

PCoIP[®] Host Software for Linux User Guide

TER1104006

Issue 7

teradici[®]
PCoIP

Teradici Corporation
#101-4621 Canada Way, Burnaby, BC V5G 4X8 Canada
phone +1.604.451.5800 fax +1.604.451.5818
www.teradici.com



The information contained in this documentation represents the current view of Teradici Corporation as of the date of publication. Because Teradici must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Teradici, and Teradici cannot guarantee the accuracy of any information presented after the date of publication.

This document is for informational purposes only. TERADICI MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS DOCUMENT.

Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Teradici Corporation.

Teradici may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Teradici, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property. Visit [Notice of Intellectual Property Rights](#) for more information.

© 2000-2015 Teradici Corporation. All rights reserved.

Teradici, PC-over-IP, and PCoIP are trademarks of Teradici Corporation and may be registered in the United States and/or other countries. Any other trademarks or registered trademarks mentioned in this release are the intellectual property of their respective owners.

Revision History

Version	Date	Description
7	Sep. 30, 2015	Updated for release 4.7.0.
6	July 18, 2014	Updated for release 4.5.0.
5	July 24, 2013	Updated for release 4.1.6.
4	Jan. 28, 2013	Updated for release 4.0.8.
3	Oct. 29, 2012	Updated for release 4.0.5.
2	May 18, 2012	Updated for release 3.0.6.
1	July 11, 2011	Initial release.

Contents

1 Introduction	8
1.1 Audience	8
2 PCoIP Host Software Overview	9
2.1 System Requirements	11
2.2 Soft Client Restrictions	11
2.3 Tested Linux Distributions	12
3 PCoIP Host Software Installation	13
3.1 Enabling Host Driver Function	13
3.2 Setting Up a Development System	14
3.2.1 Requirements	14
3.2.2 Installing the Required Tools/Libraries	14
3.3 Building a Binary RPM	15
3.3.1 Requirements	15
3.3.2 Unpacking the Source Code Package	15
3.3.3 Creating a Binary RPM	16
3.4 Installing PCoIP Host Software Binary RPM	16
3.5 Configuration Files	18
3.5.1 Host Software Daemon Configuration Files	18
3.5.2 Host Software Configuration Files	21
4 Uninstalling PCoIP Host Software	23
4.1 Uninstalling the PCoIP Host Software for Linux	23
4.2 Disabling Host Driver Function	23
5 Using the PCoIP UI	24
5.1 Command Line Options—pcopip_agent	25
5.2 Features	26
5.2.1 Security	27
5.2.2 WAN Experience	27
5.3 Network	29
5.4 Statistics	30
5.5 Monitors	31
5.5.1 Xrandr 1.2 or Greater	32
5.5.2 Xrandr 1.1 or Lower	32
5.5.3 Zero Client Display Settings	34
5.6 Image	36

5.7 About	37
6 Troubleshooting	38
6.1 Requirements for Local Cursor and Keyboard	43
6.2 Known Issues When Hiding the Remote Cursor	44
6.3 Local Tablet Driver	45
6.3.1 Local Tablet Driver Requirements	45
6.3.2 Supported Tablets	45
6.3.3 Known Issues When Using Local Tablet Driver	47
Glossary of Definitions	48

Table of Figures

Figure 5-1: System Tray with PCoIP UI Icon (CentOS 6)	24
Figure 5-2: System Tray with PCoIP UI Icon (RHEL 7 and CentOS 7)	24
Figure 5-3: PCoIP UI Right-Click System Tray Menu	24
Figure 5-4: PCoIP Host Software Settings—Features	26
Figure 5-5: PCoIP Host Software Settings—Network	29
Figure 5-6: PCoIP Host Software Settings—Statistics	30
Figure 5-7: PCoIP Host Software Settings—Monitors xrandr 1.2 or Greater	32
Figure 5-8: PCoIP Host Software Settings—Monitors Not Configured	33
Figure 5-9: PCoIP Host Software Setting—Monitors Configured	34
Figure 5-10: OSD User Settings > Display Topology Options	35
Figure 5-11: PCoIP Host Software Settings—Image	36
Figure 5-12: PCoIP Host Software Settings—About	37

Table of Tables

Table 2-1: Host Card and Zero Client Firmware, and Host Software Compatibility Matrix	9
Table 2-2: New Feature Software and Firmware Requirements	10
Table 2-3: Linux Distribution Compatibility Matrix	12
Table 3-1: Required Packages	14
Table 6-1: Common Issues and Solutions	38
Table 6-2: Supported Video Modes	44
Table 6-3: Supported Tablets	45

1 Introduction

The PCoIP host software for Linux is a collection of drivers and applications that lets Linux operating systems (OS) interact with Teradici Tera2 PCoIP host processors installed in the host PC/workstation and a PCoIP client connected to the host. This lets users enable features such as:

- Using local cursor and keyboard.
- Using local Wacom tablet (requires updated host and zero client firmware).
- Pushing client display topology to the host.
- Locking the host PC when a session is terminated.
- Disconnecting a session.
- Viewing host statistics and connection information.
- Adjusting the PCoIP session image quality preference setting.

This document provides guidelines for installing or uninstalling, using, and troubleshooting the PCoIP host software for Linux.

For information on the Linux distributions on which the PCoIP host software was tested, see section [2.3 "Tested Linux Distributions"](#).

Note: PCoIP host software release 4.1.6 for Linux added experimental support for Teradici PCoIP software clients connecting to PCoIP host cards. See section [2.2 "Soft Client Restrictions"](#) for restrictions.

1.1 Audience

This document is written for:

- Network administrators who want to install and configure the host software.
- PC users who want to configure the host software.

2 PCoIP Host Software Overview

PCoIP host cards loaded with firmware releases 3.1.0 or later support an optional feature: the PCoIP Host Driver Function. This feature lets administrators use a PCoIP software package on the host PC or workstation. This software package works with the exposed PCoIP Host Driver Function PCI device function. If an administrator installs the PCoIP host software package on the PC or workstation, users can manage and use the features of the PCoIP Host Driver Function.

The user application, called the host software user interface (UI), is installed when the host software is installed. The UI communicates with the PCoIP firmware via the device drivers installed by the PCoIP host software. You can configure the features of the PCoIP host software through the UI.

Release 4.1.6 and later include an additional software application called the host software daemon. By default the daemon is enabled and starts running when the workstation boots. The daemon is responsible for:

- Starting the UI when the workstation boots and ensuring one instance of the UI is always running. The daemon restarts the UI if it exits for any reason.
- Activating the **Local Cursor and Keyboard** feature for soft client sessions while the login screen is active.
- Disabling the **Local Cursor and Keyboard** feature for zero client sessions when a user logs off.

For details on configuring the daemon, see section [3.5.1 "Host Software Daemon Configuration Files"](#).

The Firmware Compatibility Matrix table below lists the firmware releases and the compatible PCoIP host software releases. We recommend that you load the PCoIP host software release that corresponds to the firmware loaded on the PCoIP host card and zero client. The recommended firmware release column lists the firmware release used to test each host software release.

Table 2-1: Host Card and Zero Client Firmware, and Host Software Compatibility Matrix

Compatible Firmware Release	Recommended Host Card Firmware Release		Recommended Zero Client Firmware Release		PCoIP Host Software Release for Linux
	Tera1	Tera2	Tera1	Tera2	
Host card: 4.5.x where x is >= 1, 4.6.x, 4.7.x Zero client: 4.5.x where x is >= 1, 4.6.x, 4.7.x, 4.8.0	Not supported	4.7.2	Not supported	4.8.0, 4.8.0-p91 (for Wacom tablets only)	4.7.0

Compatible Firmware Release	Recommended Host Card Firmware Release		Recommended Zero Client Firmware Release		PCoIP Host Software Release for Linux
	Tera1	Tera2	Tera1	Tera2	
4.5.0-p91, 4.5.x where x is >= 1	4.5.1	4.5.1, 4.5.0-p91 (for Wacom tablets only)	4.5.1	4.5.1 ,4.5.0-p91 (for Wacom tablets only)	4.5.0
4.1.x, 4.2.x	4.1.2	4.1.2	4.1.2	4.1.2	4.1.6
4.0.x	4.0.2	4.0.3	4.0.2	4.0.3	4.0.8
3.1.x, 3.2.x, 3.3.x, 3.5.x	3.5.1	Not supported	3.5.1	Not supported	3.0.6
Earlier than 3.1.0	Not available	Not supported	Not available	Not supported	Not available

Do **not** upgrade Tera1 PCoIP host processors above host card firmware 4.5.1 or host software 4.5.0.

Some features added to new releases of the host software require changes to the firmware running on the PCoIP host and/or zero client. The table below lists the features that require firmware changes. Each feature is available if the host card and zero client are running a firmware release that is equal to or later than the release listed in the table.

Table 2-2: New Feature Software and Firmware Requirements

New Feature Description	Host SW Release	Host Card Firmware Release	Zero Client Firmware Release
Support for RHEL 7.1.	4.7.0	4.7.2	4.8.0
The Wacom tablet driver is now in the Linux OS.	4.7.0	4.7.2	4.8.0-p91 (for Wacom tablets only)
Support for pushing client topology to host on workstations with xrandr 1.2 or greater.	4.5.0	4.5.0-p91	4.5.0-p91
Local tablet driver. See section 6.3 "Local Tablet Driver" .	4.5.0	4.5.0-p91	4.5.0-p91
Experimental support for Teradici PCoIP software client.	4.1.6	4.1.0	4.1.0

New Feature Description	Host SW Release	Host Card Firmware Release	Zero Client Firmware Release
Support for Tera2 PCoIP host card.	4.0.5	4.0.3	4.0.3
Configure PCoIP session image quality setting (see section 5.6 "Image").	3.0.6	3.5.0	3.5.0
Support for processing multimedia keys (USB HID usage pages 1 and 12) when the local cursor feature is enabled. Example keys include volume up, mute, and calculator.	3.0.6	3.3.0	3.3.0
Support for configuring client keyboard repeat detection (see section 5.2 "Features").	3.0.6	3.2.0	3.2.0
Support IT auditing feature that gathers workstation and PCoIP host card network settings (see section 5 "Using the PCoIP UI").	3.0.6	3.5.0	3.5.0

Note: The Teradici PCoIP host software for Linux package is a source code package. This package is used to create a binary RPM that can then be installed. Section 2.3 "Tested Linux Distributions" lists the Linux distributions the package was tested with. The package might work on other Linux distributions, but Teradici makes no guarantees. Problems with the package should be reported via the [Teradici support website](#).

2.1 System Requirements

Before installing the PCoIP host software, ensure the PC or workstation meets the following requirements:

- PCoIP host and zero client are loaded with a compatible firmware release. See [Table 2-1 "Host Card and Zero Client Firmware, and Host Software Compatibility Matrix"](#).
- The Host Driver Function is enabled on the PCoIP host card. See section 3 "PCoIP Host Software Installation".
- See section 2.3 "Tested Linux Distributions" for supported Linux distributions.

2.2 Soft Client Restrictions

PCoIP sessions between soft clients and PC/workstations with a PCoIP host card are supported for desktop clients. Mobile clients are not supported.

High-level requirements for these connections:

- PCoIP host card running firmware release 4.5.0-p91 or later.
- PCoIP host software for Linux release 4.5.0 or later.
- Teradici PCoIP software client release 1.2.0 or later.

- The workstation should have xrandr version 1.2 or later installed. If an earlier version is installed, the host software cannot activate the client topology settings at the start of a session and users might encounter problems where the client cursor and keyboard do not work.

PCoIP host software imposes some limitations intended to prevent users from getting their system into a state where the keyboard and mouse do not work.

The restrictions are described in this document and summarized as:

- Users should not try to install the host software while connected to the PC/workstation from a soft client. For details, see section 3.4 "Installing PCoIP Host Software Binary RPM".
- Users cannot disable the local cursor feature while connected to the PC/workstation from a soft client.

2.3 Tested Linux Distributions

This release of the host software was tested with the Linux distributions in the following table. The host software may be compatible with additional distributions. Check the [Teradici support website](#) for the most recent information on supported Linux distributions.

Table 2-3: Linux Distribution Compatibility Matrix

Linux Distribution	Host SW Release	Tested by
RHEL 7.1 (kernel 3.10.0-229), GNOME/KDE CentOS 6.6 (kernel 2.6.32-504), GNOME/KDE SLED 11 SP 4 (kernel 3.0.82), GNOME/KDE	4.7.0	Teradici Teradici Customer
CentOS 5.10, 64-bit (kernel 2.6.18-371), GNOME CentOS 6.5, 64-bit (kernel 2.6.32-431), GNOME/KDE SLED 11 SP 3 (kernel 3.0.76-0.11), GNOME/KDE	4.5.0	Teradici
CentOS 5.3, 64-bit (kernel 2.6.18-128), GNOME CentOS 6.4, 64-bit (kernel 2.6.32-358), GNOME/KDE SLED 11 SP 2 (kernel 3.0.13-0.27), GNOME/KDE	4.1.6	Teradici
CentOS 5.3, 64-bit (kernel 2.6.18-128), GNOME CentOS 6.2, 64-bit (kernel 2.6.32-220), GNOME/KDE CentOS 6.3, 64-bit (kernel 2.6.32-279), GNOME/KDE	4.0.8	Teradici
CentOS 5.3, 64-bit (kernel 2.6.18-128), GNOME CentOS 6.2, 64-bit (kernel 2.6.32-220), GNOME	4.0.5	Teradici
CentOS 5.3, 64-bit (kernel 2.6.18-128), GNOME CentOS 6.2, 64-bit (kernel 2.6.32-220), GNOME Fedora 13, 64-bit (kernel 2.6.34.9-69.fc13)	3.0.6	Teradici Teradici Customer

3 PCoIP Host Software Installation

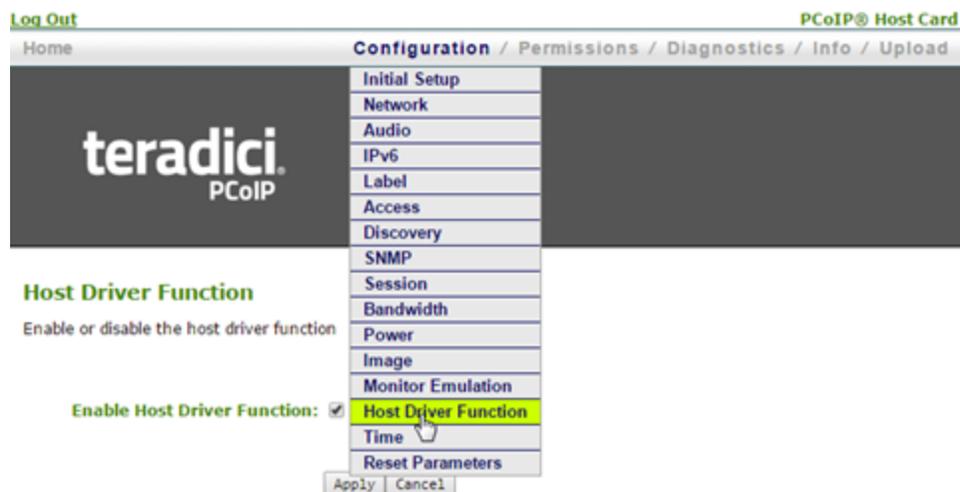
We strongly recommend that you install the version of PCoIP host software that is released with the version of the firmware loaded on the PCoIP host and zero client. For details, see [Table 2-1 "Host Card and Zero Client Firmware, and Host Software Compatibility Matrix"](#). Before you install the software, you must also [enable the Host Driver Function](#) on the host card.

Note: Temporal dithering is a technique employed by some graphics cards to simulate colors that they cannot natively display by rapidly changing the colors of pixels, thus tricking the eye into seeing “in-between” colors. During PCoIP remote sessions, temporal dithering can cause extremely high bandwidth utilization because the rapidly changing pixels force the PCoIP protocol to constantly deliver large screen updates to the remote desktop. Temporal dithering should be disabled on workstation graphics cards supporting PCoIP sessions. Consult your graphics card documentation or contact the card vendor for details on disabling temporal dithering. The Knowledge Base on the [Teradici support website](#) also contains information on disabling temporal dithering on some graphics card.

3.1 Enabling Host Driver Function

To enable the Host Driver Function on the PCoIP host:

1. Open a web browser on a PC or workstation connected to the same network as the PCoIP host. Browse to the PCoIP host’s webpage, and then log in.
2. From the **Configuration** menu, select **Host Driver Function**.



3. Check the **Enable Host Driver Function** box and click **Apply**. A prompt appears to indicate the host PCoIP processor must be reset.
4. Click **Reset** and then click **OK** to schedule a deferred reset.

5. Restart the PCoIP host by restarting the PC or workstation.
6. After the workstations boots, log into the PC or workstation as usual.

3.2 Setting Up a Development System

The host software is installed using a binary RPM. The RPM includes a kernel driver. Kernel drivers must be built using header files that match the version of the kernel running on the workstation the host software is installed on. This restriction prevents Teradici from distributing pre-built RPMs. The package provided by Teradici allows end users to create the binary RPM.

This section describes the steps to follow to set up a Linux system to create the PCoIP host software binary RPM. This document is written for a Linux system running CentOS 6.6. The same instructions may apply to other Linux distributions, but may require changes.

3.2.1 Requirements

- CentOS 6.6 or other supported Linux distribution installed.
- Gnome or KDE desktop environment installed.
- Root permissions.

3.2.2 Installing the Required Tools/Libraries

To create the binary RPM the required packages listed in the table below must be installed. The packages differ based on the Linux distributions running on the workstation. Install the packages listed in the column that match the Linux distribution running on the workstation.

Table 3-1: Required Packages

Description	Packages Required for Different Linux Distributions	
	CentOS, Red Hat	SLED
Compiler	gcc	gcc
Kernel header files required to build kernel driver	kernel-devel	kernel-default-devel
Tools used to build RPM files	rpm-build	Not required

To install these packages on CentOS or Red Hat:

1. Log in as root.
2. Open Terminal and type:


```
yum install gcc
yum install kernel-devel
yum install rpm-build
```

To install these packages on SLED:

1. Log in as root.
2. Open Terminal and type:

```
zypper install gcc  
zypper install kernel-default-devel
```

Note: If the kernel-devel or kernel-default-devel package must be installed, ensure you install the version compatible with the kernel installed on the workstation. If you install the wrong version, the driver fails to build and the error message **install: cannot start `pcoip_host.ko': No such file or directory** appears while installing the RPM file created by the createRPM script. See section [2.3 "Tested Linux Distributions"](#) for which Linux distributions (kernel-devels) are supported.

Note: Non-root users can install the fakeroot package to run the createRPM script.

3.3 Building a Binary RPM

3.3.1 Requirements

- Linux development system set up for PCoIP host software development (see section [3.2 "Setting Up a Development System"](#)).
- A copy of the PCoIP host software source code for Linux.

3.3.2 Unpacking the Source Code Package

To unpack the source code package:

1. Obtain the PCoIP host software package for Linux from the [Teradici support website](#).

The package includes multiple files, including a copy of this document and an archive file (pcoip_host-X.Y-Z.tar.gz). The archive contains the files necessary to create a binary RPM.

2. Copy the archive file to the Linux workstation, e.g., the desktop.
3. Create a new folder, e.g., PCoIP_Host_SW_Release.
4. Extract the contents of the archive file into this new folder.
5. Open the new folder and check that the pcoip_host_X.X-X.aaaa.tar.gz file is there.
6. Extract the contents from pcoip_host_X.X-X.aaaa.tar.gz into the same folder.

Extracting the files creates a folder, e.g., pcoip_host_X.X-X.aaaa which contains sub-folders such as common, kernel, and user.

3.3.3 Creating a Binary RPM

To create a Binary RPM:

1. Log in as root.

This is necessary when creating RPMs distributed outside a company. When an RPM is created, the userid of the person creating the RPM is the owner of the files in the RPM. Warning messages appear if an RPM is installed on systems that do not recognize the userid associated with the files. Creating the RPM as root avoids getting these warning messages.

Note: Non-root users can install the fakeroot package to run the createRPM script.

2. Open Terminal.
3. Set the working directory to kernel/linux/scripts/, e.g., PCoIP_Host_SW_Release/pcoip_host_X.X-X.axxxx/kernel/linux/scripts/.

Note: These folders are created when you unpack the source code package.

4. Execute the createRPM script by entering the command `./createRPM`. The binary rpm is written to the package/kernel/linux/obj directory.

Note: The host software package contains two versions of the host software executable. One that supports activating client topology settings and one that does not. The createRPM script checks the version of libxrandr installed on the workstation. If version 1.2 or later is installed, the RPM includes the host software executable that supports activating client topology settings. Administrators can force the script to include the version that does not support activating client topology settings by including the parameter `-notopo` when running the createRPM script.

3.4 Installing PCoIP Host Software Binary RPM

This topic describes how to install the binary RPM created from the source code package.

Note: Before installing the PCoIP host software, ensure no other copies of the software are installed by checking if the file `pcoip_agent` exists in the `/usr/bin` directory. If this file exists, remove it by following the instructions in section 4 "[Uninstalling PCoIP Host Software](#)".

Note: PCoIP host software release 4.1.6 adds experimental support for Teradici PCoIP software clients. As an administrator, you cannot run the host software installer while connected to a host system using a soft client. The local cursor feature is disabled during the installation process, which disables the user's keyboard and mouse. This prevents the user from completing the installation process.

To install the software:

1. Log in as root.
2. Open Terminal.

3. Set the working directory to kernel/linux/obj/, e.g., PCoIP_Host_SW_Release/pcoip_host_X.X-X.axxxx/kernel/linux/obj/.

Note: These folders are created when you unpack the source code package.

4. Enter the following command at a shell prompt, where *<build number>* is the release build number.

```
rpm -ivh pcoip_host-4.7-0.<build number>.x86_64.rpm
```

This installs the following files:

- /usr/bin/pcoip_agent: This is the GUI that configures the PCoIP kernel driver. The UI accepts multiple command line options. See section [5.1 "Command Line Options—pcoip_agent"](#) for a description of the supported options.
- /usr/bin/pcoiphostswd: This is the host software daemon. See section [2 "PCoIP Host Software Overview"](#) for a description of what the daemon does and section [3.5.1 "Host Software Daemon Configuration Files"](#) for instructions on how to configure the daemon. If you want to establish a PCoIP session with a workstation from a soft client, do not disable the daemon.
- /usr/bin/pcoip_lockscreen: The GUI calls this script when locking the screen after a PCoIP session is disconnected. This script has been tested on systems running KDE3, KDE4, and Gnome. Verify this script works if the host software fails to lock the screen when a PCoIP session is disconnected.

Note: The pcoip_agent and pcoip_lockscreen files are written to the /usr/bin directory when the host software is installed. If you want to move these files to a different location, such as a network drive, you must move both files to the same directory. When the pcoip_agent begins execution it searches for the pcoip_lockscreen script in the /usr/bin directory. If the script is not found the pcoip_agent then looks in the directory the pcoip_agent is stored in.

Note: If the pcoip_agent and pcoip_lockscreen files are moved and a new version of the host software is installed, the administrator must remove the old copies of these files and replace them with the new files found in the /usr/bin directory.

- /usr/bin/pcoip_starthostsw: The daemon uses this script to start the host software executable (pcoip_agent). Administrators who want to modify the command line options passed to the host software executable should modify the daemon configuration settings in section [3.5.1 "Host Software Daemon Configuration Files"](#).
- /usr/bin/pcoip_xauthority: The daemon uses this script to acquire an XAUTHORITY cookie. The script is run by the daemon as root. The daemon calls this script to provide some flexibility to the end user. If the script does not support the window manager running on the workstation, the script can be modified to support the new window manager without recompiling the daemon. See the script for details on how to update it if necessary.
- /lib/modules/<kernel_version>/kernel/drivers/input/misc/pcoip_host.ko: This is a kernel driver that communicates with the PCoIP host card.

- `/etc/init.d/pcoip_host`: This is a script that executes when the system boots. Links to the script are found in the `/etc/rcx.d` directories where `x` is ≥ 0 and ≤ 6 . This script handles starting and stopping the `pcoip_host` driver.
 - `/etc/init.d/pcoip_hostcheck`: This is a script that executes when the system boots. Links to the script are found in the `/etc/rcx.d` directories where `x` is ≥ 0 and ≤ 6 . This script checks for the `pcoip_host` kernel module and builds it if it doesn't exist.
 - `/etc/udev/rules.d/10-pcoip_host_udev.rules`: This file creates a special character file in the `/dev` directory used by the UI to control the driver.
5. Some Linux distributions require additional changes to the X Windows configuration file `/etc/X11/xorg.conf`. These changes are not required on CentOS 6.x, but they are required on CentOS 5.x, SLED 11, and Fedora 13. The changes ensure the X Windows `evdev` input driver processes the data received from the PCoIP mouse device driver.

Add the following line to the `ServerLayout` section:

```
InputDevice    "PCoIPMouse" "SendCoreEvents"
```

Create the following new `InputDevice` section:

```
Section "InputDevice"
    Identifier "PCoIPMouse"
    Driver     "evdev"
    Option     "Device" "/dev/input/pcoip_mouse"
    Option     "Mode" "Absolute"
EndSection
```

6. Restart the system.

3.5 Configuration Files

This topic describes the host software configuration files. Both the daemon and the UI allow the administrator to customize their operation.

3.5.1 Host Software Daemon Configuration Files

When the host software daemon starts, it attempts to read configuration settings from the file `/etc/pcoiphostswd.conf`. If the file does not exist or a setting is not found in the file, the daemon uses a default value.

A copy of the configuration file is included with the host software in the `kernel/linux/scripts` directory. Administrators wishing to modify the default daemon configuration settings should copy this file to the `/etc` directory, modify it, and restart the host software or the workstation.

The daemon and host software executables support the following settings.

Log Directory Location

- Field name: LogDirLocation
- This field is a string that determines the directory used for the log files. The daemon and host software use the same log file named pcoiphostsw.0.log. When the log file reaches the size specified in the LogFileSize parameter, it is copied to pcoiphostsw.1.log. The daemon sets the permissions of the directory containing the log files to 777. If the location of the log files is changed to something other than the default, the daemon sets the permissions of the directory to 777.
- Default value: /var/log/pcoip

Maximum Log File Size

- Field name: LogFileSize
- This field is an integer that specifies the maximum size in MB a log file may attain before a copy is made and a new one is started. The log file size is only checked periodically, so this size may be exceeded slightly at times.
- Default value: 2

Daemon Enable

- Field name: DaemonEnable
- This field determines whether the daemon is enabled. The daemon must be enabled in systems that require the host software to be running while the login screen is active. Soft clients send keyboard and mouse data to the host via the host software. Users who want to log into a host using a soft client must enable the daemon.
- Supported values: 0, 1 (0=disable, 1=enable)
- Default value: 1

Daemon Logging level

- Field Name: DaemonLogLevel
- This field controls the verbosity level of the daemon. As the level increases, the daemon generates more log messages. Typically users should set this field to info or error, which generates error messages and informational messages when the daemon starts and stops the host software.
- Supported values: 0=None, 1=Critical, 2=Error, 3=Info, 4=Debug
- Default value: 3 (Info)

Daemon Start Delay

- Field name: DaemonStartDelay
- When the system boots, the pcoip_host script starts pcoiphostswd, which launches a daemon process. When the daemon starts, it delays this many seconds before entering an infinite loop in which it does its processing.

- Supported values: positive integer (1, 2, 3, ...)
- Default value: 1

Daemon X Authority Start Delay

- Field name: DaemonXAuthDelay
- This field specifies the delay in seconds before the daemon tries to find the XAUTHORITY cookie for the host software GUI.
- Supported values: positive integer (1, 2, 3, ...)
- Default value: 5

Daemon PCoIP Agent Can Run Under Root Permissions

- Field name: DaemonRootPCoIPAgent
- This field specifies whether the daemon can run the PCoIP Agent under root permissions.

Note: Some systems do not allow root to run the screensaver and therefore the **Lock workstation on disconnect** feature does not work. It is recommended that you log in as root and see if root can run the screensaver before enabling this setting. Currently, RHEL 7, RHEL 7.1, and CentOS 7 allow the root account to run the screensaver.

- Supported values: 0, 1 (0=disable, 1=enable)
- Default value: 0

Host Software Logging Level

- Field name: HostSWLogLevel
- This field controls the verbosity level of the host software. As the level increases, the host software generates more log messages. In general, users should set this field to info or error, which allows the host software to generate error messages and informational messages.
- Supported values: 0, 1, 2, 3, 4 (0=none, 1=Critical, 2=Error, 3=Info, 4=Debug)
- Default value: 3 (info)

Host Software Location

- Field name: HostSWPath
- This field specifies the location of the host software. This includes the pcoip_starthostsw script and the pcoip_agent executable. By default, these files are installed in /usr/bin.
- Default value: "/usr/bin"

Host Software Options

- Field name: HostSWOptions
- This field can pass further options to the host software. These values are passed to the `pcoip_starthostsw` script (preceded with `-o`) and subsequently to the host software itself. The supported values can be determined by running `'pcoip_agent -h'`, and include values such as:

`-drcs` (disable sending remote cursor changes to client)

- Default value: ""

Host SW Login Start Delay

- Field name: HostSWLoginStartDelay
- When a user logs in, the daemon starts the host software. The daemon also starts the host software when it detects the host software is not running. This setting controls how many seconds the daemon delays before starting the host software when a user logs in. The setting is not used when the daemon detects the host software is not running. This delay should be increased if the host software icon appears on the desktop instead of the system tray after a user logs in.
- Supported values: positive integer (1, 2, 3,...)
- Default value: 10

Host SW Restart Delay

- Field name: HostSWRestartDelay
- When a user logs in, the daemon starts the host software. The daemon also restarts the host software when it detects the host software is not running. This settings controls how many seconds the daemon delays before restarting the host software when a user is already logged in. The setting is not used when the daemon starts the host software on user login.
- Supported values: positive integer (1, 2, 3,...)
- Default value: 1

3.5.2 Host Software Configuration Files

When the host software UI executable (`pcoip_agent`) starts, it reads configuration settings from two files: a local file and a global file. The local file is stored in `~/pcoip_agent` and the global file is stored in `/etc/pcoiphostswglobal.conf`. The default name and location of the local and global files can be overridden by including the optional parameters `"-lc=</path/filename>"` and `"-gc=</path/filename>"` in the `HostSWOptions` setting in the daemon configuration file.

When the UI starts, it attempts to open the local configuration file and read settings from it. If the local file does not exist or a setting is not defined in the local file, the UI attempts to

read the setting from the global configuration file. If the global configuration file does not exist or the setting is not defined in the file, the UI uses a default value.

While the UI runs it creates the local file if one does not exist and stores settings in it. This allows users to customize the configuration settings. This also allows administrators to configure the host software default settings for first time users.

A sample global configuration file is provided with the host software in `kernel/linux/scripts/pcoiphostswglobal.conf`. Administrators who want to use this feature should store a copy of the file in the `/etc` directory. Users who want to store the file somewhere else must include the `“-gc”` option in the `HostSWOptions` setting in the daemon configuration file.

4 Uninstalling PCoIP Host Software

You can easily remove the PCoIP host software from the PC or workstation at any time. If you no longer need the software, you should also disable the Host Driver Function in firmware. For details, see section [4.2 "Disabling Host Driver Function"](#).

4.1 Uninstalling the PCoIP Host Software for Linux

To uninstall the PCoIP host software for Linux:

1. Log in as root and at a shell prompt enter:

```
rpm -e pcoip_host
```

Note: The above step removes the installed PCoIP host software, but does not remove any PCoIP host software that might be running. Reboot the workstation to ensure the PCoIP host software is no longer running.

4.2 Disabling Host Driver Function

Disabling the PCoIP Host Driver Function on the PCoIP host prevents Linux from seeing an unknown PCI Device.

To disable the Host Driver Function on the PCoIP host:

1. Open a web browser on a PC or workstation connected to the same network as the PCoIP host.
2. Browse to the PCoIP host webpage and log in.
3. From the **Configuration** menu, select **Host Driver Function**. For details, see section [3.1 "Enabling Host Driver Function"](#).
4. Uncheck the **Enable Host Driver Function** checkbox and click **Apply**. A prompt indicates you must reset the host PCoIP processor. Click **Reset** and then click **OK** to schedule a deferred reset.
5. Restart the PCoIP host by restarting the PC or workstation.

5 Using the PCoIP UI

The UI executable (/usr/bin/pcoip_agent) is started automatically by the daemon after installing the PCoIP host software package and rebooting the workstation. The administrator may need to configure the UI executable options. If so, install and update the daemon configuration file, described in section 3.5.1 "Host Software Daemon Configuration Files". When the UI is running, the  icon appears in the CentOS 6 system tray as shown below.

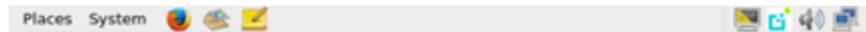


Figure 5-1: System Tray with PCoIP UI Icon (CentOS 6)

On RHEL 7 and CentOS 7, the icon appears after you click the bottom right number badge as shown below. The icon does not appear when the login screen is active.

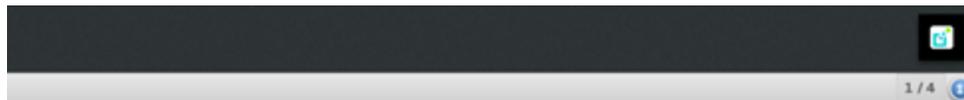


Figure 5-2: System Tray with PCoIP UI Icon (RHEL 7 and CentOS 7)

Note: Sometimes a vertical bar appears in the system tray instead of the  icon or the icon appears at the top corner of the display rather than on the task bar. The host software functions properly but the UI is difficult to access. To work around these problems, try to modify the length of time the daemon waits before starting the host software by adjusting the HostSWLoginStartDelay or HostSWRestartDelay options in the StartHostSWOptions setting in the /etc/pcoiphostswd.conf file.

The figure below displays the menu that appears when you right-click the icon in the system tray. To open a new window, select **Properties...** from the right-click menu or double-click the icon in the system tray. This window has multiple tabs that let users access different features. Each feature is described beginning with section 5.2 "Features".

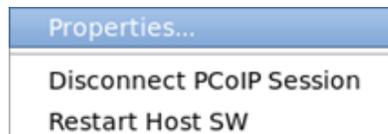


Figure 5-3: PCoIP UI Right-Click System Tray Menu

- To disconnect the PCoIP session (if one is active), select **Disconnect PCoIP Session**.
- To restart the UI executable, select **Restart Host SW**.

5.1 Command Line Options—pcoip_agent

The `pcoip_agent` command supports the following command line options.

Note: The daemon included with release 4.5.0 and later starts the UI. Do not start the host software manually. In some situations a user might invoke the `pcoip_agent` command from the command line to disconnect a session or query information about the host card.

- To list all supported command line options, enter `pcoip_agent -h`.
- To disconnect a session, enter `pcoip_agent -disconnect`. This method is useful for making a disconnect-session shortcut, or mapping to a favorite key on some keyboards.
- The UI IT auditing feature writes information about the workstation and PCoIP host card to the command line. To invoke this feature, enter `pcoip_agent -info`. This is an example of the output:

```
Host Name: localhost.localdomain
Host IP: 192.168.0.13
Host MAC: 00-2b-68-33-11-28
PCoIP Host SW Version: 3.0.2
PCoIP Host SW Build Date: Apr 18 2012 17:04:42
PCoIP Host card MAC: 00-30-04-0D-61-26
PCoIP Host card IP: 192.168.99.21
```

- The “-ll” option is used to set the logging level of the UI. The supported logging levels are 0=none (default), 1=critical, 2=error, 3=info and 4=debug. To set the logging level to debug enter the following command:
`pcoip_agent -ll=4`
- TwinView is a video mode supported by Nvidia graphics cards on multi-monitor workstations. The host software checks if this mode is enabled using the `nvidia-settings` utility. If TwinView is enabled on a workstation and the `nvidia-settings` utility is not installed or the utility does not support querying the TwinView option, users must include the “-t” option when starting the `pcoip_agent` executable. To override the host software code that checks if TwinView is enabled and disable TwinView, include the “-dt” option.

Note: Some multi-monitor workstations using newer versions of the Nvidia driver with Xinerama enabled must include the “-t” option when starting the `pcoip_agent`. If the remote and local cursors are not in sync, add the “-t” option to the `HostSWOptions` setting in the daemon configuration file and restart the host software.

- Host software release 4.0.3 and later include support for the **remote cursor synchronization** feature which periodically compares the position of the remote and local cursors. The local cursor position is updated when the remote cursor is moved by something other than the local cursor, which may be an application running on the host or a bridged USB tablet. To disable this feature, include the “-drcs” option to the `HostSWOptions` setting in the daemon configuration file and restart the host software.
- When the **remote cursor synchronization** feature is enabled, the host software sends updates to the client every 250 ms when the host cursor moves. The period of these reports can be changed by specifying the “-rcsp=10” option, which configures the host

software to send reports every 10 ms.

Note: Zero client users that set **Visible Cursor(s)** to **Local** and bridge USB devices that change the position of the cursor should use this setting to reduce the time between updates from 250 ms to 10 ms to avoid choppy cursor movement.

- The command line options “-gc=<fully qualified filename>” and “-lc=<fully qualified filename>” can be used to specify a global configuration file and local configuration file. See section 3.5.2 "Host Software Configuration Files" for details on using these options.

5.2 Features

The following figure show the Features tab of the UI.

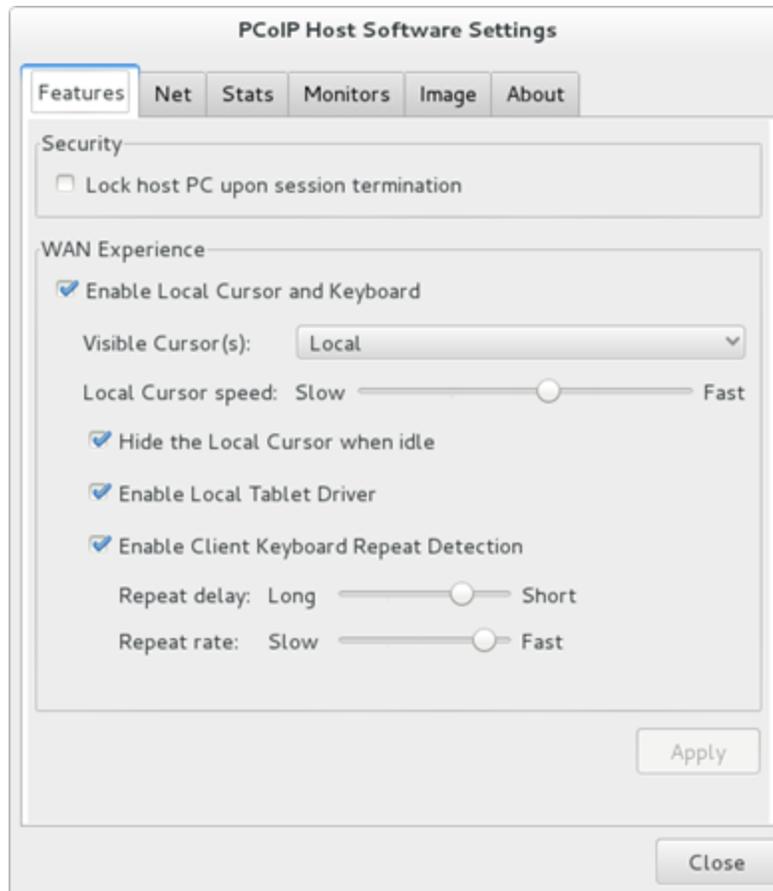


Figure 5-4: PCoIP Host Software Settings—Features

5.2.1 Security

The **Security** feature lets you lock the PC or workstation to ensure other users do not log into another user's session when the user disconnects from a PCoIP session.

- **Lock host PC upon session termination:** Select this option to lock the Host PC when a PCoIP session is disconnected.

Note: The host software calls the `pcoip_lockscreen` script to lock the screen. If the host software fails to lock the screen when a PCoIP session is disconnected, verify that this script works. See section [3.4 "Installing PCoIP Host Software Binary RPM"](#) for the location of the script.

5.2.2 WAN Experience

The WAN Experience local cursor and keyboard features may be useful in WAN deployments where network latency exceeds 40-60 ms. In these environments, users may notice a visible lag between the movement of the mouse and the movement of the cursor. Key presses may be dropped or falsely repeated key presses may occur under very high network latency scenarios. Both of these side effects of high-network latency hinder user experience. The local cursor and keyboard features help lessen latency effects.

Latency effects are noticed differently by users. With network latency less than 40 ms, most users notice the local cursor overlay and desktop cursor moving in tandem. With higher network latencies, the local cursor overlay moves according to the user's movements, and the desktop cursor follows with visible lag. Because the overlay provides instantaneous feedback, the user can move the mouse freely without having to wait for the desktop cursor to catch up.

- **Enable Local Cursor and Keyboard:** The local cursor is enabled when this option is selected and the mouse device's movements are recorded at the client. The movement is reflected via the local cursor overlay in real time. The movements and mouse clicks are sent to the PCoIP host and then to a driver via the exposed PCoIP Host Function PCI device and device drivers. When the driver receives the movement information, the cursor on the workstation is updated.

The local keyboard feature works on a similar concept. The client captures and records keyboard key presses, and then sends them to the PCoIP host. This feature prevents key presses from being dropped. The local keyboard feature does not display an overlay for the typed text, and the text that appears on the screen is affected by the network latency.

Note: The **Enable Local Cursor and Keyboard** option may be grayed out if not supported. When this happens, a "Why is this unavailable?" link appears on the UI Features tab. Move the mouse over the link to see a tooltip explaining how to fix the problem.

- **Visible Cursor(s):** The available options are:
 - **Remote:** cursor shape drawn by the workstation/host.
When the **Remote** visible cursor is selected, you cannot select **Hide the Local Cursor when idle**.
 - **Local:** cursor shape drawn by the client.
When the **Local** visible cursor option is selected, the remote cursor is hidden.
The local cursor overlay icon appears as an arrow with an “L” in it when the local cursor is visible and the host software cannot display the correct host drawn cursor.
For details including information on problems that may occur when hiding the remote cursor, see section [6.2 "Known Issues When Hiding the Remote Cursor"](#).
 - **Local and Remote.**
- **Cursor speed:** Sets the speed of the local cursor overlay. The local cursor speed setting is separate from the mouse speed in Linux.
Note: You can also configure the zero client cursor speed using the PCoIP On Screen Display (OSD). See the “PCoIP® Zero Client and Host Administrator Guide” (TER1206003).
- **Hide the Local Cursor when idle:** Select this option to set the local cursor overlay to disappear after one second of idle mouse movement. Uncheck this box to always display the local cursor overlay.
Note: The PCoIP host software stores separate copies of the **WAN Experience** configuration settings for each client a user connects to a host from. This lets users enable the feature on certain clients and disable it on other clients. This is useful when a user connects to a host from a client at work over a LAN connection and another client at home over a WAN connection. In this scenario the user might disable the **Local Cursor and Keyboard** feature for the work client and enable the feature for the home client.
- **Enable Local Tablet Driver:** The local tablet driver is enabled when this option is selected and the tablet device’s movements are recorded at the client. The movement is reflected via the local cursor overlay in real time. All data received from the tablet is sent to a tablet driver running on the host.
Note: The **Enable Local Tablet Driver** option may be grayed out if not supported. Section [6.3 "Local Tablet Driver"](#) describes why the feature may be disabled.
- **Enable Client Keyboard Repeat Detection:** Select this option for the client to perform keyboard repeat detection. Uncheck this box for the host OS to perform keyboard repeat detection.
Note: Enable this feature if the latency of the connection exceeds ~150 ms. When this feature is disabled, the host OS performs keyboard repeat detection. The host OS may incorrectly report repeated keys for high-latency connections.
 - **Repeat delay:** Set the length of time that elapses before a character begins to repeat when you hold down a key. This setting is only used when the client performs

keyboard repeat detection.

- **Repeat rate:** Set the speed at which a character repeats when you hold down a key. This setting is only used when the client performs keyboard repeat detection.

Note: You can also configure the zero client **Repeat delay** and **Repeat rate** using the OSD. See the “PCoIP® Zero Client and Host Administrator Guide” (TER1206003).

5.3 Network

The following figure shows the **Net** tab of the UI. This tab lets you view the network settings of the PCoIP host.

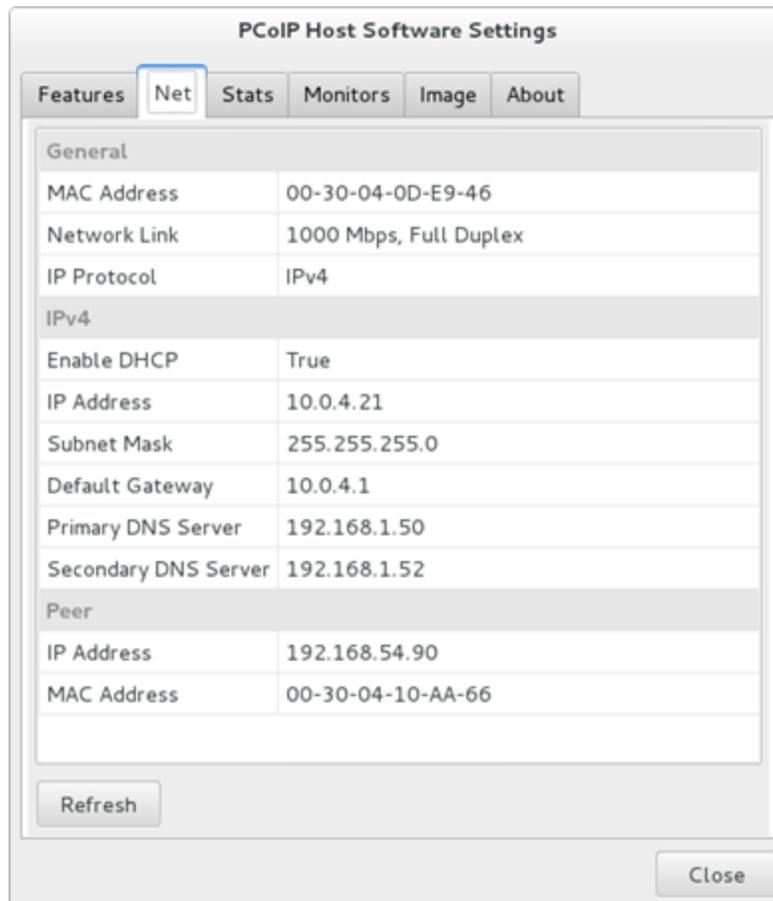


Figure 5-5: PCoIP Host Software Settings—Network

The **Net** tab shows the current network information for the host. This tab also reports status information on the NIC of the PCoIP host (speed, duplex setting, and link state – up/down). It also displays the IP and MAC addresses of the client connected to the host under the **Peer** settings.

- **Refresh:** Click this button to get the most up-to-date network settings of the host.

Note: The UI does not support changing the network settings. You can configure the network settings through the PCoIP Management Console (see the “PCoIP® Management Console User Manual” (TER0812002)), the PCoIP Administrative Interface (see the “PCoIP® Zero Client and Host Administrator Guide” (TER1206003)), or a connection broker.

5.4 Statistics

The following figure shows the **Stats** tab. This lets you view the PCoIP host session statistics.

The statistics are reset when a PCoIP session starts or when you click **Reset Statistics**.

Note: You can also access the PCoIP host card statistics through the PCoIP Administrative Interface (see the “PCoIP® Zero Client and Host Administrator Guide” (TER1206003)).

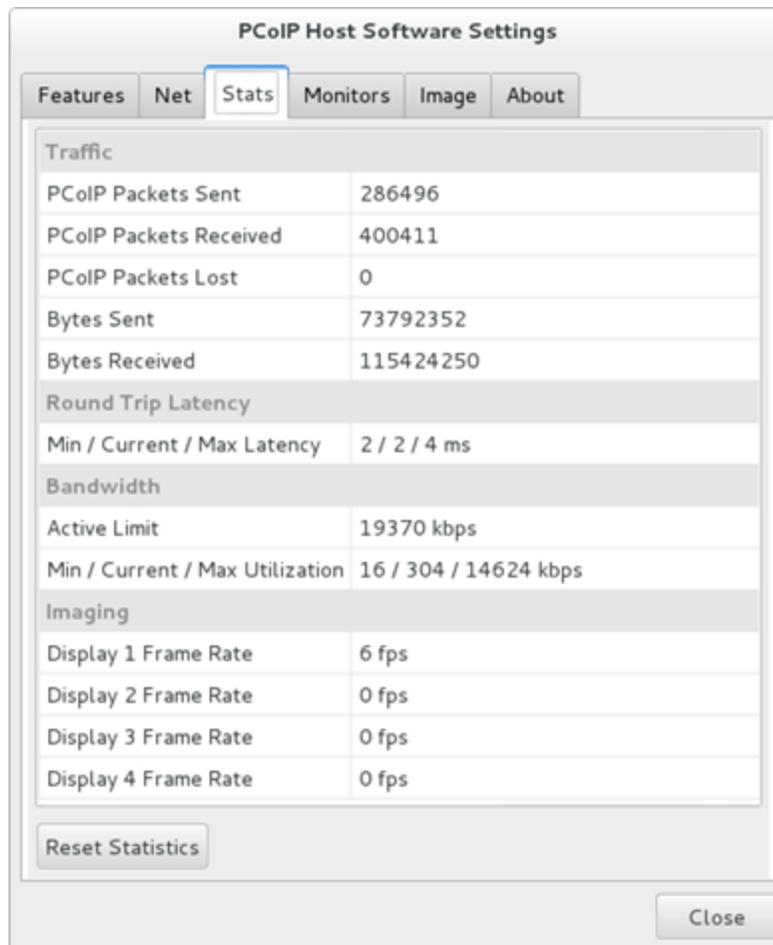


Figure 5-6: PCoIP Host Software Settings—Statistics

Traffic

The **Traffic** statistics show the number of packets sent and received by the PCoIP host.

- **PCoIP Packets Sent:** Total number of PCoIP packets sent by the host.
- **PCoIP Packets Received:** Total number of PCoIP packets received by the host.
- **PCoIP Packets Lost:** Total number of PCoIP packets that were not received by the host.
- **Bytes Sent:** Total number of bytes sent by the host.
- **Bytes Received:** Total number of bytes received by the host.

Round Trip Latency

The **Round Trip Latency** statistics report the total roundtrip PCoIP system (for example, host to client and back to host) and network latency in milliseconds (+/- 1 ms). The UI reports the minimum, current, and maximum values.

Bandwidth

The **Bandwidth** statistics show the host's active bandwidth settings.

- **Active Limit:** The maximum amount of network traffic the PCoIP host may currently generate. The value is derived from the host's configured bandwidth settings (see the "PCoIP® Zero Client and Host Administrator Guide" (TER1206003)) and the current network congestion levels.
- **Min / Current / Max Utilization:** The minimum, current, and maximum amount of traffic generated by the PCoIP host at a particular moment in time.

Imaging

The **Imaging** statistics show frame-rate information for the displays connected to the client.

- **Display X Frame Rate:** The frame rate of Display X. The statistic is reported in frames per second (fps).

5.5 Monitors

- If [xrandr version 1.2 or greater](#) is installed on the workstation, the **Monitors** tab presents information about the attached displays.
- If [xrandr version 1.1 or lower](#) is installed on the workstation, you must configure monitor settings.
- If using zero clients, configure the [client topology settings](#).

5.5.1 Xrandr 1.2 or Greater

The figure below is an example of the **Monitors** tab of a system running xrandr 1.3 with four monitors.

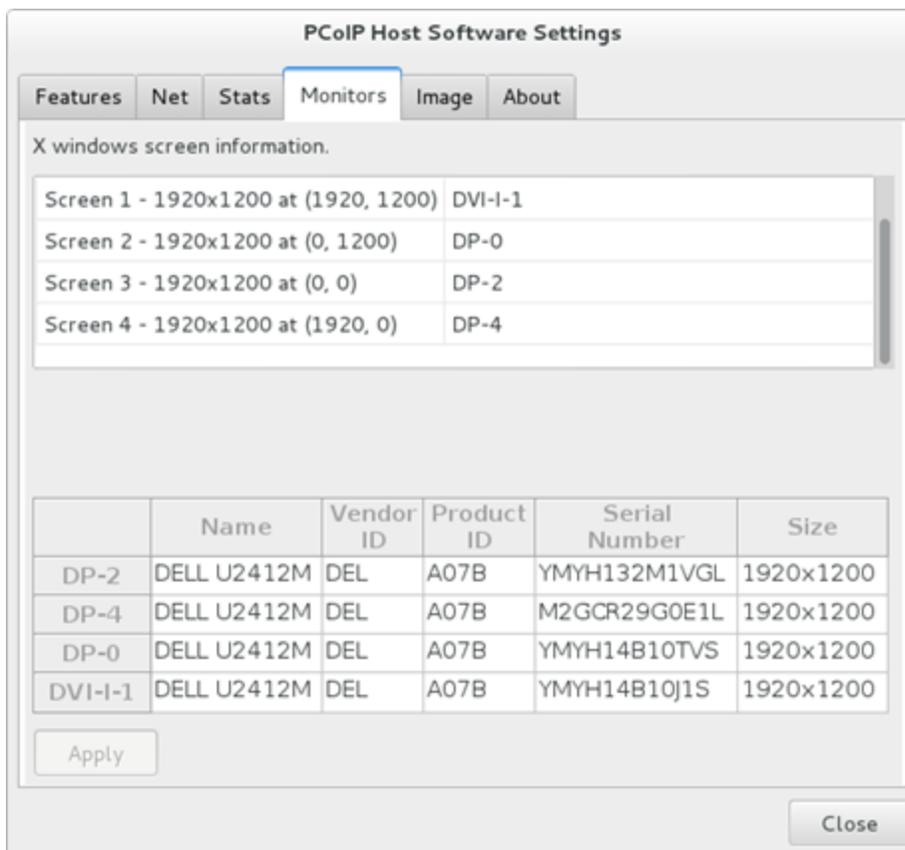


Figure 5-7: PCoIP Host Software Settings—Monitors xrandr 1.2 or Greater

5.5.2 Xrandr 1.1 or Lower

On Linux systems that support xrandr version 1.1 or lower, you must match the monitors reported by the client with the screens reported by X Windows. If the monitor configuration settings are not properly set, the **Local Cursor and Keyboard** feature may be grayed out (disabled) or the local and remote cursors may not be in sync.

This is only necessary when more than one monitor is connected to the client or when X Windows reports more than one active screen. The UI automatically configures the monitor settings when all the following conditions are true:

- X Windows reports only one active screen.
- Only one monitor is connected to the client.
- The client [Display Topology settings](#) are configured properly.

The figure below is an example of the **Monitors** tab from a system with two X Windows screens and two monitors. You must specify which monitor is connected to which screen.

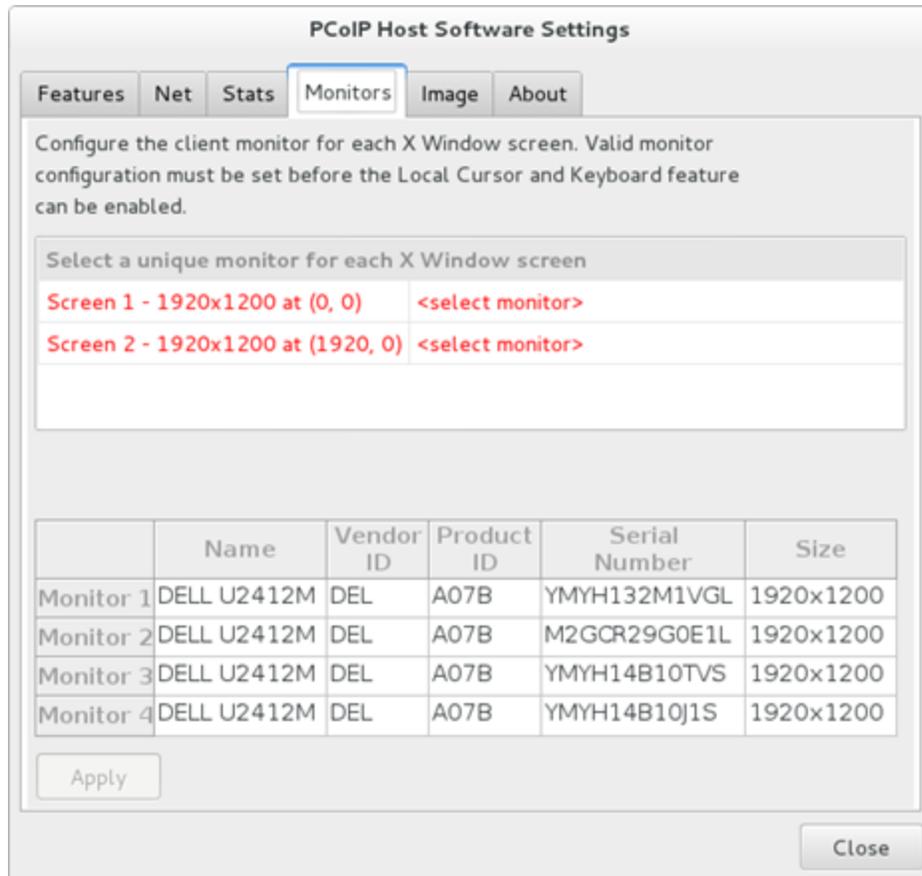


Figure 5-8: PCoIP Host Software Settings—Monitors Not Configured

To match the monitors reported by the client with the screens reported by X Windows:

1. Click the **<select monitor>** text and choose **Monitor 1** or **Monitor 2**.
2. Repeat to specify which screen is connected to which monitor until all screens are matched to monitors.

The figure below is an example of the **Monitors** tab after the monitors are configured.

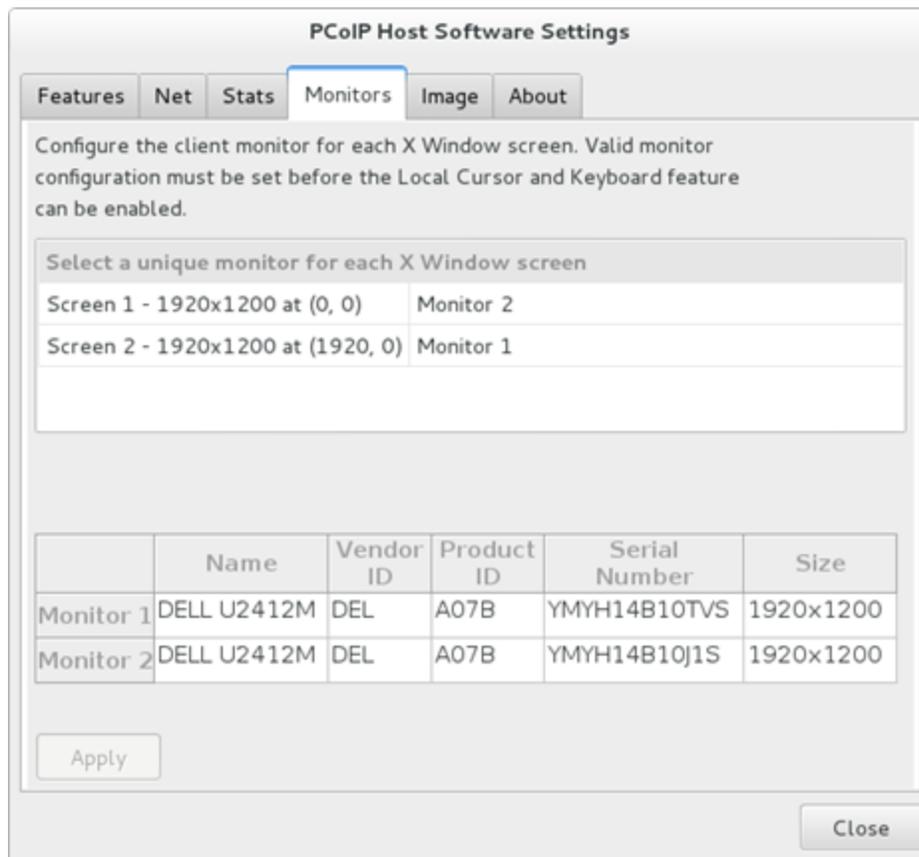


Figure 5-9: PCoIP Host Software Setting—Monitors Configured

5.5.3 Zero Client Display Settings

The **Display Topology** tab is on the zero client OSD **User Settings** page.

- Ensure **Enable Configuration** is selected. This setting is selected by default.

Note: If this option is not selected, the monitor information shown at the bottom of [PCoIP Host Software Settings—Monitors not Configured](#) and [PCoIP Host Software Settings—Monitors Configured](#) is not populated and the **Local Cursor and Keyboard** feature is grayed out.

- The **Resolution** setting must match the resolution of the host monitor. The default value of this field is **Native**. The **Local Cursor and Keyboard** feature might be grayed out if this setting does not match the resolution of the host screen.

Note: If the system is running xrandr 1.1 or lower, the host software ignores the **Layout**, **Alignment**, **Primary**, **Position**, and **Rotation** settings. If the system is running xrandr 1.2 or greater, the host software uses these settings.

For more information on multi-monitor systems, see section 6.1 "Requirements for Local Cursor and Keyboard".

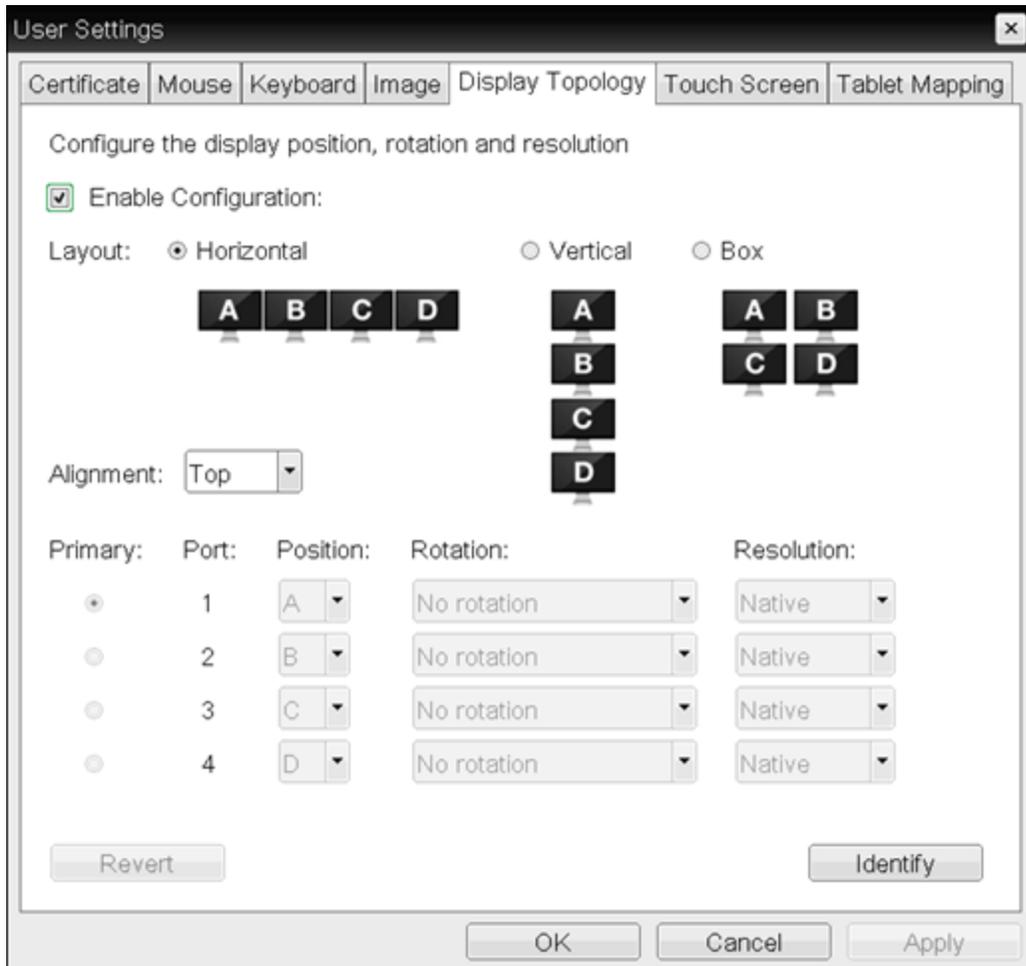


Figure 5-10: OSD User Settings > Display Topology Options

5.6 Image

The following figure shows the **Image** tab. This lets you view and adjust the PCoIP session image quality preference setting.

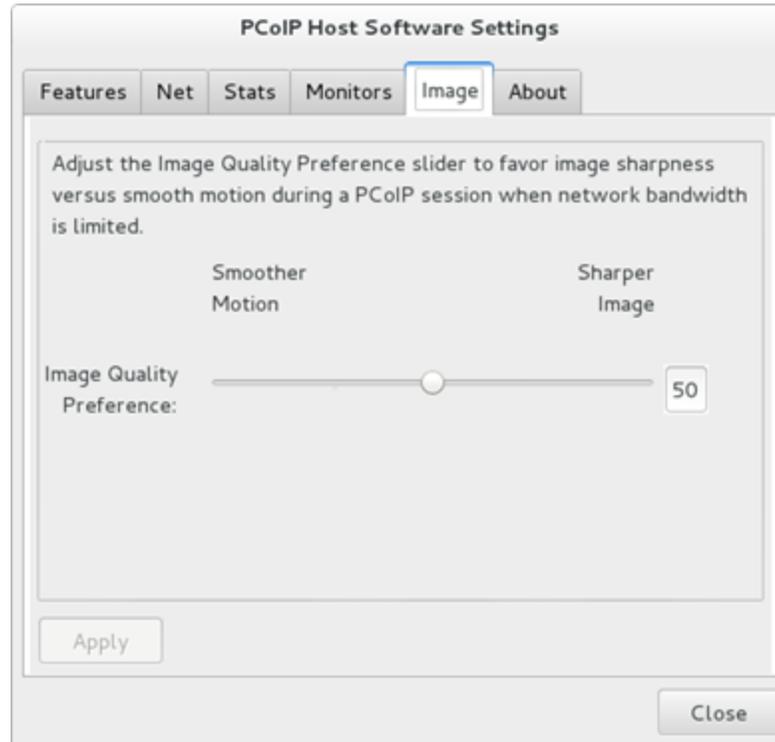


Figure 5-11: PCoIP Host Software Settings—Image

The PCoIP protocol adjusts image quality settings when the network connection between a PCoIP host and client is constrained and unable to provide enough bandwidth to support full frame rate video. The **Image Quality Preference** setting lets you configure a preference for smoother motion (higher frame rate) versus sharper image (higher image quality).

Note: Firmware release 3.5.0 is the first release that supports **Image Quality Preference**.

5.7 About

The **About** tab lets you view the version information of the PCoIP host software.

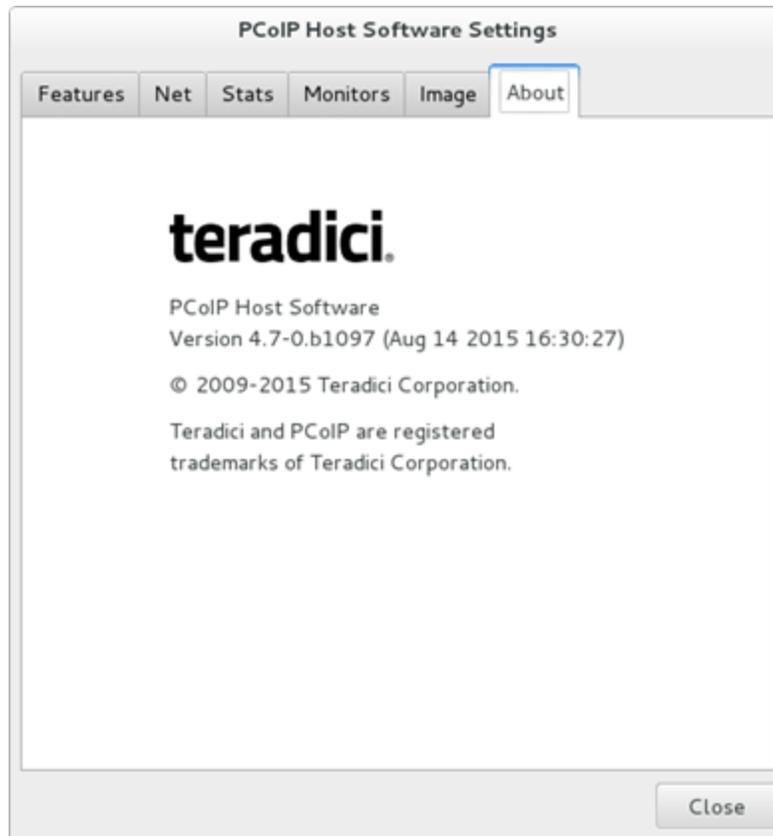


Figure 5-12: PCoIP Host Software Settings—About

6 Troubleshooting

This topic outlines some common issues and suggested solutions. If your problem is not listed, you can capture additional debug information by [starting the host software executable](#) with the optional parameter “-ll=4”, which enables debug logging.

Table 6-1: Common Issues and Solutions

Item	Description	Solution
1	When a user logs in, this popup message appears: <i>PCoIP Host Software Error Could not start the agent. Another instance of the agent is already running or the last instance of the agent did not exit properly. Close the other instance or delete the file '/tmp/pcoip_hostsw.pid' and try again.</i>	This occurs when a user’s login script calls pcoip_agent or pcoip_starthostsw. The host software daemon in releases 4.5.0 and higher automatically starts the host software executable, eliminating the need for users to start the program when they log in. Modify the user’s login script so it does not call pcoip_agent or pcoip_starthostsw.
2	When connecting from a software client, the display is scaled strangely.	Add this line to Device section of /etc/X11/xorg.conf: Option "FlatPanelProperties" "Scaling = Native"
3	Client topology is not applied correctly.	Verify that the host Xserver can support the desired topology by setting it with display manager or command-line xrandr.
4	Client topology is not applied correctly, including: <ul style="list-style-type: none"> • Not all client windows are enabled (one or more displays are blank). • The local cursor overlay is out of sync with the remote cursor. • Some or all display rotations are not applied. • The primary display specified by the client is not the actual primary display. 	Possible solution: <ul style="list-style-type: none"> • Restart host software: <ul style="list-style-type: none"> • Right-click the PCoIP icon and select restart. • If the icon is not visible, from a terminal type "killall pcoip_agent". • Disconnect and reconnect the session. • Restart X windows to terminate all running applications: <ul style="list-style-type: none"> • Log out and log in again. • Press Ctrl-Alt-Backspace.

Item	Description	Solution
5	Incorrect topology applied after connecting or disconnecting (hot plug) zero client monitors while a session is active.	The current host software does not support hot-plugging zero client monitors while a session is active. Resolution: Disconnect and restart the PCoIP session.
6	When the login screen is active on multi-monitor systems, the primary display specified by the client topology settings might not be the actual primary display.	The Linux login screen sometimes doesn't correctly process dynamic topology updates. Resolution: Restart the X server by pressing Ctrl-Alt-Backspace.
7	The <code>pcoip_agent</code> application does not start.	Delete the lock file <code>/tmp/pcoiphostsw.pid</code> if it exists and start the UI application.
8	The local cursor overlay is out of sync with the remote cursor when the display is rotated by 90, 180, or 270 degrees.	The current host software does not support local cursor on rotated displays: <ul style="list-style-type: none"> • If <code>xrandr</code> version 1.1 or lower is installed on the workstation. • The <code>"-notopo"</code> option is specified when the <code>createRPM</code> script runs. Resolution: Do not rotate any displays or use a workstation with <code>xrandr</code> version 1.2 or greater with the <code>"-notopo"</code> option when running the <code>createRPM</code> script.
9	Only the left, middle, right, forwards, and backwards buttons and horizontal scroll wheel work on the mouse when local cursor and keyboard is enabled.	The current host software supports only the left, middle, right, forwards, and backwards mouse buttons and horizontal scroll wheel in local cursor mode.
10	A session is active with a soft client and the Local Cursor and Keyboard feature is not enabled at the login screen after the host PC finishes booting.	By default, the host software daemon enables the Local Cursor and Keyboard feature when the login screen is active and a session is active with a soft client. Resolution: Verify the daemon configuration file <code>/etc/pcoiphostswd.conf</code> does not exist. If the file exists, verify the daemon is enabled.
11	The local cursor speed is different from the X Windows cursor speed.	The local cursor does not use X Window's pointer speed or acceleration settings. The local cursor speed of the zero client is configured by the PCoIP UI. The local cursor speed of the soft client is controlled by soft client system's mouse driver.

Item	Description	Solution
12	The Enable Local Cursor and Keyboard checkbox is grayed out.	System configuration may not meet requirements. See section 6.1 "Requirements for Local Cursor and Keyboard".
13	The PCoIP UI icon does not appear in the system tray. Instead it appears on the desktop, typically in the upper left hand corner of the screen.	This occurs when the PCoIP UI starts running before the desktop manager has finished booting. Resolution: Delay starting the PCoIP UI by modifying the daemon Host SW Login Start Delay .
14	The local cursor feature only works on systems where all active host displays are connected to a single client.	This restriction exists because the client sends absolute cursor data to the host. For this to work properly the client topology must match the host topology. If the topologies do not match, the local and remote cursors will not be in sync. Resolution: Ensure all active host displays are connected to a single client.
15	The host software does not work in host systems with multiple PCoIP host cards.	The current host software does not work in systems with more than one PCoIP host card.
16	Only one instance of the UI can run on the workstation.	Multi-user mode is not supported. Do not attempt to run multiple instances of the UI.
17	The <code>pcoip_host.ko</code> kernel driver does not load.	Open the file <code>/var/log/messages</code> and search for messages with "kernel: pcoip_host:". View details that are typically hidden while the system boots and look for startup errors and verify <code>pcoip_host</code> loads.
18	The Local Cursor and Keyboard feature does not support entering and exiting low power modes (hibernate and standby). This feature may stop working on systems that exit low power state.	Users wishing to put the workstation in a low power state should shut down/restart the workstation after exiting a low-power state.
19	Key presses on the keyboard are dropped when the Local Cursor and Keyboard and Client Keyboard Repeat Detection features are enabled, the latency of the PCoIP session exceeds 60 ms and the keyboard is connected behind a USB hub.	Resolution: Connect the keyboard directly to the zero client or install firmware release 4.1.0 or later and ensure only HID devices (keyboard and mouse) are connected to the USB hub.

Item	Description	Solution
20	<p>When the mouse is connected to the zero client behind a USB hub and Local Cursor and Keyboard is enabled:</p> <ul style="list-style-type: none"> • If remote cursor synchronization is also enabled, the local cursor movement is not smooth. • If remote cursor synchronization is disabled, the local cursor does not move. 	<p>Resolution: Connect the mouse directly to a zero client USB root port or install firmware release 4.1.0 or later and ensure only HID devices (keyboard and mouse) are connected to the USB hub.</p> <p>Note: Some zero clients contain an integrated USB hub. USB devices connected to some USB ports are connected to a hub rather than a root port. See Knowledge Base topic 15134-1486 (How to identify which USB port on my PCoIP zero client is behind an integrated/internal USB hub?) on the Teradici support website.</p>
21	<p>The zero client display topology settings are configured and enabled, but the settings are not activated when the PCoIP session starts.</p>	<p>If xrandr version 1.1 or lower is installed on the workstation, the host software does not support activating client topology settings.</p> <p>Resolution: Adjust the display configuration settings using applications installed on the workstation/PC (example applications include nvidia-settings), or use a workstation running xrandr version 1.2 or higher.</p>
22	<p>The following error message appears when starting the pcoip_agent application:</p> <pre>Xlib: extension "RANDR" missing on display ":0.0".</pre>	<p>This has been observed on a CentOS 6.2 system while Xinerama is enabled.</p> <p>Resolution: Disable Xinerama or ignore the error message.</p>
23	<p>Both the remote and local cursors are visible when the Visible Cursor(s) option is Local.</p>	<p>Known Issues when Hiding the Remote Cursor describes known issues associated with hiding the remote cursor.</p>
24	<p>The Visible Cursor(s) dropdown menu does not include the Local option.</p>	<p>Known Issues when Hiding the Remote Cursor describes known issues associated with hiding the remote cursor.</p>

Item	Description	Solution
25	The local and remote cursors are not in sync or the cursor movement does not match mouse movement.	<p>Typically the Linux distribution requires changes to the X Windows <code>xorg.conf</code> file. For details, see step 5 in section 3.4 "Installing PCoIP Host Software Binary RPM".</p> <p>This might happen if TwinView is enabled on the workstation and the <code>-t</code> command line option is not specified when starting the host software executable.</p> <p>This might also happen on multi-monitor workstations with Xinerama enabled running CentOS 6.3 and version 310.19 of the Nvidia driver.</p> <p>Resolution: Add the <code>-t</code> option to the <code>HostSWOptions</code> setting in the daemon configuration file and restart the host software.</p>
26	The local and remote cursors are not in sync, or the cursor movement does not match mouse movement after changing the number of active monitors or the display resolution settings while logged in, or the monitor(s) is blank after connecting to a workstation.	<p>Resolution: Log off and log on again or press <code>Ctrl-Alt-Backspace</code>. Both actions restart the X server and may fix the problem.</p>
27	The workstation is not locked after a PCoIP session ends while a user is logged in and the Lock host PC upon session termination feature is enabled.	<p>The host software calls the <code>pcoip_lockscreen</code> script to lock the screen. For details on the location of the script, see section 3.4 "Installing PCoIP Host Software Binary RPM".</p> <p>Resolution: Modify the script to lock the screen.</p>
28	While connected to a workstation over a PCoIP session, mouse movements are slow and the bandwidth from the host to the client is high when the desktop image is static.	<p>Most likely the graphics card has enabled temporal dithering. For details on temporal dithering, see section 3 "PCoIP Host Software Installation".</p>
29	The UI closes after clicking Apply on the UI Monitor tab.	<p>This is a known problem that will be investigated in the future.</p> <p>Resolution: Re-open the UI after clicking Apply.</p>
30	The PCoIP UI icon appears as a vertical bar instead of the PCoIP icon in the system tray.	<p>This is a known problem that will be investigated in the future.</p> <p>Resolution: Right-click the UI and select Restart Host SW or kill the <code>pcoip_agent</code> process by typing <code>killall pcoip_agent</code>.</p>

Item	Description	Solution
31	Sometimes the client displays an arrow cursor shape with an “L” in it when Local Cursor and Keyboard is enabled and the Local cursor is visible.	See section 6.2 " Known Issues When Hiding the Remote Cursor " for scenarios that might cause this. This problem also occurs when the size of the host drawn cursor bitmap exceeds a limit negotiated by the client and host at the start of a session.

6.1 Requirements for Local Cursor and Keyboard

There are requirements for the local cursor and keyboard feature. If the **Enable Local Cursor and Keyboard** checkbox is grayed out, ensure the following requirements are met:

- The PCoIP host and zero client both use the same firmware that supports local cursor and keyboard.
- The **Host Driver Function** option is enabled on the PCoIP host and the PC or workstation is restarted after changing the option.
- A PCoIP session is established between the PCoIP host and client.
- The graphics card is not configured to scale the image (that is, not using technologies such as horizontal/vertical span mode from NVIDIA).
- The graphics card is configured to use the monitor’s built-in scaling when a non-native resolution is selected.
- If xrandr version 1.1 or lower is installed on the workstation, the display(s) are not rotated.
- If using firmware release 4.1.0 or higher and the mouse or keyboard are connected behind a USB hub, ensure only HID devices (keyboard and mouse) are connected to the USB hub.
- If using a firmware release lower than 4.1.0, the mouse and keyboard are connected directly to the USB ports on the zero client (that is, the devices are not connected to a USB hub).
- The mouse and keyboard devices function correctly with the zero client’s OSD.
- The **Enable Configuration** option is selected on the **OSD User Settings > Display Topology** tab.
- The resolution settings on the **OSD User Settings > Display Topology** tab match the resolution settings of the X Window screens.
- If xrandr version 1.1 or lower is installed on the workstation, the correct monitor information is configured on the UI **Monitors** tab.
- All active X Window monitors must be connected to one client.
- Verify the X Window output screens match the display outputs detected by the host card. The host card reports the display outputs on the **Info > Attached Devices** window. To access this window, log into the host card web interface and select **Info > Attached Devices**.
- X Window multi-monitor workstations can be configured to overlap screens (physical displays) such that part of the image or the entire image shown on display 1 also appears

on display 2. The local cursor feature does not work in systems configured in this manner. Verify none of the X Window screens overlap each other.

- If xrandr version 1.1 or lower is installed on the workstation, the table below shows the supported video modes and the number of monitors supported in each mode. The **Local Cursor and Keyboard** feature is disabled or does not function properly on systems that configure the graphics card to use unsupported video modes, or the number of monitors is incorrect.

Table 6-2: Supported Video Modes

TwinView	Xinerama	Number of Monitors Supported
Disabled	Enabled	1, 2, 3, or 4
Disabled	Disabled	1
Enabled	Disabled	2

Note: Some multi-monitor workstations using newer versions of the Nvidia driver (310.19) with Xinerama enabled must include the “-t” option when starting the pcoip_agent. If the remote and local cursors are not in sync after starting the pcoip_agent, try adding the “-t” option to the HostSWOption setting in the daemon configuration file and restarting the host software.

6.2 Known Issues When Hiding the Remote Cursor

When the local cursor and keyboard feature is enabled, users must configure the **Visible Cursor(s)** option. When this option is set to **Local**, the host software hides the remote cursor. Some problems users may observe when the remote cursor is hidden include:

- Animated cursors are not supported on some Linux distributions. The client displays an arrow cursor shape with an “L” in it when an animated cursor is active.
- Invisible cursor shapes are not supported on some Linux distributions. The client displays an arrow cursor shape with a “L” when an invisible cursor is active. On some systems an invisible cursor is used when users type text in a terminal.
- Workstations with multiple monitors that enable Xinerama see that the host cursor is not hidden when the cursor shape changes on monitors other than the primary monitor. The primary monitor is the monitor whose origin is located at position (0, 0). The host cursor remains visible until the cursor shape changes again on the primary monitor.
- The host software hides the remote cursor using API found in version 4 or later of the XFixes package. The host software cannot hide the host cursor if version 4 or later of this package is not installed. The host software checks if the correct package is installed. If the correct package is not installed, the **Local** option is not included in the list of available **Visible Cursor(s)**.

6.3 Local Tablet Driver

The local tablet driver is useful in WAN deployments where network latency exceeds 40-60 ms. In these environments, users may notice a visible lag between the movement of the tablet stylus and the movement of the cursor. The local tablet driver helps improve user experience by reducing the effects of latency in some networks.

6.3.1 Local Tablet Driver Requirements

There are requirements for the local tablet driver feature. If the **Enable Local Tablet Driver** checkbox is grayed out, ensure the following requirements are met:

- The PCoIP host card firmware must be 4.7.2 or higher.
- The PCoIP zero client firmware must be 4.8.0-p91 or higher.
- The PCoIP host card and zero client include Tera2 devices. This feature is not supported on Tera1 devices.
- The workstation kernel version is 2.6.30 or higher.
- A maximum of two tablets can be connected to the zero client operating in local tablet mode. Additional tablets must be bridged.
- To operate the tablet in left-handed orientation, you must configure both the zero client **Left Handed Orientation** setting and the host tablet **Rotate** setting. Use the zero client **OSD User Setting > Tablet Mapping** screen to configure the **Left Handed Orientation** setting. Change the host tablet orientation setting by configuring the xsetwacom **Rotate** setting. The local and remote cursors will not be in sync if the zero client and host settings are not configured properly.
- On multi-monitor workstations the tablet is mapped to the entire desktop by default. If a tablet is mapped to a single display on a multi-monitor workstation, configure both the zero client tablet mapping setting and the host tablet mapping setting. Use the zero client **OSD User Setting > Tablet Mapping** screen to map the tablet to a single display. Change the host tablet mapping setting by configuring the xsetwacom **MapToOutput** setting. The local and remote cursors will not be in sync if the zero client and host settings are not configured properly.
- In bridged mode (local tablet driver is disabled), the host tablet mapping setting by the xsetwacom **MapToOutput** command is required like the tablet is connected to the host port.

6.3.2 Supported Tablets

Table 6-3: Supported Tablets

Description	Model	Product ID
Intuos3 4x5	PTZ-430	0x00B0

Description	Model	Product ID
Intuos3 6x8	PTZ-630	0x00B1
Intuos3 9x12	PTZ-930	0x00B2
Intuos3 12x12	PTZ-1230	0x00B3
Intuos3 12x19	PTZ-1231W	0x00B4
Intuos3 6x11	PTZ-631W	0x00B5
Intuos3 4x6	PTZ-431W	0x00B7
Intuos4 4x6	PTK-440	0x00B8
Intuos4 6x9	PTK-640	0x00B9
Intuos4 8x13	PTK-840	0x00BA
Intuos4 12x19	PTK-1240	0x00BB
Intuos4 WL		0x00BC
Intuos5 touch S		0x0026
Intuos5 touch M		0x0027
Intuos5 touch L		0x0028
Intuos5 S		0x0029
Intuos5 M		0x002A
Intuos Pro S	PTH-451	0x0314
Intuos Pro M	PTH-651, PTH-651/S	0x0315
Intuos Pro L	PTH-851	0x0317
Cintiq 24HD	DTK-2400	0x00F4
Cintiq 24HD touch	DTH-2400 (pen)	0x00F8
Cintiq 22HDT	DTH-2200 (pen)	0x005B
Cintiq 22HD	DTK-2200	0x00FA
Cintiq 21UX2	DTK-2100	0x00CC

Description	Model	Product ID
	DTH-2242	0x0059
	DTK-2241	0x0057
Cintiq 13HD	DTK-1300	0x0304
Cintiq 12WX	DTZ-1201W	0x00C6
Cintiq 20WSX		0x00C5
Cintiq 21UX	DTZ-2100	0x003F

6.3.3 Known Issues When Using Local Tablet Driver

This section describes some problems users may observe while using the local tablet driver.

- If the tablet stylus or mouse is too close to the tablet under specific conditions, move the tablet stylus or mouse away from the tablet for it to work:
 - If the state of the **Local Tablet Driver** feature is changed.
 - If the **Local Tablet Driver** feature is enabled when the session starts.
- The tablet must be configured to operate in absolute mode.
- The tablet mouse operates in relative mode:
 - When a session starts.
 - When a tablet is connected to a zero client.
 - When the **Local Tablet Driver** feature is enabled.

To work around this, use the `xsetwacom` utility to change the mode of the **Pen Cursor** device from **Absolute** to **Relative** and then back to **Absolute**. You must do this each time the tablet is connected, when a session starts, and when the **Local Tablet Driver** feature is enabled.

- Some tablets, such as the Cintiq 22HD, include a built-in USB hub and provide a USB port for an external USB device. If a non-HID USB device is connected to the tablet USB port, the tablet and the device are bridged to the host and the zero client’s local tablet driver does not control the tablet. To work around this, do not connect non-HID USB devices to the tablet USB port.

Glossary of Definitions

AWI

Administrative Web Interface. The AWI contains a set of webpages that let you configure the PCoIP host or PCoIP zero client through a web browser.

Daemon

A program that runs as a background process waiting to be activated by an event or condition.

FPS

Frames per Second

LAN

Local Area Network. A computer network that uses network media to interconnect computers in a limited area, such as an office building.

NIC

Network Interface Card

OSD

On Screen Display

PCI

Peripheral Component Interconnect

PCoIP

Personal Computer over Internet Protocol (PC-over-IP)

PCoIP Host

Host or server side of PC-over-IP system

PCoIP Zero Client

Desktop portal or integrated display based on a PCoIP hardware device.

RPM

RPM Package Manager (package management system used to

install/uninstall the PCoIP host software for Linux).

SLED11

SUSE Linux Enterprise Desktop 11

Soft Client

Software application that can establish a PCoIP session with a PCoIP host.

Tera1

First-generation family of Teradici processors for PCoIP zero clients and host cards.

Tera2

Second-generation family of Teradici processors for PCoIP zero clients and host cards.

TwinView

A feature supported on Nvidia graphics cards that present two displays as one large virtual display.

UI

User Interface

VDI

Virtual Desktop Infrastructure. A server computing model that enables desktop virtualization.

Xinerama

An X Window extension that presents two or more displays as one large virtual display.