

Welcome to PCoIP Software Client for Linux

Welcome to the Teradici PCoIP® Software Client for Linux Administrators' Guide.

PCoIP Software Clients are applications that establish PCoIP sessions with remote Windows or Linux desktops. Connections can be made to virtual machines via Cloud Access Software, and to remote workstations via PCoIP Host Software and Remote Workstation Cards.

This guide explains how to install, configure, and use the PCoIP 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 Teradici PCoIP® Software Client for Linux.

Understanding terms and conventions in Teradici guides

For more information on the industry specific terms, abbreviations, text conventions, and graphic symbols used in this guide, see [Using Teradici Product and Component Guides](#) and the [Teradici Glossary](#).

What's New In this Release?

The following features are supported in this release of the PCoIP Software Client for Linux:

Connecting USB flash devices to a remote host

You can now connect USB flash devices to a remote host. Only flash drives can be connected. Only the USB 2.0 protocol is currently supported.

- USB 3.0 flash drives will not work when plugged into a USB 3.0 port, but will work when plugged into a USB 2.0 port.
- USB 2.0 flash drives will work when connected to a USB 3.0 port.

Improved Audio Input Bandwidth

PCoIP monitors the bandwidth available for audio and selects the audio compression algorithm that provides the best quality possible for the available bandwidth. Previously PCoIP endpoints use the Opus audio codec for audio output only, now this codec is available for audio input. By using the OPUS codec for audio input, high quality audio recording is possible even when bandwidth is limited.

Enhanced Security and Stability

This release contains improvements and enhancements around the security and stability of the Software Client for Linux.

PCoIP Ultra

This release contains improved support for PCoIP Ultra, our latest PCoIP protocol enhancements. This is an evolving feature that will continually improve with each release. For more information see the [PCoIP Agent](#) documentation.

Auto-Forward USB Devices

This release enables USB devices to be automatically redirected to the remote desktop on connection. Either all devices can be forwarded or a set of devices specified by VID/PID.

Additional Documentation

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

- For more information about Teradici Cloud Access Software, including detailed information on included PCoIP components as well as Teradici All Access 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 Standard Agent for Windows](#)
 - [Teradici PCoIP Graphics Agent for Windows](#)
 - [Teradici PCoIP Standard Agent for Linux](#)
 - [Teradici PCoIP Graphics Agent for Linux](#)
- For information about Teradici PCoIP Host Software, which is required on remote workstations using a Teradici PCoIP Remote Workstation Card, see the following pages:
 - [PCoIP Host Software for Windows](#)
 - [PCoIP Host Software for Linux](#)

System Requirements

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

System	Version Required
PCoIP Software Client Operating Systems	<ul style="list-style-type: none"> • Ubuntu Bionic Beaver 18.04 <p>You can use an Ubuntu 18 container if you wish to run the client on another OS.</p>
Compatible PCoIP agents	All PCoIP agents and versions
Compatible Teradici Remote Workstation Cards	TERA22x0 with firmware 5.0.1+
Compatible PCoIP Host Software	<ul style="list-style-type: none"> • Host Software for Windows: 4.3.1+ • Host Software for Linux: 4.7.0+

Remote Workstation Platforms

PCoIP Host Software must be installed on Remote Workstation machines to enable keyboard and mouse functionality.

Host Instance Requirements

Instance Requirements	
Operating Systems	<ul style="list-style-type: none"> • Ubuntu 16.04 LTS, 18.04 LTS • RHEL/CentOS 7.5, 7.6

Instance Requirements	
Remote Host Memory	At least 2GB of RAM is required on the host desktop. The agent should have at least 512MB of available memory.
Remote Host CPUs	At least 2 CPUs are required on the host desktop. Processors must support Streaming SIMD Extensions (SSE) 4.2. To use PCoIP Ultra, processors must support AVX2 instruction set.
Network Ports	The following ports must be open on the host desktop: <ul data-bbox="437 680 587 869" style="list-style-type: none">• TCP 443• TCP 4172• UDP 4172• TCP 60443
Storage	At least 100MB for installation and 100MB for logging are recommended.
User	Cannot be root. You must create a user account for PCoIP connections.

Audio Support

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

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.

When to Enable PCoIP Ultra

In release 19.11, PCoIP Ultra supports the following use cases:

- Users requiring CPU-optimized delivery of **4K UHD, high-framerate video playback**.
- Efficient scaling across multicore CPUs, leveraging AVX2 instruction sets.

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), 2.15 or later
- A PCoIP Software Client (any type), 2.15 or later
- The CPUs on both the agent and the client machines must support the AVX2 instruction set.

Enabling PCoIP Ultra

In order to enable PCoIP Ultra features you need to turn on GPO variables. For information on this, see [Enabling PCoIP Ultra](#).

Printing Support

When a local printer is visible to a client computer by USB connection or local network connection, it may be possible to print from the host machine. Refer to the following table for local printing support.

Cloud printing is available from all clients if supported by the desktop system and correct PCoIP Agent.

	PCoIP Agent for Windows	PCoIP Agent for Linux
Local USB Printing	✓ printer is connected to a USB port on the client computer	—
Local Network Printing	✓	—
Cloud Printing	✓	—

The PCoIP Standard Agent for Linux does not support local printing on remote clients.

Local, network, and cloud printers are supported in various ways:

- Linux hosts can print to any printer on the host machine's local area network.
- If your host workstation has access to the Internet, cloud-based printing is supported through cloud-printing services such as Google Cloud Print and HP Mobile 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.

Client USB Protocol Support

USB 3.0 flash drives will not work when plugged into a USB 3.0 port, but will work when plugged into a USB 2.0 port.
USB 2.0 flash drives will work when connected to a USB 3.0 port.

Isochronous USB device support

USB devices with time-sensitive information, such as webcams, are not generally supported. However, Teradici's technology partners provide additional solutions to expand peripheral support such as webcams. For more information, look for partners listed under *Peripherals* on the [Teradici Technology Partners](#) page.

Wacom Tablet Support

Wacom Tablets are not supported with the PCoIP Software Client for Linux at this time.

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.

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. Download the Teradici repository:

```
sudo wget -O teradici-repo-latest.deb https://downloads.teradici.com/ubuntu/  
teradici-repo-$(lsb_release -cs)-latest.deb
```

2. Install the Teradici repository:

```
sudo apt install ./teradici-repo-latest.deb
```

3. Install the PCoIP Software Client for Linux:

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

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

It is also possible to install and run the PCoIP Software Client for Linux within a docker container, for information on this process, see [Docker Containers](#).

The reference section also has information on [Disabling the Virtual Terminal Functionality](#) and configuring [Linux Keyboard Shortcuts](#).

Kernel Network Configuration

The `pcoip-configure-kernel-networking.sh` script is installed with the 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_default` : A kernel parameter that controls the default size of receive buffers used by sockets.
- `rmem_max` : A kernel parameter that controls the maximum size of receive buffers used by sockets.

 **rmem_max size**

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

- `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.

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
```

Using the PCoIP Software Client

After installing a PCoIP Software Client on your client machine, you can connect to the following PCoIP solutions or products or hosts:

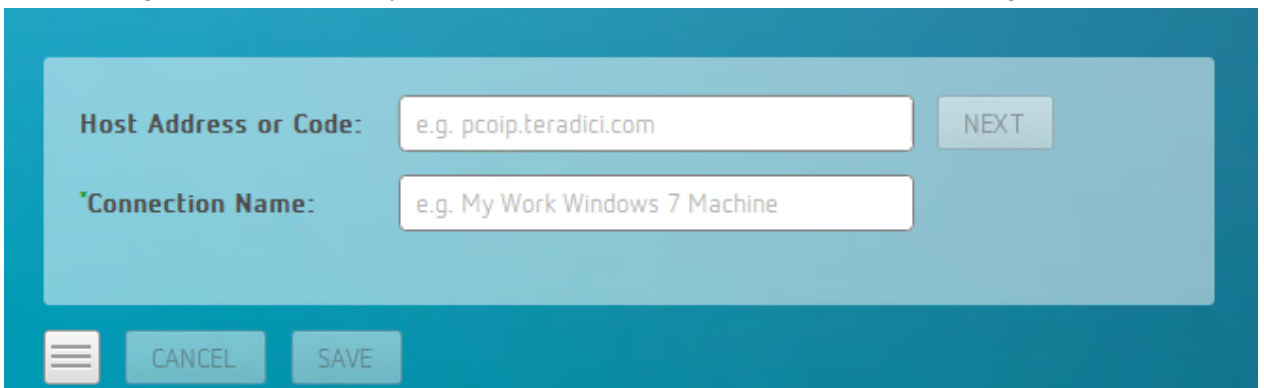
- Teradici PCoIP Graphics Agent or PCoIP Standard Agent installed as part of Teradici Cloud Access Software.
- Teradici PCoIP Remote Workstation Card and Teradici PCoIP Host Software installed in a Windows or Linux workstation.

Connecting to Virtual Machines

You can connect to virtual Windows or Linux hosts that have a PCoIP Standard Agent or PCoIP Graphics Agent installed. Connections can be made directly to individual host machines, or via a connection broker in managed deployments.

To connect to a remote workstation or virtual desktop:

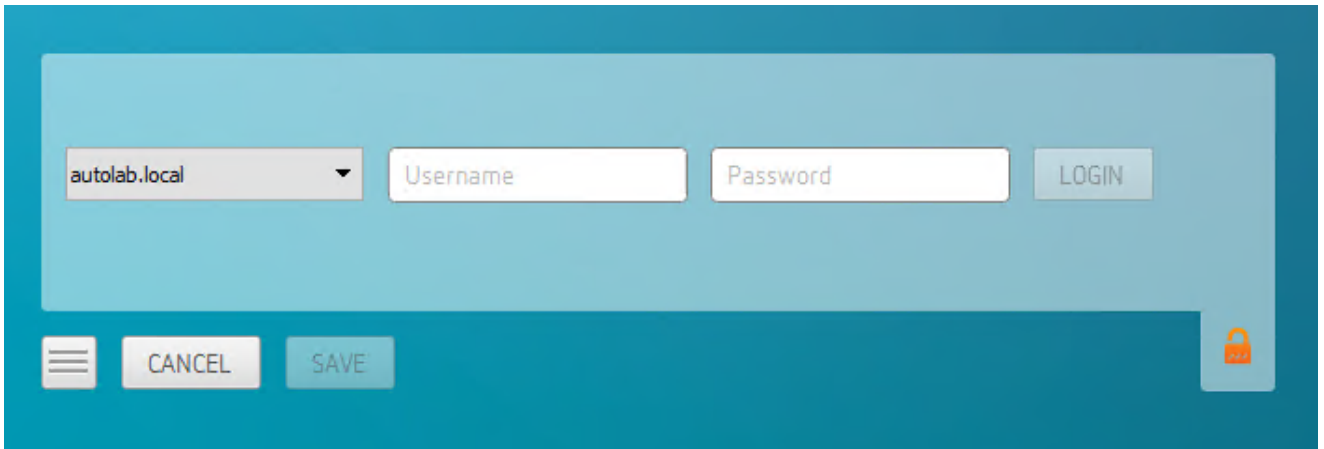
1. Double-click the PCoIP Client desktop icon, alias, or program file *PCoIPClient* to launch the application.
2. In the *Host Address or Code* field, enter one of the following:
 - For **direct connections**, provide the address of the host machine.
 - For **managed connections**, provide the address of the connection manager.

The image shows a screenshot of a software dialog box for connecting to a virtual machine. The dialog has 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 input field is labeled "Connection Name:" and contains the text "e.g. My Work Windows 7 Machine". At the bottom of the dialog, there are three buttons: a menu icon (three horizontal lines), a "CANCEL" button, and a "SAVE" button.

If you want to save this connection later for easy recall, enter a name in the *Connection Name* field. You will save the connection in step 5.

3. Click **NEXT**.

4. On the next screen, select your domain from the dropdown list, enter your user name and password for the desktop, and then click **LOGIN**.



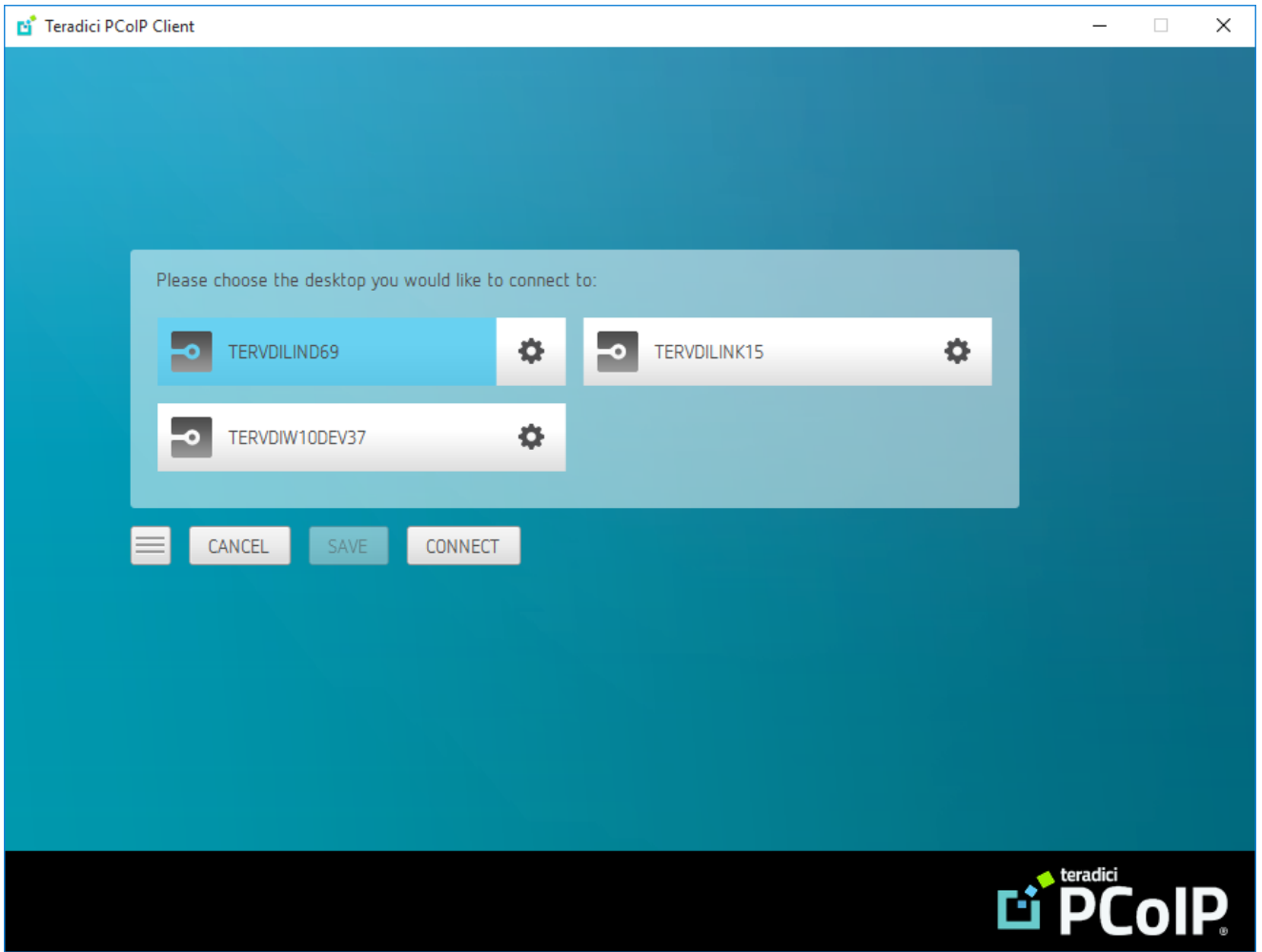
If your domain does not appear in the list, specify it along with your user name (for example, `MyDomain\MyUserName`).

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.

To connect to a remote workstation or virtual desktop:

5. If your login is successful, the following screen appears with a list of available desktops:



6. Click **Connect** to connect to the selected desktop.

 **A short interface delay is normal**

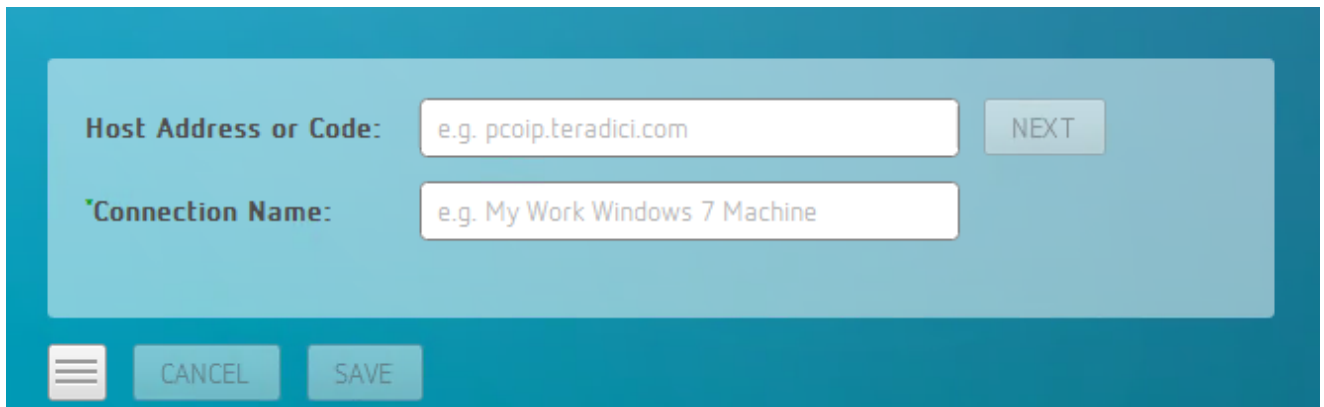
When a session is first connected, it may take a few seconds before you can take control of the keyboard and mouse. This is normal behavior.

Connecting to Amazon Workspaces

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

To connect to a virtual desktop:

1. Double-click the PCoIP Client desktop icon, alias, or program file *PCoIPClient* to launch the application.
2. In the *Host Address or Code* field, enter the Amazon Workspaces registration code:

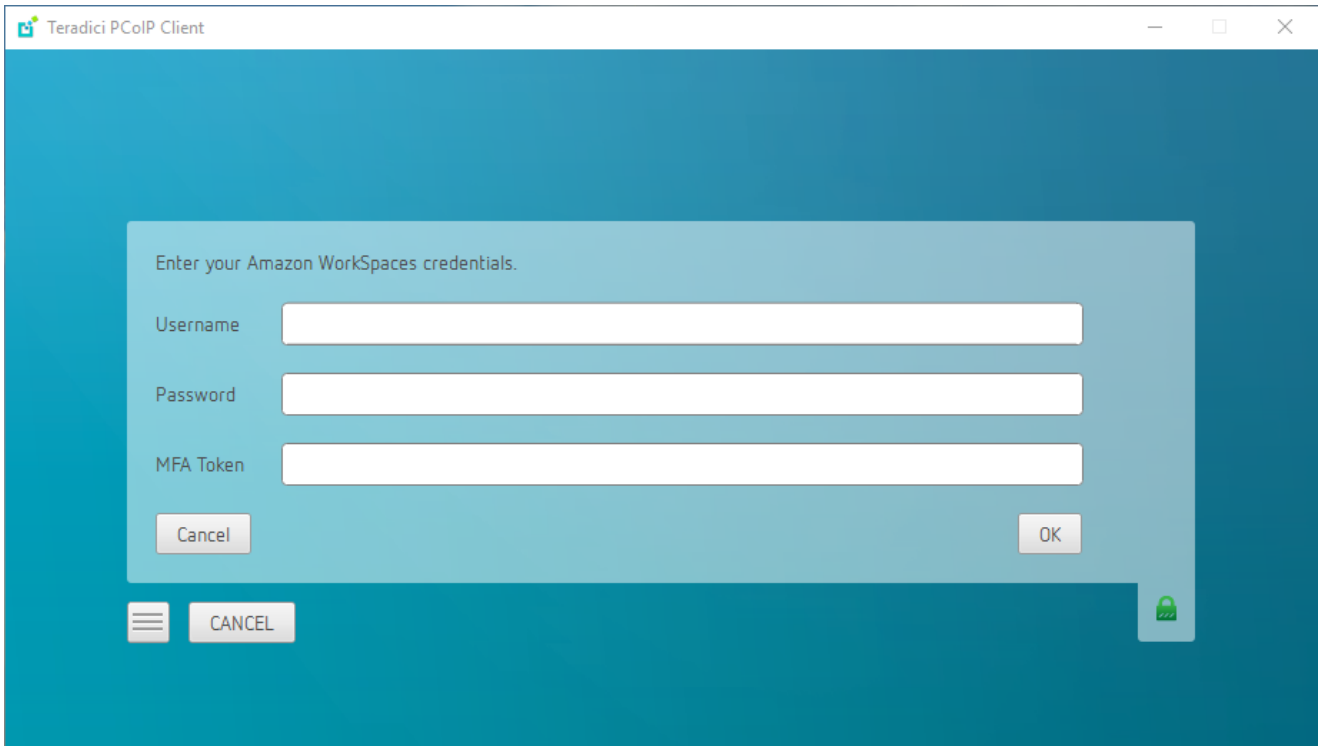
A screenshot of the PCoIP Client application's connection dialog box. The dialog has a teal background. It contains two input fields: 'Host Address or Code:' with the example text 'e.g. pcoip.teradici.com' and 'Connection Name:' with the example text 'e.g. My Work Windows 7 Machine'. A 'NEXT' button 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 later for easy recall, enter a name in the *Connection Name* field.

3. Click **NEXT**.

To connect to a virtual desktop:

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



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. To learn more about certificates, see the PCoIP agent administrators guides listed in the Teradici Cloud Access Architecture Guide.

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 Teradici PCoIP Remote Workstation Cards

You can connect to remote workstations with a Teradici PCoIP Remote Workstation Card and PCoIP Host Software installed. Refer to [System Requirements](#) for supported versions.

Initial Workstation Configuration

Before you can connect to your remote workstation for the first time, a few things must be configured on the host machine.

These configuration actions only need to be taken once on each remote workstation in your system:

- **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 [Tera2 PCoIP Zero Client Firmware 4.x and Remote Workstation Card Firmware 4.9 Administrators' Guide](#).

- **Disable temporal dithering**

Temporal dithering causes blurriness, heavy packet loss, and high CPU usage on the PCoIP Software Client machine. See [Should I disable the dithering feature of my graphics card in a remote workstation environment? \(KB 15134-207\)](#) for more information.

- **Linux workstations: configure PCoIP Host Software to Start Automatically**

To configure the PCoIP host 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 host software. For details, see [Installing PCoIP Host Software Binary RPM in the PCoIP® Host Software for Linux User Guide](#).

Connecting to a Remote Workstation Card

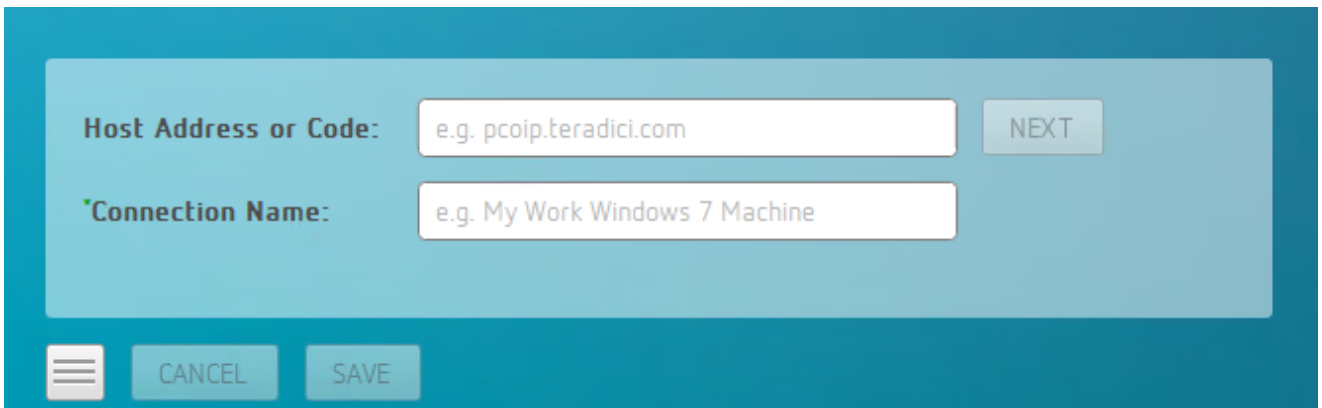
Once the remote workstation is properly configured, you can connect to it from the PCoIP Software Client.

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.

To connect 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.



2. In the **Host Address and Code** box, enter the fully-qualified computer name or IP address of the Teradici PCoIP Remote Workstation Card installed in the remote workstation.
3. *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.

4. 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.

5. 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.

Connecting to a USB Device

Remote Windows hosts using the PCoIP Standard Agent or the PCoIP Graphics Agent can use USB devices that are attached to the client. When you connect a local USB device to your remote host it will be disabled on the client machine.

USB device connections do not persist across multiple PCoIP sessions. You must connect your USB device each time you connect.

PCoIP Agent needs to be configured to enable USB redirection

The USB menu will only show up if the PCoIP Agent has been configured to enable USB redirection and a USB device has been detected by the PCoIP Client.

USB Auto-Forward

Automatic bridging enables you to auto bridge all non-HID USB devices. Use the `usb-auto-forward` command line parameter.

USB Vendor ID/Product ID Auto-Forward

You can automatically forward up to 20 USB devices to the host at the start of the session by calling the PCoIP client executable with `vidpid-auto-forward` and the required VID/PID pairs. Devices that are auto-forwarded will appear in the USB Devices dialog box, enabling users to connect or disconnect them from the host. The following rules apply to VID and PID values:

- VID/PID values are comma-separated: `xxx , yyy`
- VID/PID pairs are space-separated: `aaa, bbb ccc, ddd`
- VID/PID pairs with invalid values will be discarded. Discarded rules appear in the event log.
- Up to 20 devices will be passed; if more than 20 are attempted, the first 20 will be accepted and rest ignored. Ignored rules appear in the event log.

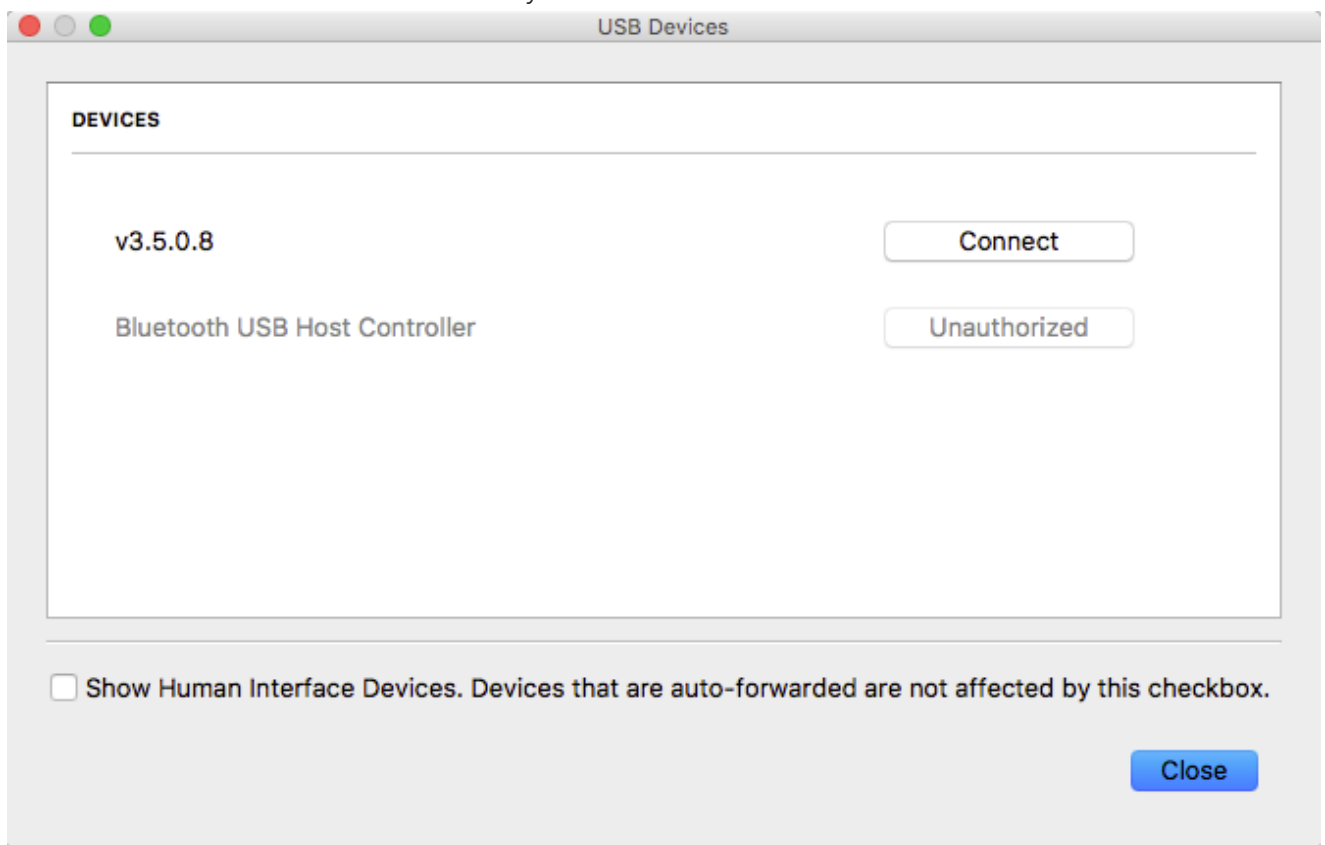
To connect to a USB device:

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

A list of USB devices connected to your client machine appears. Integrated USB devices, such as built-in cameras on laptops, will appear in this list along with devices you have plugged in yourself.

Some devices will identify themselves only as **USB Device**.

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



Connecting to Human Interface Devices

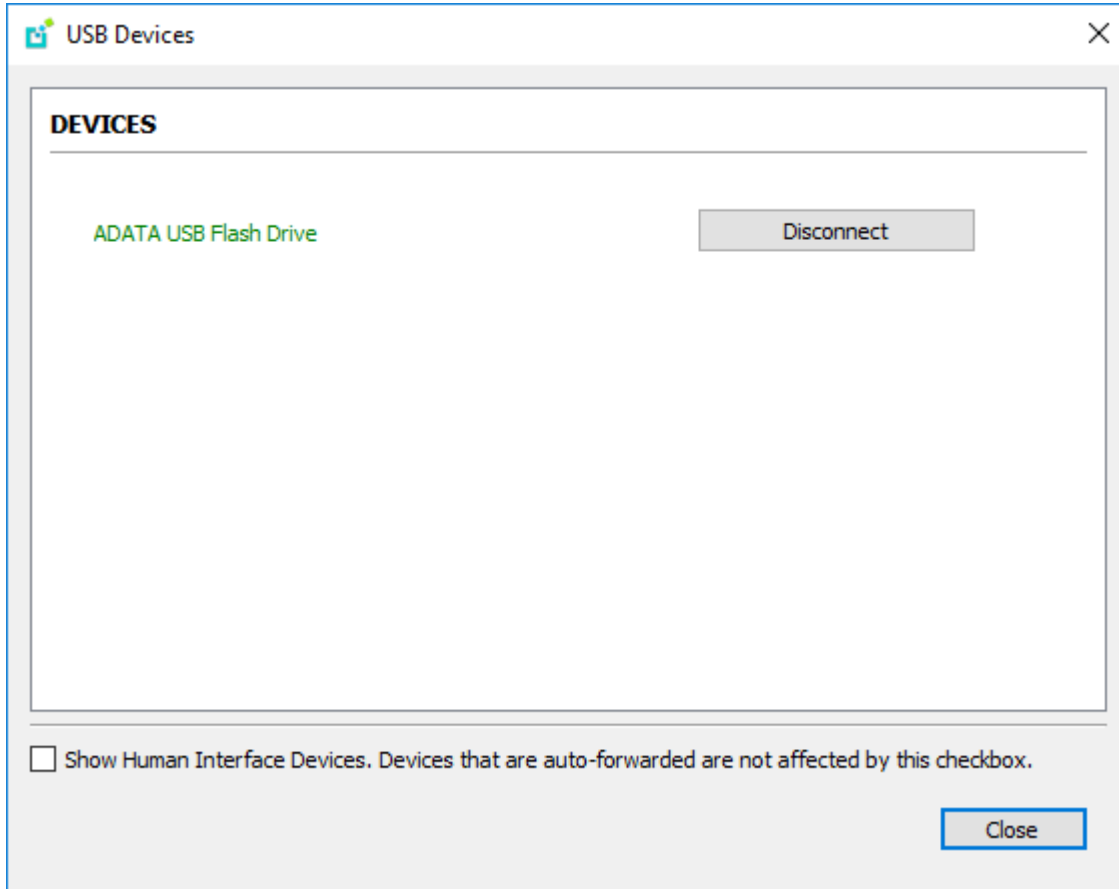
Most Human Interface Devices (HIDs), such as keyboards and mice, are automatically handled by the PCoIP Software Client and don't appear on in this list even if they use a USB connection.

If you need to connect a Human Interface Device that can't be locally processed, like a 3D mouse or a Wacom tablet, enable the **Show Human Interface Devices** checkbox to reveal the device in the USB device list and click its Connect button.

You may also have to complete additional configuration steps or install drivers on the host machine.

To 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.

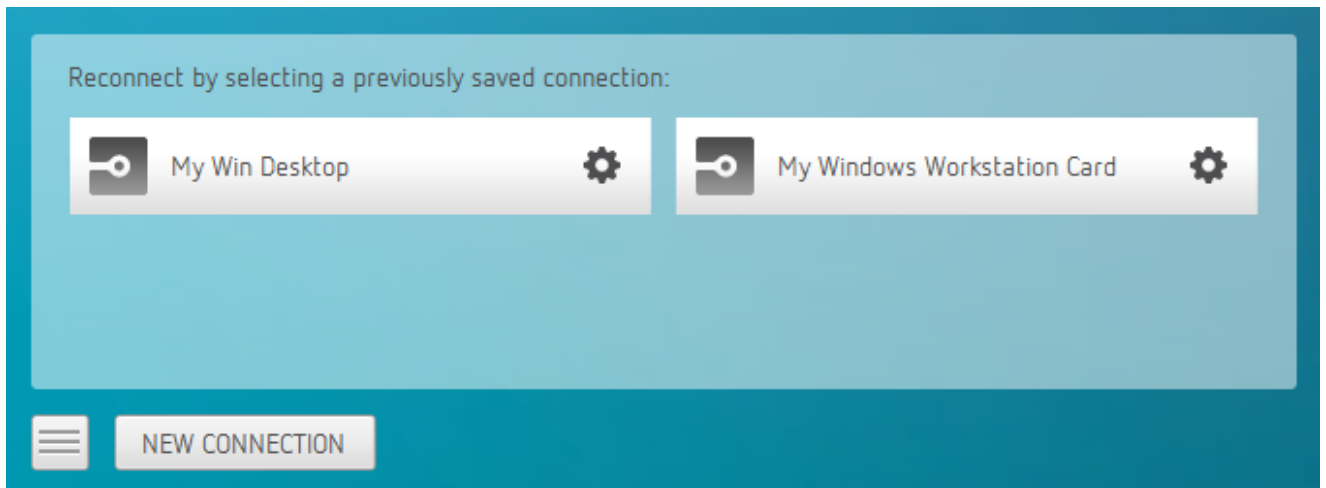


Using Saved Connections

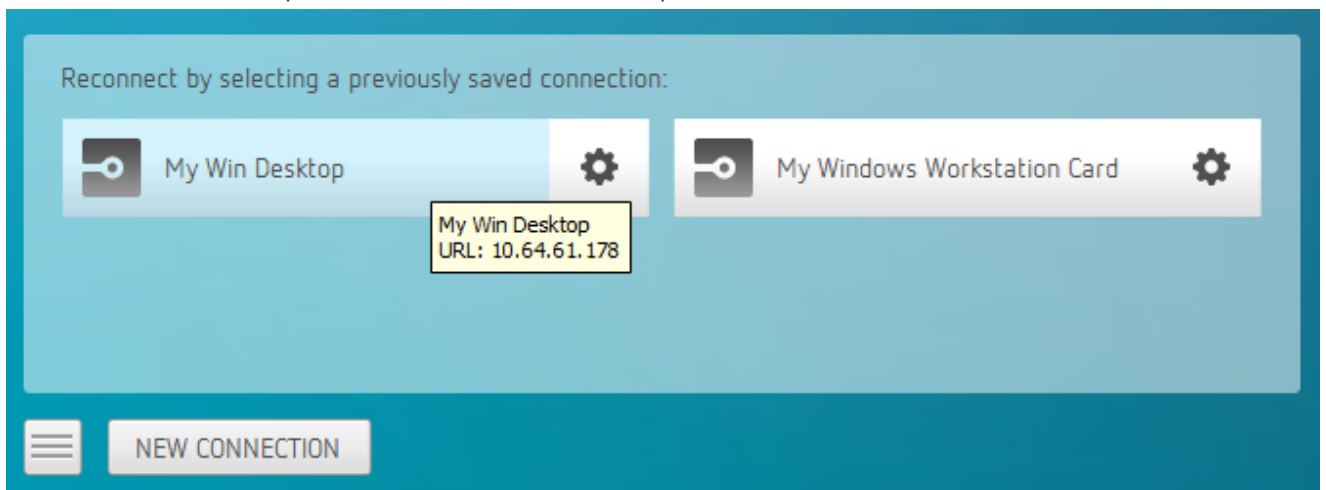
Once you have saved a connection, you can use it to reconnect easily.

To reconnect using your saved connection:

1. Click the button for the saved connection. The button label displays the connection name you assigned when you configured the connection.

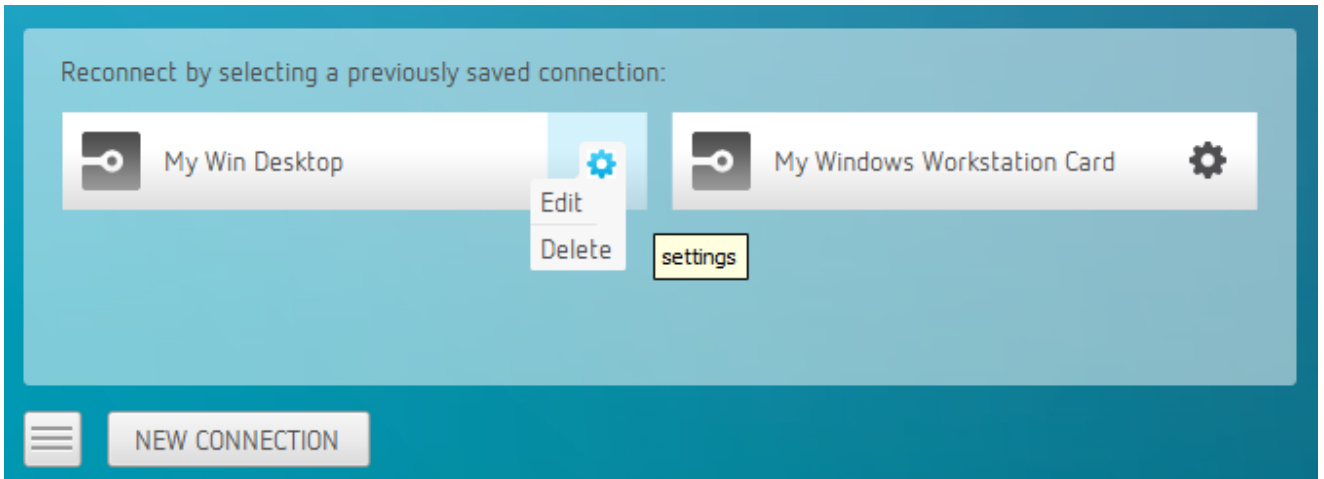


2. To see the connection address, hover your mouse over the saved connection. Hovering over a saved virtual desktop will also show the desktop name.

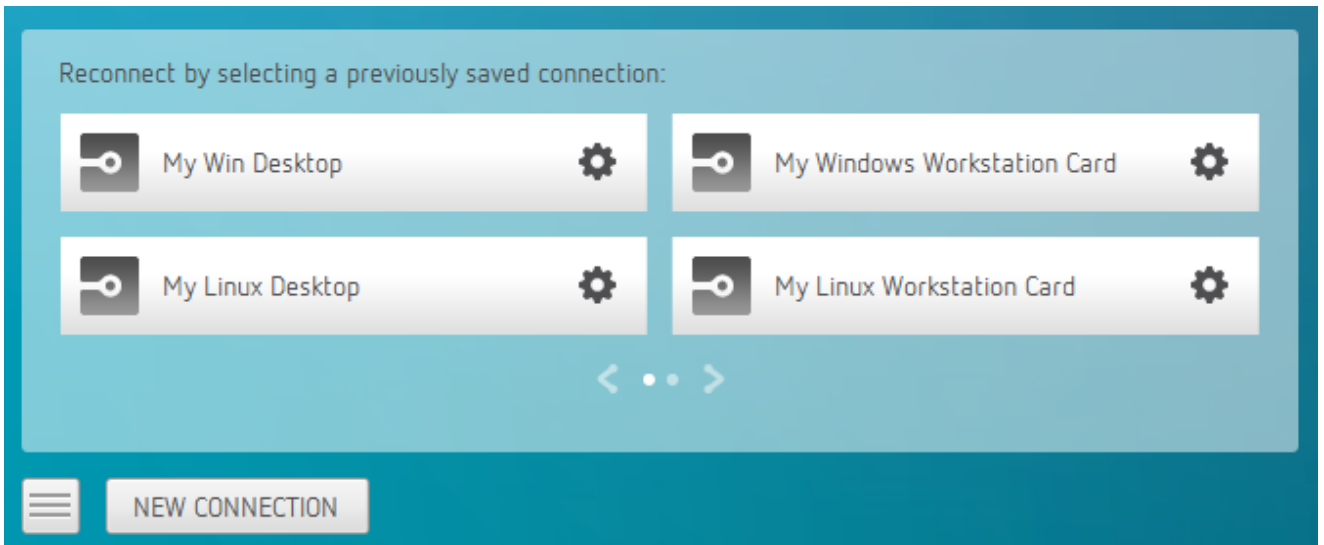


To reconnect using your saved connection:

3. To edit or delete a saved connection, click the configure button on the right, and then select the desired option from the popup menu.



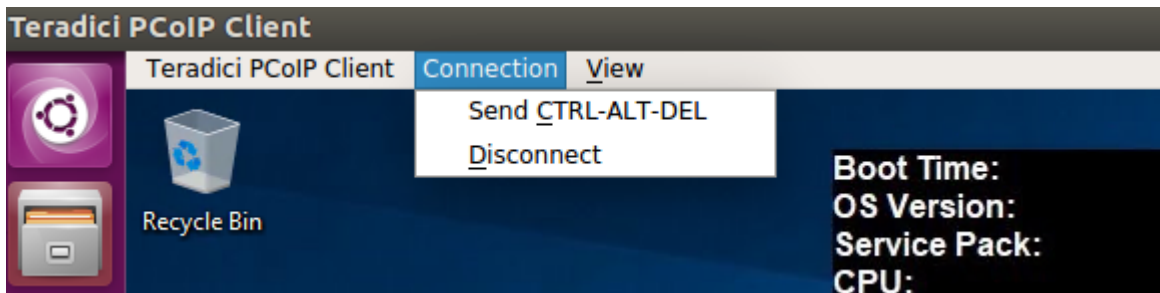
4. If you have saved multiple connections, click the desired one to reconnect. If you have more than four saved connections, additional saved connection buttons appear in an extended area of the page. Use the forward and back arrows to navigate between areas.



5. Any time you wish to connect to a new workstation, just click **NEW CONNECTION** to return to the main screen, and then enter the connection details.

Disconnecting a Session

To disconnect a PCoIP session from either client, select the **Connection > Disconnect** menu option.



Quitting the application will also disconnect the current session.

Session Reconnection

If a network interruption is detected, the PCoIP session enters a reconnecting phase. In this phase the client will show you the network reconnecting dialog which indicates that there is a network issue and that the client is trying to reconnect and re-establish the PCoIP session. You can click **disconnect** to cancel the attempted reconnect and disconnect the session completely. If the reconnection is successful, the notification dialog will disappear and the session will be restored, if not, the session will be disconnected completely.

Changing the PCoIP Software Client Window Mode

You can use the PCoIP Software Client in full-screen or windowed mode. Full-screen mode is recommended in most cases.

Activating Full Screen Modes

The PCoIP Software Client provides two full-screen modes: one monitor and all monitors.

To switch from windowed mode to full-screen mode:

- To use one full-screen display, select **View > Show Fullscreen One Monitor**.

All open windows and applications will be moved to a single full-screen display. This is equivalent to disconnecting all but one monitor from a physical host.

- To use all available full-screen displays, select **View > Show Fullscreen All Monitors**.

This mode shows full-screen displays on all client monitors.

Keyboard shortcut

You can also enter full-screen mode by pressing **Ctrl+Alt+Enter** while in windowed mode. The shortcut will activate whichever full-screen mode was used last, or *all monitors* if no previous selection was made.

To switch from Fullscreen One Monitor to Fullscreen All Monitors mode:

1. Reveal the menu bar by moving the mouse cursor to the top of a client display.
2. Select **View > Show Fullscreen All Monitors**.

To switch from Fullscreen All Monitors to Fullscreen One Monitor mode:

1. Reveal the menu bar by moving the mouse cursor to the top of a client display.
2. Select **View > Show Fullscreen One Monitor**.

Persistent Display Topology

Depending on the display topology mode you have selected, for example **Fullscreen One Monitor**, if you disconnect and then reconnect to the session, it will maintain that same mode upon reconnection. The state and mode will be preserved.

Minimizing the PCoIP Software Client from a Full-screen Mode

To minimize a software client in full-screen mode:

1. Reveal the menu bar by moving the mouse cursor to the top of any display.
2. Select **View > Minimize Client**.

Keyboard shortcut

You can also minimize the client by pressing **Ctrl+Alt+m** while in any full-screen mode.

Activating Windowed Mode

To switch from full-screen mode to windowed mode:

1. Reveal the menu bar by moving the mouse cursor to the top of any display.
2. Select **View > Leave Fullscreen**.

Keyboard shortcut

You can also enter windowed mode by pressing **Ctrl+Alt+Enter** while in any full-screen mode.

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 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.

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.

The enhanced A/V Sync feature is turned off by default and needs to be turned on for the menu items to appear.

To turn on A/V Sync:

1. Go to `~/.config/Teradici/Teradici\PCoIP\Client.ini` and add the following line:

```
enable_enhanced_avsync=1
```

The above text is OS specific. Note the setting changed from 0 to 1.

When enabled, a check mark will appear beside the enhanced A/V Sync menu item on that display. It is disabled on all displays by default.

To use enhanced A/V Sync:

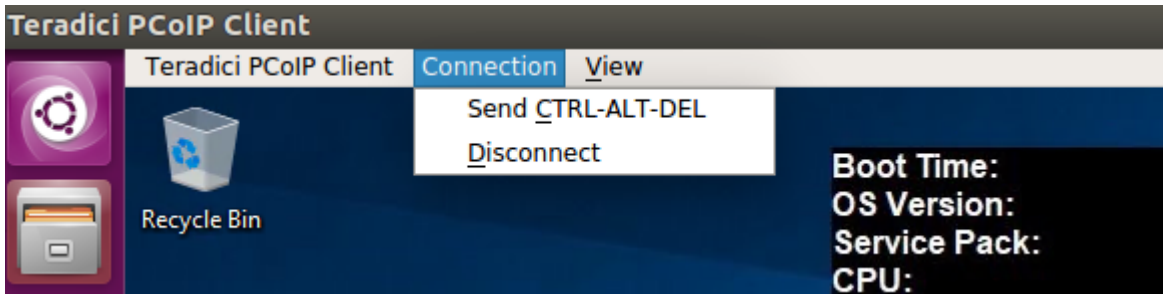
1. If you are in full-screen mode, reveal the menu bar on the display you want to enhance by moving the mouse cursor to the top of the screen.
2. On the display you want to enhance select **View>Enhanced A/V Sync** to toggle the enhanced sync mode.

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.

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

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:

```
pcoip.security_mode = 2
```

System Libraries

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

- libboost
- libGL
- libprotobuf
- libpthread
- libssl
- libzma

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

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.

Docker Containers

Docker containers can be used to provide a Ubuntu 18.04 environment for the PCoIP client to run within. This can be used to isolate the client from the rest of the system or to run the client on a Linux distribution other than Ubuntu 18.04.

There are three steps involved in using the docker container:

1. Setup your docker environment for running docker commands.
2. Build a docker image as defined by the dockerfile.
3. Run the client within a container instance of the docker image.

Example Instructions Only

The instructions in this section outline an example of how to run the client within a docker container. Individual deployments may require modifications to this example. For a full description of docker, see the documentation at <https://docs.docker.com>.

Setting up the Docker Environment

The following section outlines how to setup docker on Ubuntu 18.04:

1. Execute the following commands to install the docker package and enable docker access to X11 to display the client GUI:

```
$ sudo apt-get install docker  
  
$ xhost +local:docker
```

2. Enable your user to properly use the docker commands without using sudo for every command. Execute the following command and then log out and back in again:

```
$ sudo groupadd docker  
  
$ sudo usermod -a -G docker $USER
```

Creating a Docker Image

A Dockerfile defines the runtime environment within the container that the client will run in. The contents of the Dockerfile for the Linux Client are outlined here:

```
FROM ubuntu:18.04

# Use the following two lines to install the Teradici repository package
RUN apt-get update && apt-get install -y wget
RUN wget -O teradici-repo-latest.deb https://downloads.teradici.com/ubuntu/teradici-repo-bionic-latest.deb
RUN apt install ./teradici-repo-latest.deb

# Uncomment the following line to install Beta client builds from the internal repository
#RUN echo "deb [arch=amd64] https://downloads.teradici.com/ubuntu bionic-beta non-free" > /etc/apt/sources.list.d/pcoip.list

# Install apt-transport-https to support the client installation
RUN apt-get update && apt-get install -y apt-transport-https

# Install the client application
RUN apt-get install -y pcoip-client

# Setup a functional user within the docker container with the same permissions as your local user.
# Replace 1000 with your user / group id
# Replace myuser with your local username
RUN export uid=1000 gid=1000 && \
  mkdir -p /etc/sudoers.d/ && \
  mkdir -p /home/myuser && \
  echo "myuser:x:${uid}:${gid}:Myuser,,,:/home/myuser:/bin/bash" >> /etc/passwd && \
  echo "myuser:x:${uid}:" >> /etc/group && \
  echo "myuser ALL=(ALL) NOPASSWD: ALL" > /etc/sudoers.d/myuser && \
  chmod 0440 /etc/sudoers.d/myuser && \
  chown ${uid}:${gid} -R /home/myuser

# Set some environment variables for the current user
USER myuser
ENV HOME /home/myuser

# Set the path for QT to find the keyboard context
ENV QT_XKB_CONFIG_ROOT /user/share/X11/xkb
```

```
ENTRYPOINT exec pcoip-client
```

To build a docker image execute the following command:

```
$ cd <directory with Dockerfile>
```

```
$ docker build -t pcoip-client .
```


Running the Client in a Container

Once you have a docker image with the tag `pcoip-client`, you can run the client in a docker container. Execute the following command to build the pcoip-client docker image:

```
$ docker run -d --rm -h myhost -v $(pwd)/.config:/home/myuser/.config/Teradici -v $(pwd)/.logs:/tmp/Teradici/$USER/PCoIPClient/logs -v /tmp/.X11-unix:/tmp/.X11-unix -e DISPLAY=$DISPLAY pcoip-client
```

The following table outlines the parameters used in the example above:

Parameters	Definition
<code>-d</code>	Runs the docker container in detached mode (optionally the client could be run in foreground mode).
<code>-rm</code>	Cleans up the container filesystem after the container exits.
<code>-h</code>	Specifies the hostname to use for the container.
<code>-v</code>	Maps local volumes to volumes in the container.
<code>\$(pwd)/.config:/home/myuser/.config/Teradici</code>	This allows persistent storage of the client configuration and saved connections between container runs. The files are stored in <code>.config</code> in the current directory.
<code>\$(pwd)/.logs:/tmp/Teradici/\$USER/PCoIPClient/logs</code>	This allows for persistent storage of the client log files after the client exits. The log files are stored in <code>.logs</code> in the current directory.
<code>/tmp/.X11-unix:/tmp/.X11-unix</code>	This allows access to the X11 display from the container.
<code>-e</code>	Set environment variable
<code>DISPLAY=\$DISPLAY</code>	This sets the correct X11 display within the container.
<code>pcoip-client</code>	This is the tag of the container to run, the <code>pcoip-client</code> tag was created in the previous docker build step.

Linux Keyboard Shortcuts

There 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.

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.

Contacting Support

If you encounter problems installing or using Teradici technology, you can:

- Check for updated release notes, which may address the issue you are experiencing. Release notes are published on [Teradici Support](#).
- Browse the Teradici Knowledge Base.
- Submit a [support ticket](#).

The Teradici Community Forum

The PCoIP Community Forum allows users to have conversations with other IT professionals to learn how they resolved issues, find answers to common questions, have peer group discussions on various topics, and access the Teradici PCoIP Technical Support Service team. Teradici staff are heavily involved in the forums.

To join the Teradici community, visit the [Teradici Community Forum](#).

Creating a Technical Support File

Teradici may request a support file from your system in order to troubleshoot and diagnose PCoIP issues.

The support file is a tar.gz archive containing PCoIP Software Client for Linux logs and other diagnostic data that can help support diagnose your problem.

To create a support file:

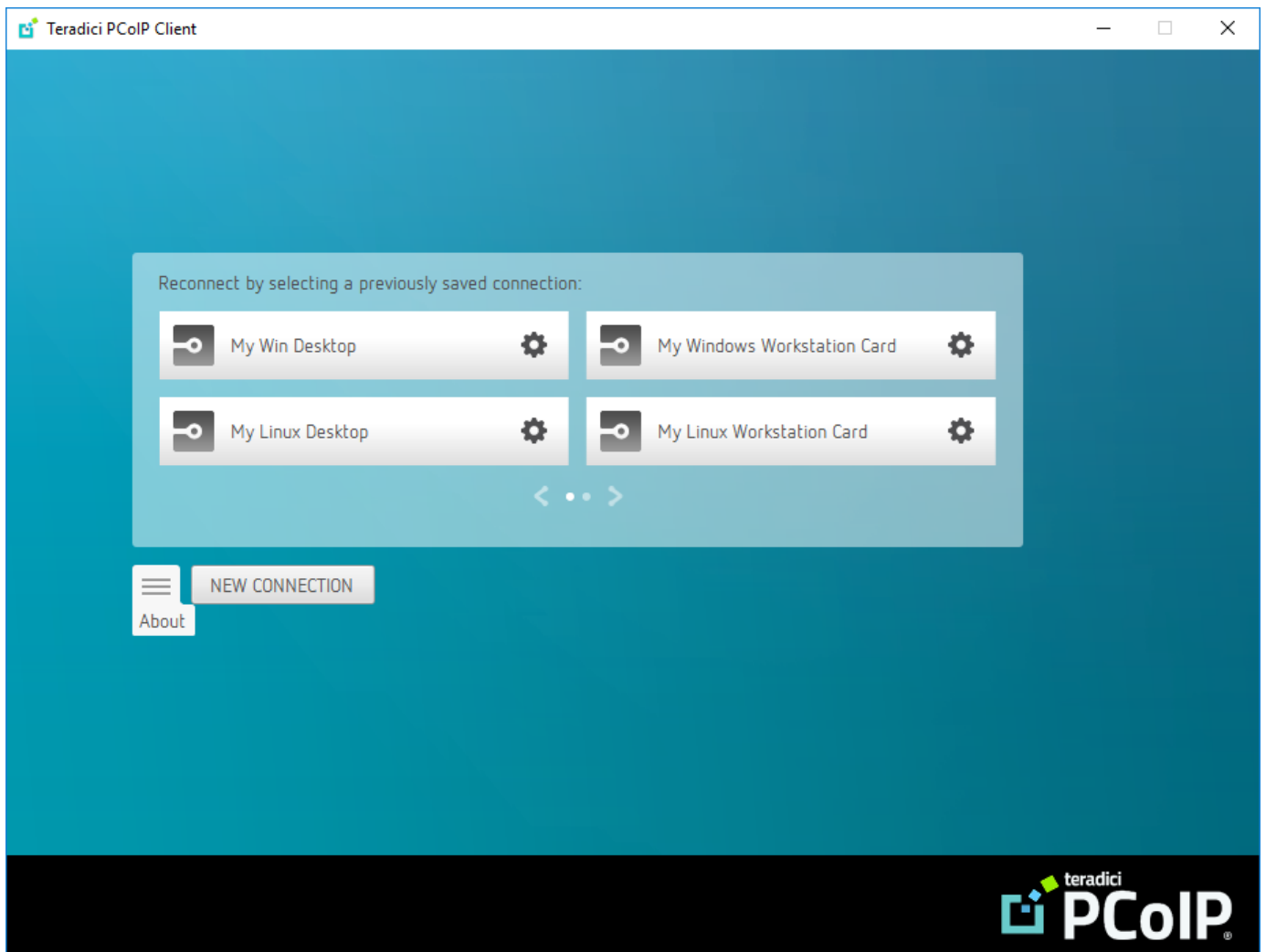
1. Open a terminal window.
2. Launch the support bundler:

```
username$ pcoip-client-support-bundler
```

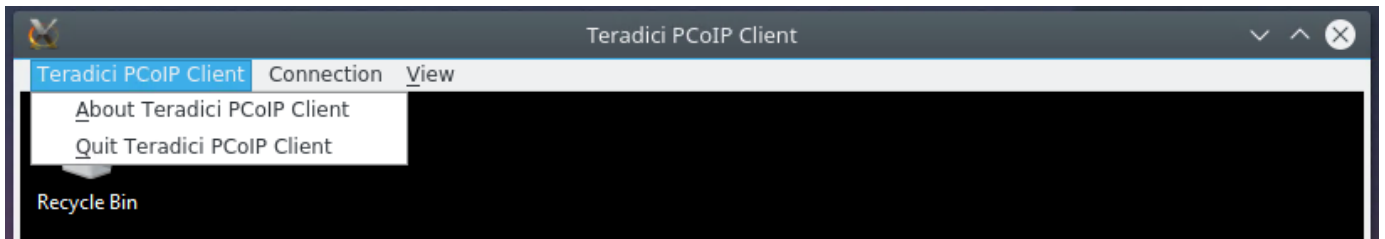
The file will be created and placed in the user's home directory.

Checking the PCoIP Software Client Software Release

The PCoIP Software Client pre-session window contains an About button in the lower left of the window. Click this button and then select **About** from the popup menu to display the PCoIP Software Client software release version.



From either client, you can also select the Teradici PCoIP Client > About Teradici PCoIP Client menu to display the software release version from within a PCoIP session.



 **About menu item only appears when the client is in session**

The *About Teradici PCoIP Client* menu item only appears when the client is in session. The menu item is not available from the pre-session GUI.

Troubleshooting Your PCoIP Software Client

This section demonstrates using PCoIP Software Client log files to troubleshoot problems you may encounter with your PCoIP Software Client.

If you experience a problem, recreate the issue, generate a support bundle and contact [Teradici Support](#). You can also check the [Teradici PCoIP Community Forum](#) for troubleshooting information about this product.

Session Log IDs

The PCoIP Software Client creates a unique session ID when a new session is established, and distributes that ID to all components in the system. When PCoIP components generate log messages, they are prefixed by this unique session ID, allowing administrators and support to easily group events by session across multiple components:

```
yyyy-mm-ddThh:mm:ss.ffffffZ xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx > ...
```

For example:

```
2015-11-06T08:01:18.688879Z 4208fb66-e22a-11d1-a7d7-00a0c982c00d > ...
```

Log messages that do not pertain to a specific session will show a string of zeroes in place of the session log ID number.

Setting Log Levels

You can set log levels to determine the level of details provided in the log. Log levels range from 0 to 3, where 0 provides the least information and 3 provides the most information.

To set log levels:

- `pcoip-client -l x`

where `l` is lowercase L and `x` is desired the log level (1, 2, or 3).

Locating PColP Software Client for Linux Log Files

On a Linux computer, client logs are placed in `/tmp/Teradici/<USERNAME>/logs/`.

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

Reconnecting a PCoIP Session

If a network interruption is detected, the PCoIP session enters a reconnecting phase. In this phase the client will show you the network reconnecting dialog which indicates that there is a network issue and that the client is trying to reconnect and re-establish the PCoIP session. You can click **disconnect** to cancel the attempted reconnect and disconnect the session completely. If the reconnection is successful, the notification dialog will disappear and the session will be restored, if not, the session will be disconnected completely.