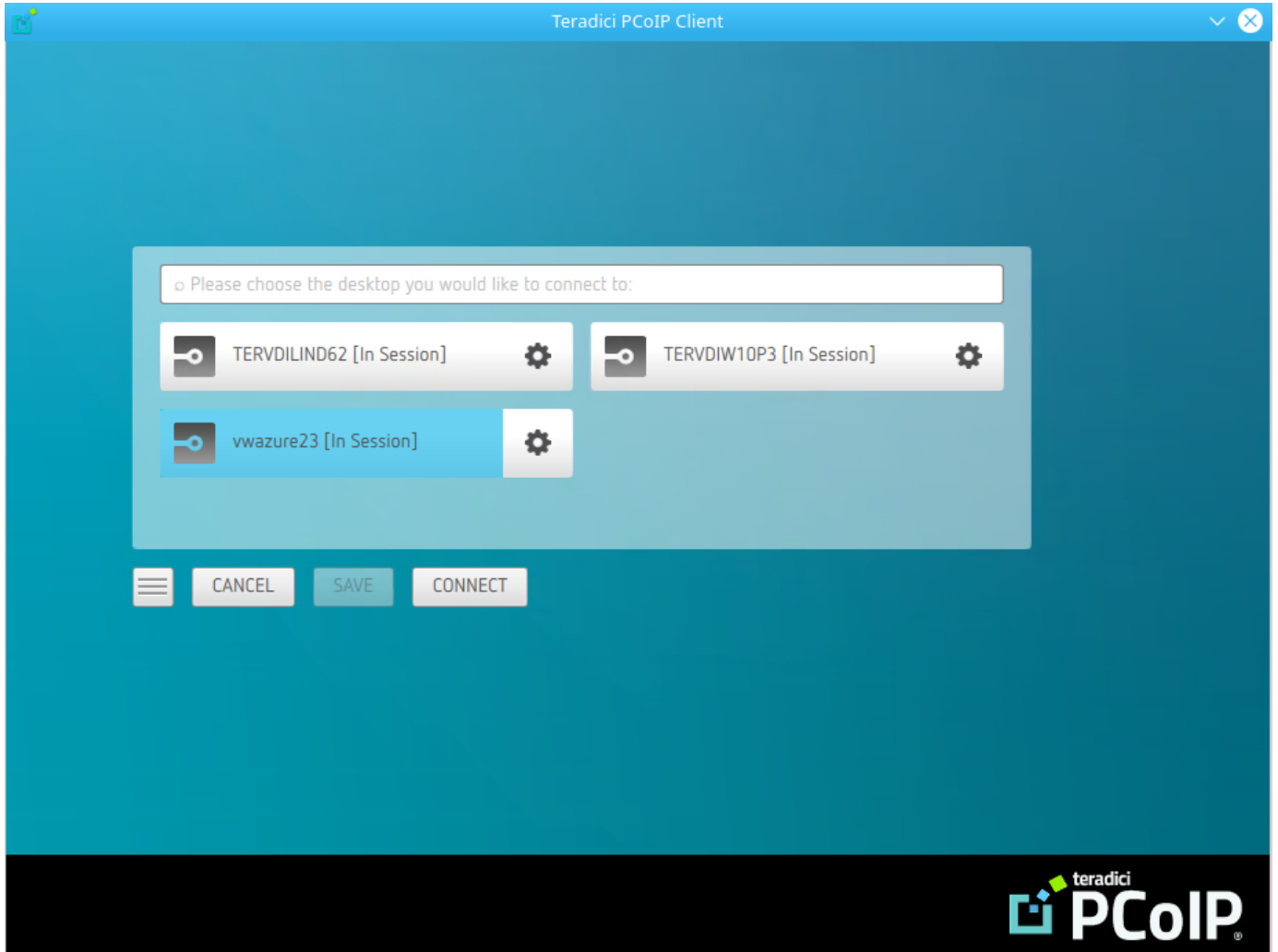
A screenshot of a configuration dialog box with a teal background. It contains two input fields: "Host Address:" with the value "10.0.152.156" and "Connection Name:" with the value "My Test Desktop". A "NEXT" button is to the right of the first field. At the bottom, there is a hamburger menu icon, a "CANCEL" button, and a "SAVE" button.

2. Enter and save the Username



A screenshot of a configuration dialog box with a teal background. It features a dropdown menu showing "autolab.local", a "Username" input field, a "Password" input field, and a "LOGIN" button. At the bottom, there is a hamburger menu icon, a "CANCEL" button, a "SAVE" button, and a small orange lock icon in the bottom right corner.

Once you have done this each time you use this connection you will be presented with the list of available desktops for that connection.



Using Displays

When you connect to a PCoIP session, the Software Client for Linux 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 Linux 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.

Display Modes

Using the Software Client for Linux, you can switch between three display modes. 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 Linux 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 Linux menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for Linux menu bar, select **View > Leave Fullscreen**.

Full Screen Modes

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

In both full-screen modes, the Software Client for Linux 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`.

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 Linux menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for Linux 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.

To use Full Screen One Monitor mode:

1. If you are in a full-screen mode already, reveal the Software Client for Linux menu bar by moving the mouse cursor to the top of a display.
2. From the Software Client for Linux 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 Linux menu bar by moving the mouse cursor to the top of a display.

2. From the Software Client for Linux 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.

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 PCoIP Agent configuration:** The remote PCoIP 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 Linux 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:** PCoIP 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

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 PCoIP 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.

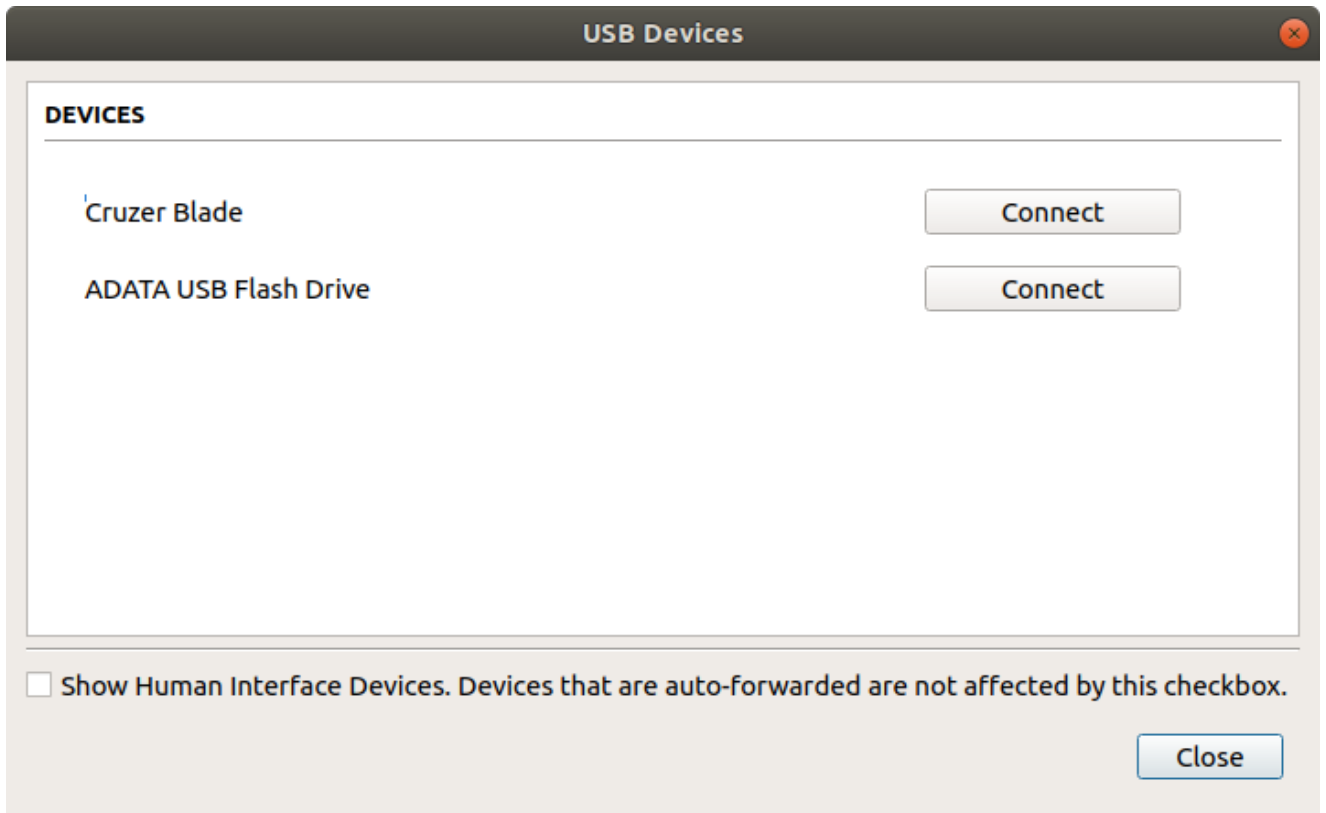
The name shown in the list is self-reported by the device; some devices will identify themselves only as *USB Device*.

Important: Connecting special HID devices

Because most Human Interface Devices (HIDs) are automatically processed by the Software Client for Linux, 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.

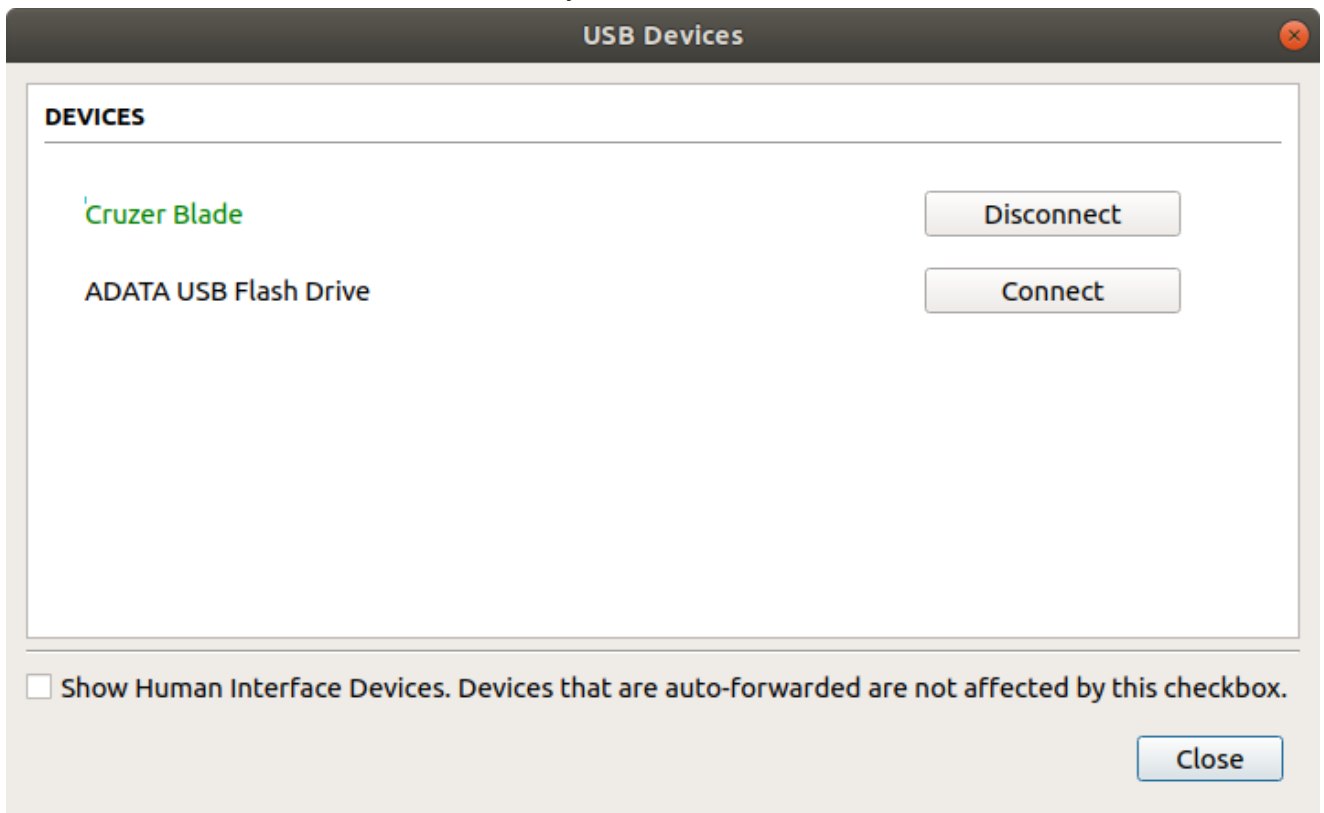
3. Click **Connect** beside the USB device you want to use.



Disconnect a USB Device

1. Select **Connection > USB Devices** from the PCoIP 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 Linux interface.

To enable automatic forwarding, 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 Linux 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 Linux.
3. Plug in the device.
4. Close the Software Client for Linux.
5. [Find the most recent PColP 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.

Connect USB Webcams

USB Webcams may be used in remote sessions by connecting them to a Windows remote session as USB devices. This feature has been tested with a limited number of popular webcams, including the Logitech C920. See [PCoIP Cloud Access Software Webcam Support](#) for a current list of tested webcams.

This feature is only supported by the Graphics Agent for Windows and the Standard Agent for Windows, and is limited to resolutions of 480p or lower.

Configuring Wacom Tablets

This section outlines how to configure your Wacom tablet through the PCoIP Client session. There are two available features within the PCoIP 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.

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

The screenshot shows the 'Wacom Tablet Properties' window. At the top, the 'Device' is set to 'Intuos Pro M', the 'Tool' is 'Pro Pen 2', and the 'Application' is 'All'. Below this, the 'Mapping' tab is selected. It features a diagram of the tablet with a red rectangle indicating the mapped area on the screen. To the right of the diagram, the 'Orientation' is set to 'ExpressKeys Left', the 'Mode' is set to 'Pen', the 'Screen Area' is set to 'Monitor 1' (with a dropdown menu open showing 'Full', 'Portion...', 'Monitor 1', and 'Monitor 2'), and the 'Tablet Area' is set to 'Full'. At the bottom left, the 'Use Windows Ink' checkbox is checked. A 'Default' button is located at the bottom right of the mapping section. At the very bottom of the window, there are 'About' and 'Options...' buttons, and a help icon.

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

- ExpressKeys Left
- ExpressKeys Top
- ExpressKeys Right
- ExpressKeys Bottom

Mode: Pen

Screen Area: Monitor 1

Force Proportions

Tablet Area: Full

Use Windows Ink

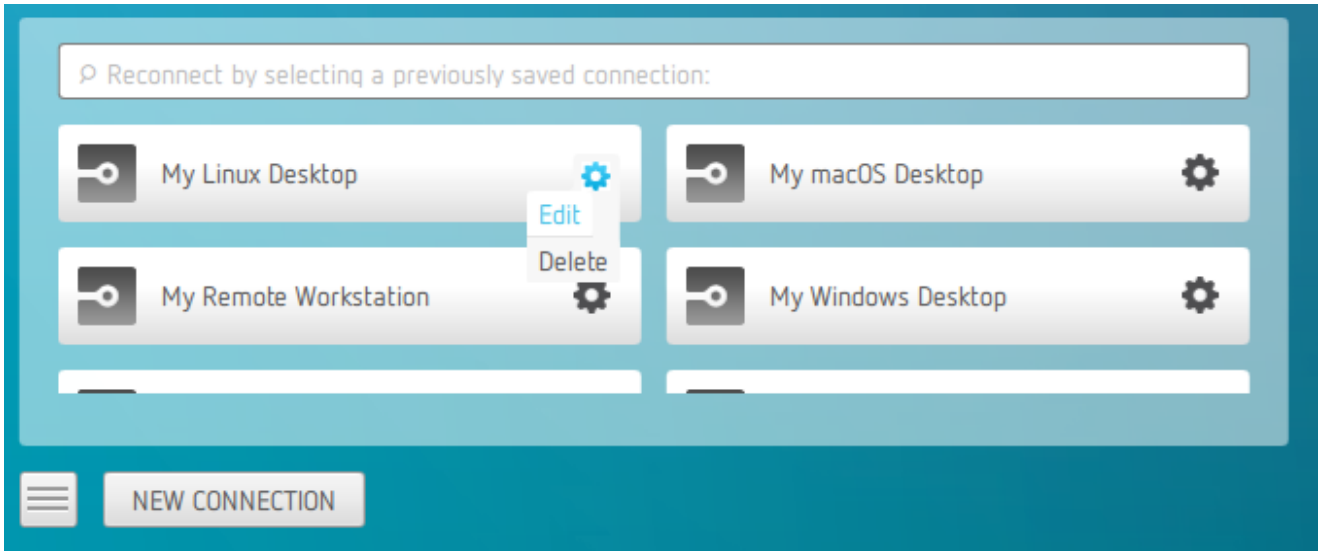
Default

About Options...

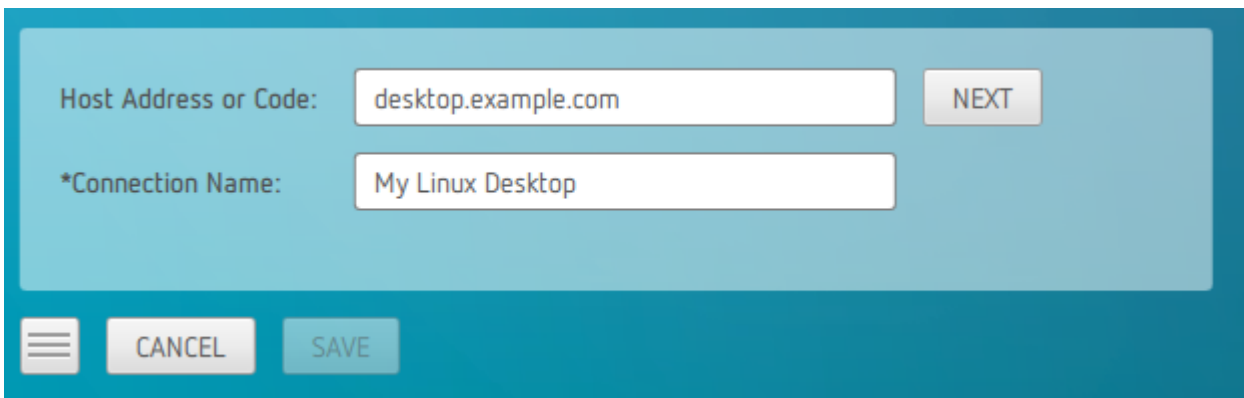
Reset Virtual Desktop

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

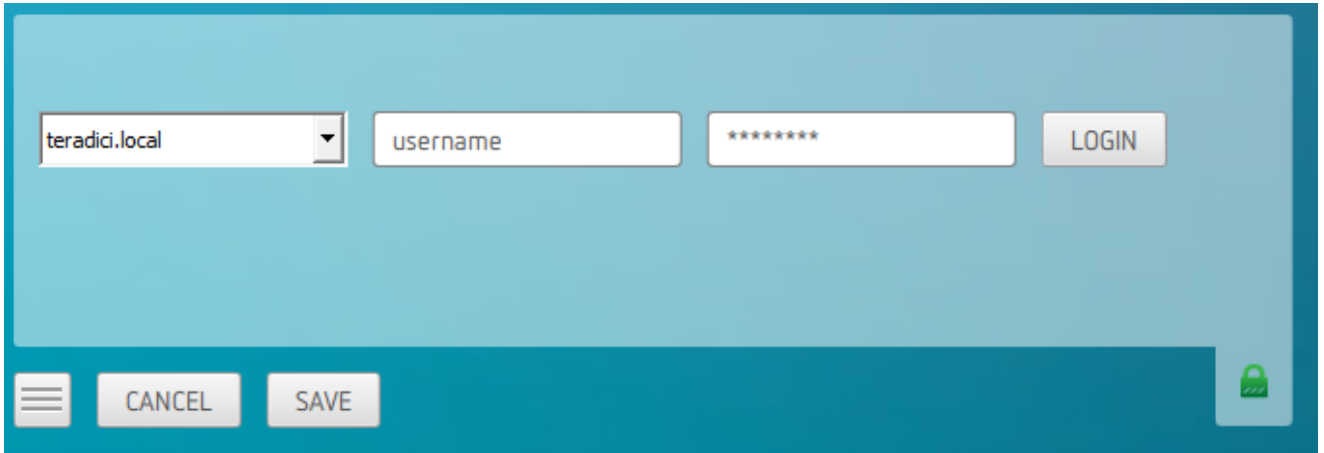
1. Click the configure button and select **Edit** from the popup menu.



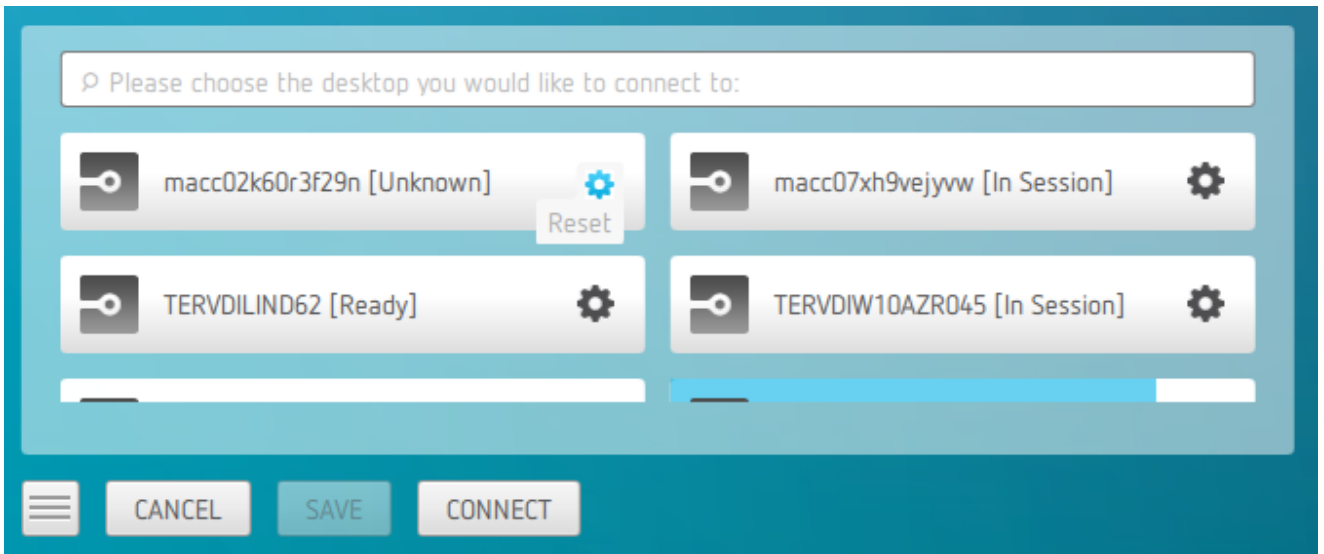
2. Click **NEXT** on the initial saved connection screen.



3. Enter your access credentials and click **SAVE**.



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.



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.

Enhanced A/V Sync is enabled on a per-display basis, so you can dedicate individual displays to playback without impacting responsiveness on the others.

To use enhanced A/V Sync:

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>Enhanced A/V Sync** 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

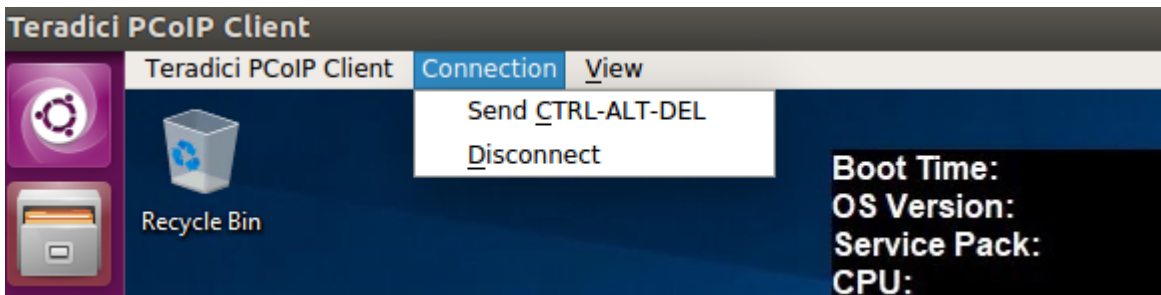
PCoIP Ultra AV-Lock enables regulated synchronization of audio and video frames. When audio is playing the video frames will be delayed to align with the audio sound track. When there is no audio playing the video frames will be presented to the user without delay. For some use cases, such as video editorial, audio video synchronization is critical and 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 Enhanced AV Sync 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 information on this, see [High Performance Client](#).

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.



Changing the Language

In addition to English, the PCoIP Software Client also supports a number of different languages. During installation, you can select one of the supported languages.

To change the language in GNOME

- In the **Settings > Language and Region** panel, select another language from the language setting.

To change the language on the command line

Alternatively, the language can be set with the `locale` parameter on the command line:

```
pcoip-client --locale <locale-code>
```

The following table lists the available language translations and codes:

Language	Code
German	de
Spanish	es
French	fr
Italian	it
Japanese	ja
Korean	ko
Portuguese (EU)	pt
Portuguese (Brazil)	pt_BR
Russian	ru

Language	Code
Turkish	tr
Chinese (Simplified)	zh_CN
Chinese (Traditional)	zh_TW

Configuring the PCoIP Software Client for Linux

The Software Client for Linux 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, or
- [Via a URI](#), providing your configuration values in an encoded JWT string.

Setting Configuration Values on the Command Line

To set configuration values this way, launch the Software Client for Linux 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):

```
/usr/bin/pcoip_client --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 Linux 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>	Required. This scheme is registered with the operating system and will launch the Software Client for Linux.
<code>broker</code>	Optional. FQDN of the connection broker to use. If the connection is not brokered, this can be omitted.
<code>/connect</code>	Required. 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.eyJmdWxsc2NyZWVudj0cnV1LCJsb2ctbGV2ZWwiC
```

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

Configurable Settings

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

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
de : German	Not set	string
es : Spanish		
fr : French		
it : Italian		
ja : Japanese		
ko : Korean		
pt : Portuguese (EU)		
pt_BR : Portuguese (Brazil)		
ru : Russian		
tr : Turkish		
zh_CN : Chinese (Simplified)		
zh_TW : Chinese (Traditional)		

Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--locale</code>	—	<code>--locale zh_CN</code>
URI	✓	<code>locale</code>	<code>loc</code>	<code>{loc: "zh_CN"}</code>

Connection Settings

These settings control how the Software Client for Linux 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 PCoIP 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	✓	<code>hard-host</code>	<code>rwc</code>	<code>{rwc: "rwc.example.com"}</code>

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	—	—	—	—

Security Mode

The security mode used for validating connections.

Options	Default	Type
0 : Verification not required 1 : Warn, but allow 2 : Full verification required	1 : Warn, but allow	integer

Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--security-mode</code>	<code>-s</code>	<code>-s 2</code>
URI	✓	<code>security-mode</code>	<code>sec</code>	<code>{sec:2}</code>

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	✓	<code>sessionid</code>	<code>sid</code>	<code>{sid: exampleSessionID}</code>

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	✓	<code>--username</code>	<code>-u</code>	<code>-u myUsername</code>
URI	✓	<code>username</code>	<code>usr</code>	<code>{usr: "myUsername"}</code>

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 <code>false</code> : enabled	false (USB enabled)	boolean

Usage

Method	Valid	Full	Alias	Example
Command Line	✓	<code>--disable-usb</code>	<code>-</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>

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>

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>vb1</code>	<code>{vb1: "aa11,bb22 cc33,dd44"}</code>

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>--vidpid-black-list</code>	<code>-w</code>	<code>-w</code>
URI	✓	<code>vidpid-black-list</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
<ul style="list-style-type: none"> 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>

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>-</code>	<code>--log-prefix example-prefix</code>
URI	<code>-</code>	<code>-</code>	<code>-</code>	<code>-</code>

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 Linux. 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 PCoIP 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 PCoIP 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	False (does not maintain aspect ratio)	boolean
<code>false</code> : Do not maintain aspect ratio		

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 `{! ./common/name.md! }`. 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>

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>

HID Local Termination Blacklist

Local Termination of Wacom tablets provides the best user experience in networks with high latency, however some features of the tablet may not be fully supported with local termination. A HID local termination blacklist has been added to override the preferred local termination mode.

Devices on the blacklist would be bridged to the remote desktop. To enable the HID local termination blacklist, add the following setting to `~/.config/Teradici/Teradici\ PCoIP\ Client.ini`. The vendor and product IDs are separated by a comma and multiple devices are separated by a space.

```
localtermination_black_list "vid,pid vid2,pid2"
```

For more information on USB Vendor ID/Product ID Auto-Forward, see [USB Vendor ID/Product ID Auto-Forward](#).

Troubleshooting HID Local Termination Blacklist

The following lines should appear in the PCoIP Agent log if a device is using HID local termination:

```
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`
```

PCoIP High Performance Client

The PCoIP Software Client has a high performance mode that can be enabled through the `Teradici PCoIP Client.ini` file. The `Teradici PCoIP Client.ini` file can be found at `~/.config/Teradici/Teradici PCoIP Client.ini`.

The PCoIP High Performance client enables higher frame rates with fewer dropped frames than the default PCoIP Software Client. This mode is especially beneficial for 4K video workloads up to 30fps.

PCoIP High Performance Client Limitations

The PCoIP High Performance Client is recommended for customers wishing to optimize the presentation of high frame rate content such as video or animations. Teradici does not recommend using the PCoIP High Performance Client for majority use cases, and instead it is a case specific enhancement at this time as it contains certain limitations.

To enable the high performance mode of the PCoIP Client you must edit the `Teradici PCoIP Client.ini` file. To edit the file, you can use tools like "vi", "nano" or "vim". Please see the manuals of your preferred text editor on how to use it.

1. Open the `.ini` file:

```
sudo vi ~/.config/Teradici/Teradici PCoIP Client.ini
```

2. Add the following line:

```
enable_high_perf_client=1
```

Once you have added this setting to the `.ini` file, you have to start the PCoIP Client via a terminal window. Run the following command to start the PCoIP Client:

```
pcoip-client --use-egl
```

You can use the `--vidpid-auto-forward` parameter which will automatically forward USB peripherals such as Wacom Tablets and Game Pads, see [here](#).

Additional information on the high performance client:

- Compatible for fullscreen, all monitors only. You cannot use windowed mode.
- Limited menu options are available.

Menu Options on the High Performance Client

The following menu options are available on the High Performance Client:

- **Teradici PCoIP Client**
 - Quit Teradici PCoIP Client
- **Connection**
 - Send Ctrl+Alt+Del
 - Disconnect (To disconnect use `ctrl-alt-~`)
- **View**
 - Minimize Client (You can minimize the client by using `ctrl-alt-m`)
 - Tablet Monitor
 - Tablet Orientation Left-handed
 - PCoIP Ultra AVLock

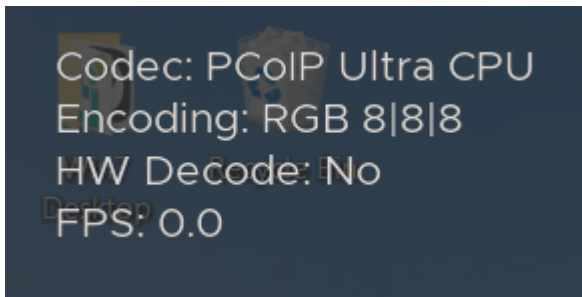
Statistics Overlay on the High Performance Client

The statistics overlay feature on the High Performance Client displays the following information:

- **Codec:** This reports the current PCoIP encoding that is in use. Possible values for this include PCoIP Ultra CPU, PCoIP Ultra GPU and PCoIP.
- **Encoding:** This reports the color space that is being used to encode the information. PCoIP and PCoIP Ultra CPU offload will report RGB 8:8:8 which means full 8 bit RGB pixels are being used. For PCoIP Ultra GPU optimization, either YUV 4:4:4 or YUV 4:2:0 will be used, depending on the system configuration.
- **HW Decode:** This reports whether or not the PCoIP Client is decoding the frames using built-in GPU hardware decoding.

- **FPS:** This reports the current frames per second that are presented on the PCoIP Client.

The image below is an example of a statistics overlay on the High Performance Client:



To enable the statistics overlay of the PCoIP Client you have to edit the `Teradici PCoIP Client.ini` file. To edit the file you can use tools like "vi", "nano" or "vim"/ Please see the manuals of your preferred text editor on how to use it.

1. Open the `.ini` file:

```
sudo vi/.config/Teradici/Teradici PCoIP Client.ini
```

2. Add the following line:

```
enable_high_perf_client_stats_overlay=1
```

To toggle visibility of the statistics overlay press `CTRL+Win``.

H.264 Hardware Decode

The PCoIP Software Client for Linux supports H.264 hardware decode for selected hardware configurations on supported hardware platforms by using the PCoIP Client to enable the decode. This enables improved frame rate performance when using PCoIP Ultra GPU-Offload or Auto-Offload, especially in conjunction with high resolution content. This feature must be used in combination with the [High Performance Client](#) and enabled and invoked with `--use-egl`. Hardware decoding is only supported for Chroma subsampled H.264 encoded data which is a PCoIP Agent configuration setting, which is only supported on the Graphics Agent for Windows or Graphics Agent for Linux. To enable the decode functionality on the PCoIP Client edit the file `~/.pcoip.rc` and add the following line:

```
pcoip.enable_hw_h264 = 1
```

Intel Integrated Graphics Recommended

Currently the PCoIP Client does not support H.264 hardware decoding functions on NVIDIA graphics cards. Teradici recommends endpoint devices configured with integrated Intel UHD graphics. Hardware decoding will only work if the graphics driver on the client computer supports the VAAPI.

PCoIP Software Client Security Modes

Once the client is installed, you can configure it and optimize PCoIP protocol behavior by adjusting configuration directives found in `~/ .config/Teradici/Teradici PCoIP Client.ini`

Setting Values in *Teradici PCoIP Client.ini*

To set the configuration value, add or modify directives in `Teradici PCoIP Client.ini`. Place one directive on each line, in this format:

```
directive.name = <value>
```

PCoIP Software Client Security Modes

The PCoIP 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 `Teradici PCoIP Client` configuration file, which is described next. Three security mode options are available:

- **security_mode = 0:** verification is not required. A red, unlocked padlock icon appears on the client login screen.
- **security_mode = 1:** warn but allow (default). If a certificate cannot be verified, an 'untrusted server' warning displays and a red, unlocked padlock icon appears on the client login screen. Users still have the option of connecting.

This mode is used if `security_mode` is not set in the configuration file.

- **security_mode = 2:** full verification is required. Users cannot connect unless a certificate can be verified.

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 to full verification, set the security mode to **2**. You would set values in the `Teradici PCoIP Client.ini` file like this:

```
security_mode = 2
```

System Libraries

The following system libraries are used by the Software Client for Linux:

- libcap2
- libbz2
- libc6
- libegl1
- libgcc
- libgl1
- libharfbuzz0b
- libpng16
- libprotobuf10
- libpulse0
- libqt5
- libssl1.1
- libstdc++6
- libudev1
- libva-drm2

Previously these libraries had been distributed along with the client application. Security updates to these packages are available via system updates.

Installing the Internal Root CA Certificate in a PCoIP Client

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

Installing Root CA Certificates in the PCoIP Software Client for Linux

Active Directory group policies

For information on using Active Directory Group Policy to distribute certificates to client computers, see <http://technet.microsoft.com/en-us/library/cc772491.aspx>.

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 PCoIP Software Client.

Installing a Root Certificate on Ubuntu and Debian

1. Copy the certificate to the folder `/usr/local/share/ca-certificates/extra`. You may need to create the `/extra` folder.
2. Update the certificate store with the following command:

```
update-ca-certificates
```

3. Remove the certificate from the folder.
4. Update the certificate store with the following command:

```
update-ca-certificates --fresh
```

Installing a Root Certificate on CentOS and RHEL

1. Copy the certificate to the folder `/etc/pki/ca-trust/source/anchors`.
2. Update the certificate store with the following command:

```
update-ca-trust extract
```

3. Remove the certificate from the folder.
4. Update the certificate store with the following command:

```
update-ca-trust
```

Azure Virtual Desktop Keyboard Shortcuts

The following keyboard shortcuts apply when using the Software Client for Linux for Linux to access a Azure Virtual Desktop (AVD) using RDP:

- **CTRL + ALT + END** = **CTRL + ALT + DEL** (inside the remote desktop)
- **ALT + Pg-Up** = **ALT + TAB** (task switcher inside the remote desktop)
- **ALT + Home** = Windows button (inside the remote desktop)
- **SHIFT + ALT + Enter** = Toggle full-screen mode on/off

Disabling the Virtual Terminal Functionality

On the PCoIP Software Client for Linux using `Ctrl+Alt+F12` will switch to virtual terminal 12, which typically does not exist. This can result in a blank screen. To avoid this you can disable virtual terminal functionality by creating a file `/usr/share/X11/xorg.conf.d/60-pcoip.conf` with the following contents:

```
Section "Serverflags"  
    Option "DontVTSwitch" "yes"  
EndSection
```

This file needs to be created with root permissions.

Linux Keyboard Shortcuts

There are a number of system level keyboard shortcuts on Ubuntu 18.04 that can affect your remote desktop experience. If you are using some of these keys then it is recommended that you re-map or disable them.

There are separate keyboard shortcuts if you are connecting to a Azure Virtual Desktop (AVD) using RDP, as outlined [below](#).

To re-map a keyboard shortcut go to the **Keyboard** tab within your system settings, select the keyboard shortcut and enter the keys you wish to use to re-map with. You can also click backspace to disable the shortcut.

The following keyboard shortcuts may be of interest:

Navigation Shortcut: `Alt + Tab`

Ubuntu 18.04: Switch applications (on local client).

Windows 10: Switch applications (on remote desktop).

Navigation Shortcut: `Super + Tab`

Ubuntu 18.04: Switch applications (on local client)

Windows 10: Open task view (on remote desktop)

Navigation Shortcut: `Super + Shift + Up arrow`

Ubuntu 18.04: Move window one monitor up.

Windows 10: Stretch the desktop window to fill the entire screen.

Navigation Shortcut: `Super + Ctrl + D`

Ubuntu 18.04: Hides all normal windows.

Windows 10: Adds a virtual desktop.

Navigation Shortcut: `Ctrl + Alt + Tab`

Ubuntu 18.04: Switch System Controls Windows.

Windows 10: View open applications.

Navigation Shortcut: `Super` + `Home`

Ubuntu 18.04: Switch to workspace 1.

Windows 10: Minimize all but the active desktop window(Restores all windows on second stroke).

Navigation Shortcut: `Super` + `Lock`

Ubuntu 18.04: Lock screen.

Windows 10: Lock screen.

Navigation Shortcut: `Super` + `A`

Ubuntu 18.04: Show all applications.

Windows 10: Open action center.

Navigation Shortcut: `Super` + `S`

Ubuntu 18.04: Show the overview.

Windows 10: Open search.

Navigation Shortcut: `Super` + `H`

Ubuntu 18.04: Hide window.

Windows 10: Open the share charm.

Navigation Shortcut: `Super` + `Up arrow`

Ubuntu 18.04: Maximize window.

Windows 10: Maximize app window.

Navigation Shortcut: `Super` + `Down arrow`

Ubuntu 18.04: Restore window.

Windows 10: Minimize app window.

Navigation Shortcut: `Super` + `Left arrow`

Ubuntu 18.04: View split window from the left side.

Windows 10: Snap app window left.

Navigation Shortcut: `Super` + `Right arrow`

Ubuntu 18.04: View split window from the right side.

Windows 10: Snap app window right.

Removing Deprecated Repos

Software Client for Linux repositories were formerly hosted at **downloads.teradici.com**. This server is deprecated, and requests to it will fail with a certificate error.

If your repo config is pointing at this deprecated server, you must remove references to it and then configure your system with the new server.

1. Search for **downloads.teradici.com** in **/etc/apt/sources.list.d/** and delete them.

```
grep downloads.teradici.com /etc/apt/sources.list.d/*
```

The response will contain the files that need to be removed.

2. Remove the outdated files. The following example will remove the **pcoip.list** file at **/etc/apt/sources.list.d/pcoip.list**; the value you use here will be found in the response to the previous step:

```
sudo rm /etc/apt/sources.list.d/pcoip.list
```

To get around this issue, you must remove any references to **downloads.teradici.com**. Search for **downloads.teradici.com** in any files in **/etc/apt/sources.list.d/** and delete these files. Run the following command:

```
$ grep downloads.teradici.com /etc/apt/sources.list.d/*
/etc/apt/sources.list.d/pcoip.list:deb [arch=amd64] https://
downloads.teradici.com/artifactory/pcoip-agent-deb-stable-local bionic stable
username@ABCDEF1:~$ sudo rm /etc/apt/sources.list.d/pcoip.list
```

Once the legacy file is removed refresh the repository cache.

```
$ sudo apt-get update
```

pcoip.list is an example filename that may be captured with the `$ grep` command.

Support and Troubleshooting

If you encounter a problem installing or using the Software Client for Linux, 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 bundle:

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

```
pcoip-client-support-bundler
```

The support bundler will collect diagnostic information and logs, and bundle them into a .tar.gz archive in your `/tmp/` directory. Support bundle files look like this: **supportbundle-client-2021-04-21T21212112Z.tar.gz**.

Troubleshooting Client Crashes

When troubleshooting issues involving a client crash, system crash dumps are extremely helpful. Some systems may not have crash dumps enabled; if this is the case, you must enable it in order to capture the crash data.

Crash dumps are disabled by setting the size limit to `0`. To check if there is a limit on the size of core dumps use the `ulimit` command:

```
ulimit -c
```

The response will indicate the limit on core dumps. If the response is `0`, it indicates that core dumps are disabled (limited to a size of zero blocks), and you must enable core dumps.

If required, enable crash dumps by setting the limit to `unlimited`:

```
ulimit -S -c unlimited pcoip-client
```

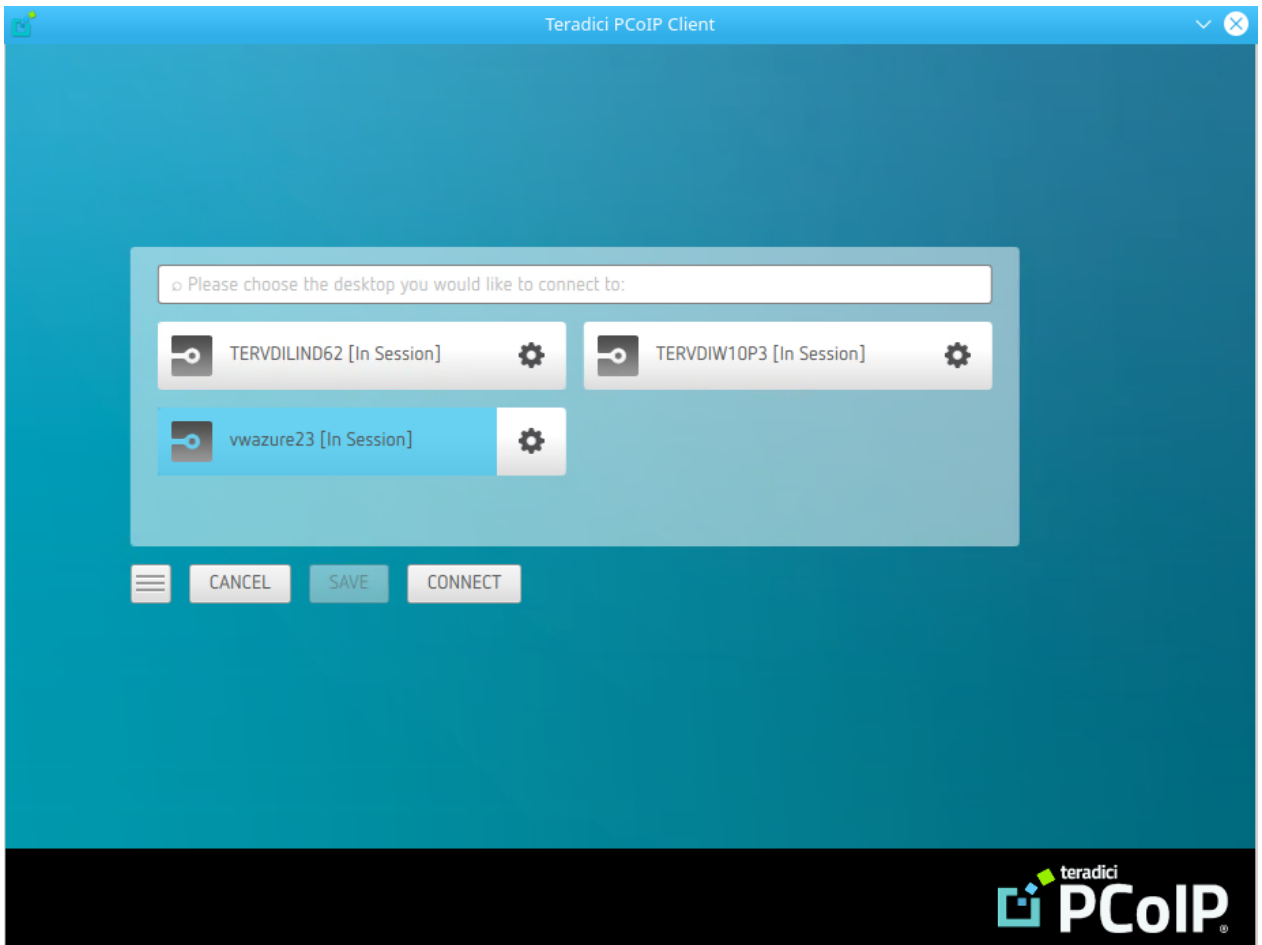
Then, reproduce your issue and collect the support bundle. After completing this sequence, reset the crash dump setting to its previous level (this example will set it to zero, or disabled):

```
ulimit -S -c 0
```

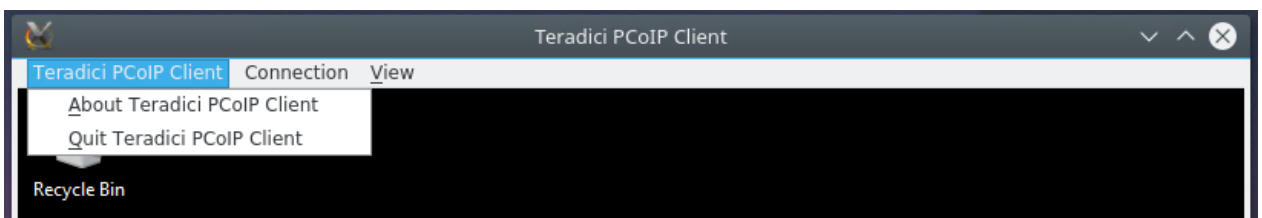
Finding Your Client Version

You can find your Software Client for Linux 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:
 - Click on the hamburger icon, found at the bottom left of the screen beside the **Cancel** button.



- From the context menu that appears, select **About**.
- Find the version number in the information window that appears.
- **In-session:** If you *are* in a session:
 - Find or reveal the client menu bar
 - Select **Anyware PCoIP Client > About Anyware PCoIP Client**.
 - Find the version number in the information window that appears.



PCoIP Client Logging

The Software Client for Linux 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

Client logs are placed in `/tmp/Teradici/<Username>/logs/` by default. Log locations can be overridden via [launch configuration](#) if required.

`<Username>` is the name of the user that launched the client.

Log Levels

Log verbosity is defined by a level, represented by an integer from 0 to 4:


- **0** : **Critical** messages only
- **1** : **Error** messages and higher
- **2** : **Info** messages and higher (default)
- **3** : **Debug** messages and higher
- **4** : All messages (maximum verbosity)

The default setting is **2**, recording informational messages and higher.

The log level can be changed in any of the following ways:

- **Via command-line launch:** This method provides the log level inline during a command line launch; see [Log Level](#) in the configuration section for details.
- **Via the client UI:**
 - From the client's menu icon, click **Settings**.
 - Set the log level as desired.

- Click **Save**.

 **Tip: Reporting issues to support**

When you are reporting an issue to support, set the log level to 3 (debug) first, and then reproduce the issue and create a support bundle. This will capture much more detail than the default setting, making diagnostics more effective.