

# PCoIP<sup>®</sup> Host Software for Windows User Guide

TER1008001

Issue 3

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## Revision History

Version	Date	Description
3	February 17, 2012	Updated for release 3.5.20
2	February 4, 2011	Updated for release 3.3.20
1	August 26, 2010	Initial release

## Contents

Table of Figures .....	6
1 Introduction.....	9
1.1 Audience .....	9
2 PCoIP Host Software.....	10
2.1 System Requirements .....	11
2.2 VMware View Soft Client Restrictions .....	12
2.3 Release Notes .....	12
3 Installing PCoIP Host Software.....	13
3.1 Enabling the Host Driver Function.....	13
3.2 Installing PCoIP Host Software.....	14
4 Uninstalling PCoIP Host Software .....	20
4.1 Uninstalling the PCoIP Host Software for Windows .....	20
4.2 Disabling Host Driver Function .....	20
5 Using the PCoIP Agent.....	21
5.1 Features.....	22
5.2 Network.....	26
5.3 Statistics.....	28
5.4 Monitors .....	29
5.5 Image .....	31
5.6 About.....	32
6 Troubleshooting.....	34
6.1 Requirements for Local Cursor and Keyboard Feature.....	38
6.2 Requirements for Using the Client Display Topology .....	38
6.3 Tested System Configurations.....	39

## Table of Figures

Figure 3-1: Host Driver Function Webpage.....	13
Figure 3-2: PCoIP Host Software Package Setup Upgrade Confirmation Dialog.....	14
Figure 3-3: PCoIP Host Software Package Setup Welcome .....	15
Figure 3-4: PCoIP Host Software Package Setup License .....	15
Figure 3-5: PCoIP Host Software Package Setup Path .....	16
Figure 3-6: PCoIP Host Software Setup Begin Install.....	16
Figure 3-7: PCoIP Host Software Package Progress .....	17
Figure 3-8: PCoIP Host Software Package Continue .....	17
Figure 3-9: PCoIP Host Software Package Continue .....	18
Figure 3-10: PCoIP Host Software Package Install .....	18
Figure 3-11: PCoIP Host Software Completed.....	19
Figure 5-1: Example Desktop with PCoIP Agent Icon in System Tray.....	21
Figure 5-2: PCoIP Agent Right-Click System Tray Menu .....	22
Figure 5-3: PCoIP Agent Settings – Features .....	23
Figure 5-4: PCoIP Agent Settings – Network .....	27
Figure 5-5: PCoIP Agent Information – Statistics.....	28
Figure 5-6: PCoIP Agent Settings – Monitors .....	30
Figure 5-7: PCoIP Agent Settings – Image .....	32
Figure 5-8: PCoIP Agent Information – About.....	33

## Tables

Table 2-1: Firmware Compatibility Matrix.....	10
Table 2-2: New Feature Software/Firmware Requirements.....	10
Table 6-1: Troubleshooting.....	34
Table 6-2: Tested System Configurations .....	40

## Definitions

EDID	Extended Display Identification Data
FPS	Frames per Second
IT	Information Technology
LAN	Local Area Network
NIC	Network Interface Card
OSD	On Screen Display
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
Soft Client	VMware View software application that can establish a PCoIP session with a PCoIP host
WOL	Wake-on-LAN

# 1 Introduction

The PCoIP host software is a collection of drivers and applications that let Windows and Linux operating systems (OS) interact with the TERA1 PCoIP firmware. This lets users enable features such as:

- using local cursor and keyboard
- locking the host PC when a session is terminated
- using a host PC NIC for Wake-on-LAN (WOL)
- disconnecting a session
- viewing host statistics and connection information

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

**Note:** PCoIP host software release 3.3.20 for Windows includes support for View 4.6 Windows soft clients connecting to PCoIP host cards. Section 2.2 lists some restrictions soft client users should note.

**Note:** PCoIP host software release 3.2.20 for Windows includes experimental support for using client display topology settings. Sections 5.4, 6.2, and 6.3 describe the feature along with some restrictions users should note.

**Note:** PCoIP host software release 3.2.20 for Windows includes experimental support for enabling the local cursor and keyboard feature on rotated displays. Sections 5.1, 6.1 and 6.3 describe the feature along with some restrictions users should note.

## 1.1 Audience

The document is written for:

- Network administrators that will be installing and configuring the host software.
- PC users who want to configure the host software.



## 2 PCoIP Host Software

PCoIP host cards loaded with firmware releases 2.0 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 you, the administrator, install 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 PCoIP Agent, or Agent, is installed when the host software is installed. The Agent 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 Agent.

The compatibility matrix in Table 2-1 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 their PCoIP host card and zero client.

**Table 2-1: Firmware Compatibility Matrix**

Firmware Release	PCoIP Host Software Release for Windows
3.5.0, 3.5.1	3.5.20
3.3.0, 3.3.1, 3.4.0, 3.4.1	3.3.20
3.2.0, 3.2.1, 3.2.2	3.2.20
3.1.0, 3.1.1, 3.1.2	3.1.11
2.1.0 (2.1)	1.0.0
2.3.0 (2.3)	1.4.3
2.2.0 (2.2)	1.2.4

Some features added to new releases of the host software require changes to the firmware running on the PCoIP host and/or zero client. Table 2-2 lists the features that require firmware changes. Each feature is available if the host card is running a firmware release that is equal to or later than the release listed in the table.

**Table 2-2: New Feature Software/Firmware Requirements**

New Feature Description	Host SW Release	Firmware Release
Configure PCoIP session image quality setting (see section 5.5)	3.5.20	3.5.0
Support IT auditing feature that gathers workstation and PCoIP host card network settings (see section 5).	3.5.20	3.5.0
Support of soft clients connecting to PCoIP host cards (see sections 2.2 and 5.4)	3.3.20	3.3.0

New Feature Description	Host SW Release	Firmware Release
Support for processing multimedia keys (USB HID usage page 12). Example keys include: volume up, mute, and browser. Previous versions of the host software did not process these keys when the local cursor feature was enabled.	3.3.20	3.3.0
Client keyboard repeat detection (see section 5.1)	3.2.20	3.2.0
Client display topology (see section 5.4)	3.2.20	3.2.0
Display rotation (see section 5.1)	3.2.20	3.2.0
Transparent local cursor shape (see section 5.1)	3.2.20	3.2.0
Support brokering sessions between PCoIP hosts and zero clients or soft clients using VMware View Manager	3.1.11	3.1.0, 3.1.1, 3.1.2
PCoIP session disconnect (see section 5)	1.4.3	2.3.0
Report session statistics (see section 5.3)	1.2.4	2.2.0
Report host card network interface link status (see section 5.2)	1.2.4	2.2.0

Note: Experimental support for soft clients operating with PCoIP host cards was introduced in firmware release 3.1.0, PCoIP host software release 3.1.11, and VMware View release 4.5. Support for this feature is available in firmware release 3.3.0, PCoIP host software release 3.3.20, and VMware View release 4.6.

Note: PCoIP host software release 3.1.11 for Windows supports using VMware View 4 to broker sessions on host machines running 32-bit versions of Windows. See [TER0911004 Using PCoIP Host Cards with VMware View 4](#) for more information on configuring a system to operate in this mode.

Note: PCoIP host software 3.2.20 for Windows supports using VMware View 4.5 or later to broker sessions on host machines running 32-bit or 64-bit versions of Windows. See [TER0911004 Using PCoIP Host Cards with VMware View 4](#) for more information on configuring a system to operate in this mode.

## 2.1 System Requirements

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

- PCoIP host and zero client are loaded with firmware release 2.x, 3.1.x or 3.2.x or later
- Host Driver Function is enabled on the host card (see section 3.1)
- Supported Operating Systems:
  - Windows XP with Service Pack 2 or later, 32- and 64-bit
  - Windows Vista, 32- and 64-bit
  - Windows 7, 32- and 64-bit

## 2.2 VMware View Soft Client Restrictions

PCoIP sessions between soft clients and PC/workstations with a PCoIP host card are now supported.

High-level requirements for these connections:

- PCoIP host card running firmware release 3.3.0 or later
- PCoIP host software for Windows release 3.3.20 or later must be installed on the PC/workstation
- VMware View soft client release 4.6 or later
- The local cursor and keyboard feature must be enabled. If the local cursor and keyboard feature is not enabled, mouse and keyboard input from the soft client is not sent to the PC/workstation.

PCoIP host software releases for Windows starting with 3.1.11 impose some limitations that 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. See section 3.2 for details.
- Users cannot disable the local cursor feature on the **Login** screen. This restriction affects both zero client and soft-client connections. This prevents zero client users from disabling the local cursor at the **Login** screen, which would later prevent a soft-client user from logging into the machine.
- Users cannot disable the local cursor feature while connected to the PC/workstation from a soft client.

**Note:** Host software release 3.5.20 adds support for sending host cursor changes to the client (see section 5.1). This feature does not work with soft clients running releases 5.0 and earlier. This feature will be supported in a future soft client release.

## 2.3 Release Notes

PCoIP host software releases are accompanied by release notes. See TER111109 *PCoIP Host Software for Windows Release Notes* for the latest information on PCoIP host software features and known issues.

## 3 Installing PCoIP Host Software

This section describes how to install or upgrade the PCoIP host software. It is highly recommended that you install the version of the software that is released with the version of the firmware loaded on the PCoIP host and zero client. See Table 2-1 for more details. Before you install the software, you must also enable the Host Driver Function on the host card as described next.

### 3.1 Enabling the 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**.

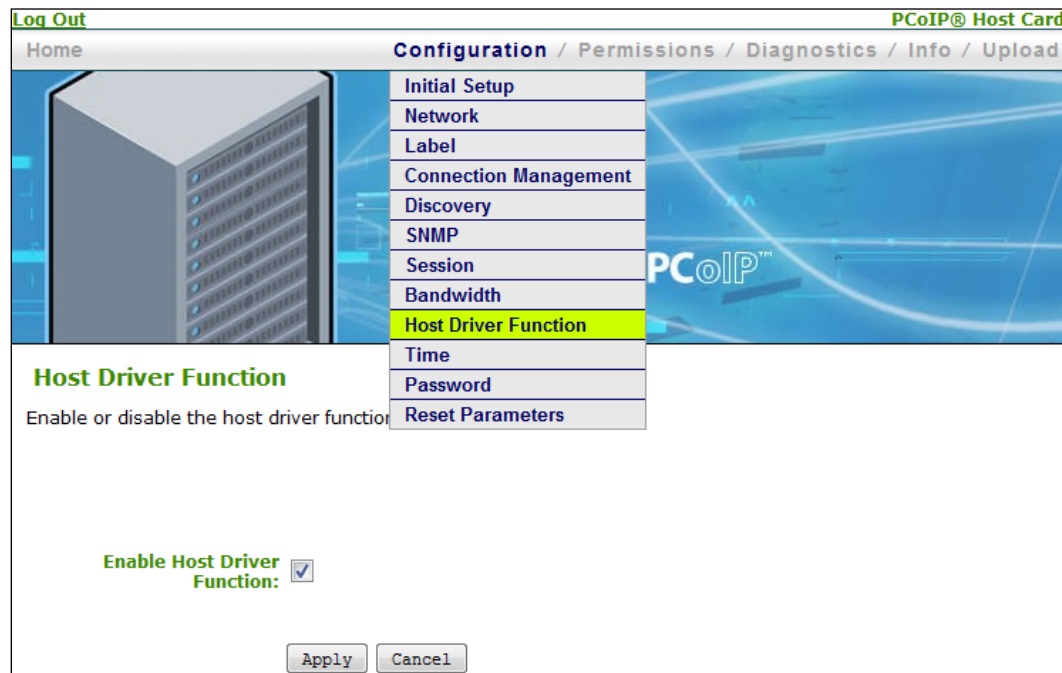


Figure 3-1: Host Driver Function Webpage

3. Check the **Enable Host Driver Function** box, and then 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 Windows boots, log into the PC or workstation as usual.
7. If a **Found Hardware** dialog box appears after logging into Windows, click **Cancel**.

## 3.2 Installing PCoIP Host Software

The PCoIP host software for Windows is provided as a Windows installation package. There are two versions of the installation package where the package filename has:

- x86: For example, PcoipHostSoftwarePackage\_x86-Release\_v1.0.0.msi. This package is for 32-bit operating systems
- x64: For example, PcoipHostSoftwarePackage\_x64-Release\_v1.0.0.msi. This package is for 64-bit operating systems.

You must use the installation package that corresponds to your applicable operating system and have administrative rights to install the software.

**Note:** PCoIP host software releases 3.1.11 and later are compatible with PCoIP hosts running firmware releases equal or later than 3.1.0. Firmware releases 3.1.0 and later support soft 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. This disables the user's keyboard and mouse, and prevents the user from completing the installation process.

You should run the installer by:

- Connecting to the host using RDP or VNC
- Connecting to the host using a zero client in a non-VMware View brokered environment
- Connecting a monitor, keyboard and mouse directly to the host system

To install the software:

1. Activate the installer by double-clicking on the file. A screen appears (similar to the example shown in Figure 3-3).
2. Click **Next** to continue.

**Note:** If an existing version of the software is already installed, a confirmation dialog appears similar to the example shown in Figure 3-2.

3. Click **Yes** to continue.

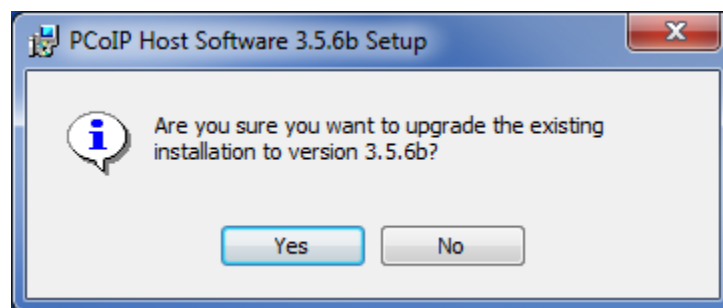
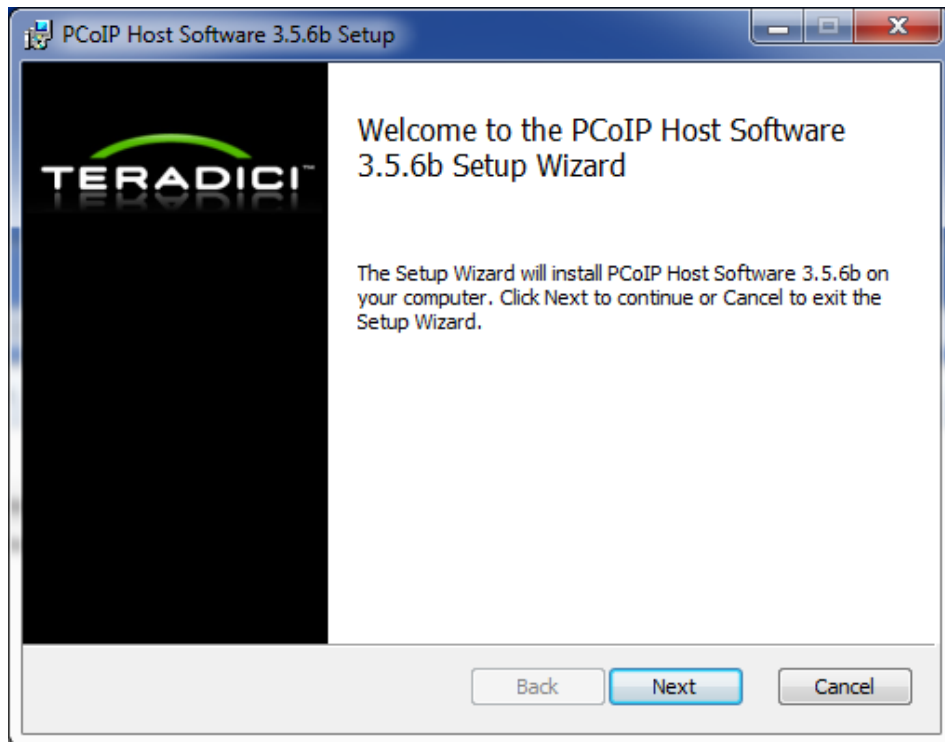
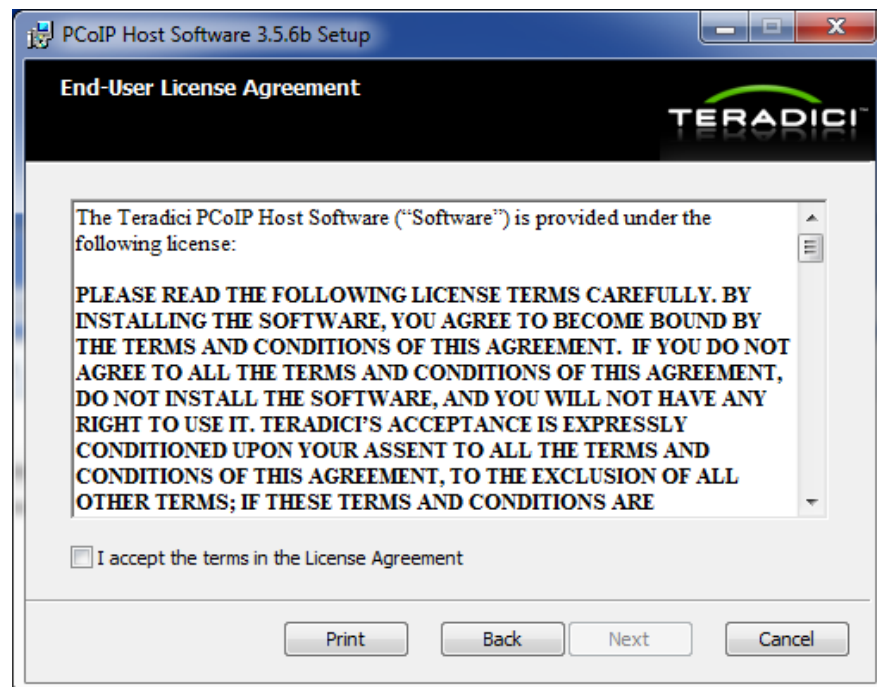


Figure 3-2: PCoIP Host Software Package Setup Upgrade Confirmation Dialog



**Figure 3-3: PCoIP Host Software Package Setup Welcome**

4. Review the End-User License Agreement. If you accept the terms, click the **I accept the terms in the License Agreement** checkbox, and then click **Next**.



**Figure 3-4: PCoIP Host Software Package Setup License**

5. To choose a different directory to install the software, specify the path in the text box, or click **Change....**
6. Click **Next** to continue.

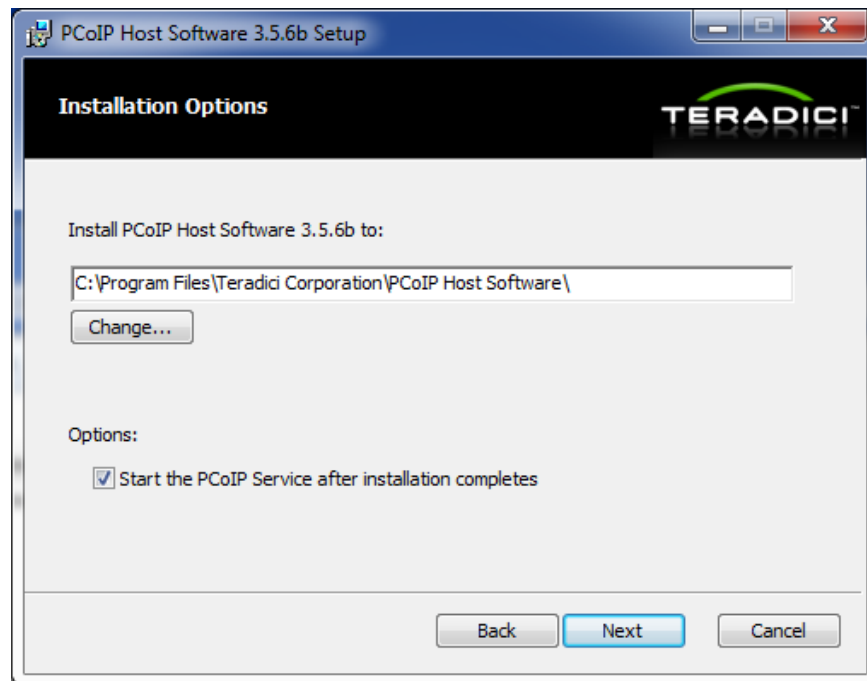


Figure 3-5: PCoIP Host Software Package Setup Path

7. Click **Install**, to start the installation process.

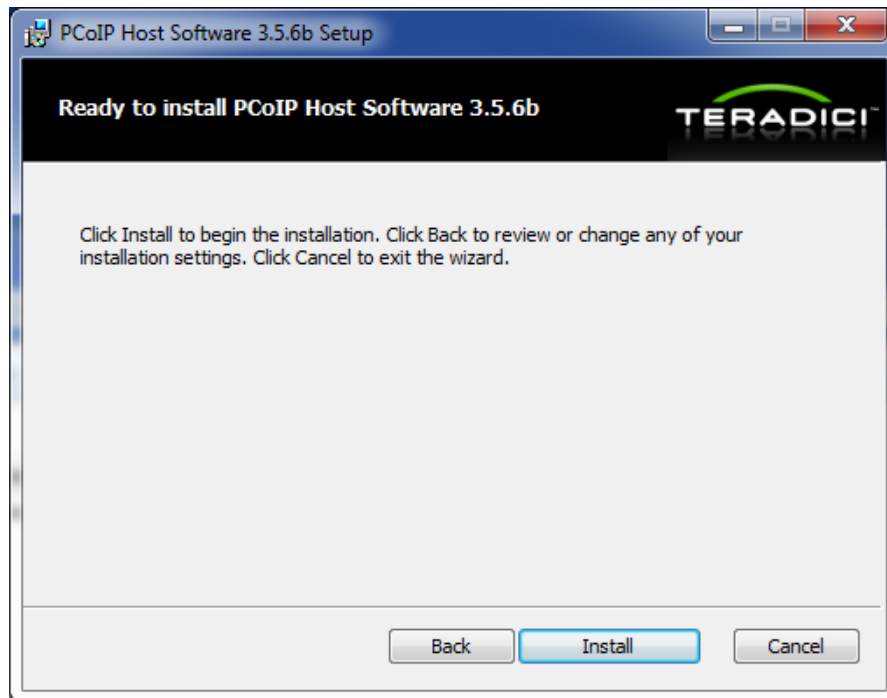
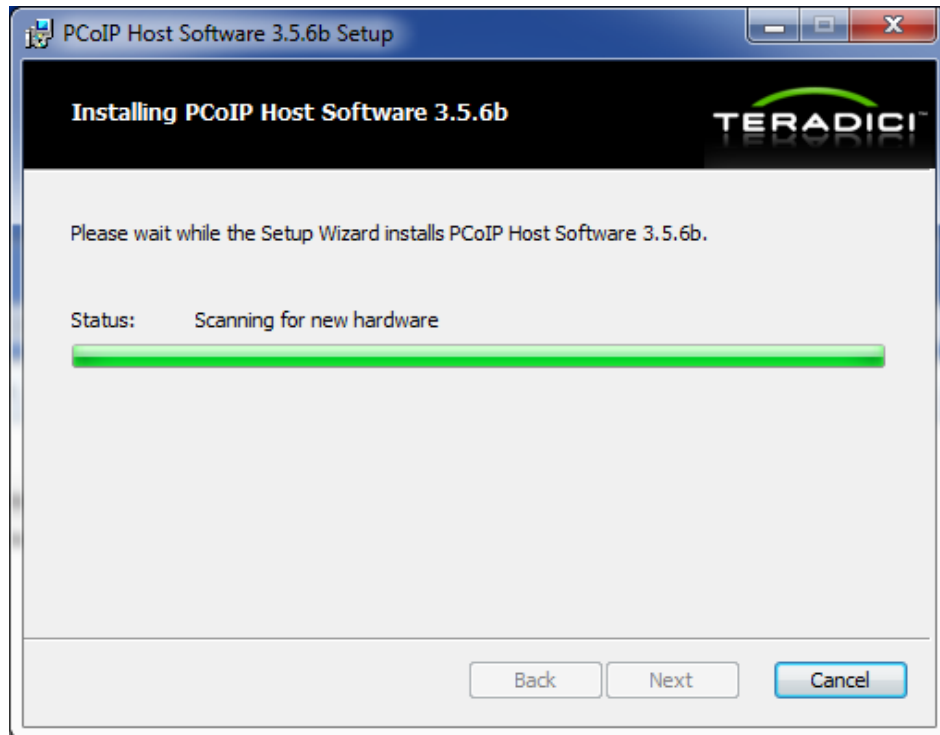


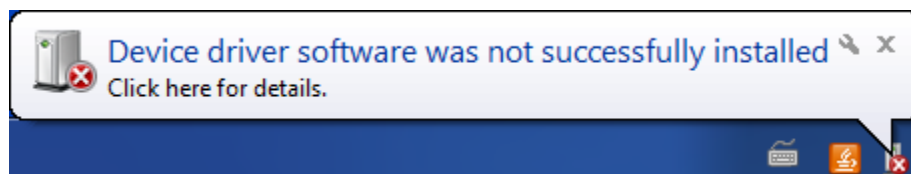
Figure 3-6: PCoIP Host Software Setup Begin Install

8. Wait for the installation process to finish.



**Figure 3-7: PCoIP Host Software Package Progress**

Note: During the installation when drivers are installed, a balloon tip may appear to indicate a driver was not successfully installed in the system tray. You can safely ignore this message.



**Figure 3-8: PCoIP Host Software Package Continue**

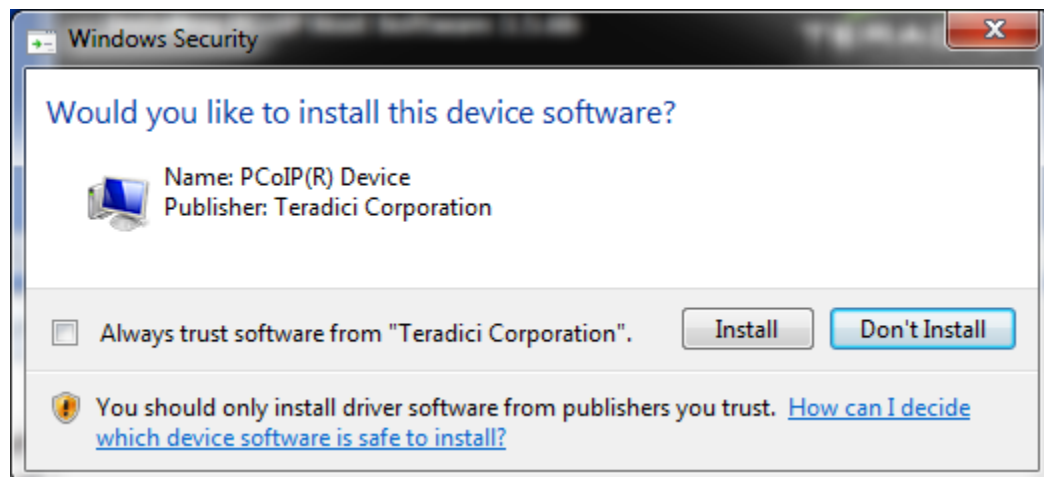
Note: If dialogs similar to Figure 3-9 appear to explain that the PCoIP host software is not Windows Logo tested, click **Continue Anyway** to continue with the installation of the drivers.





**Figure 3-9: PCoIP Host Software Package Continue**

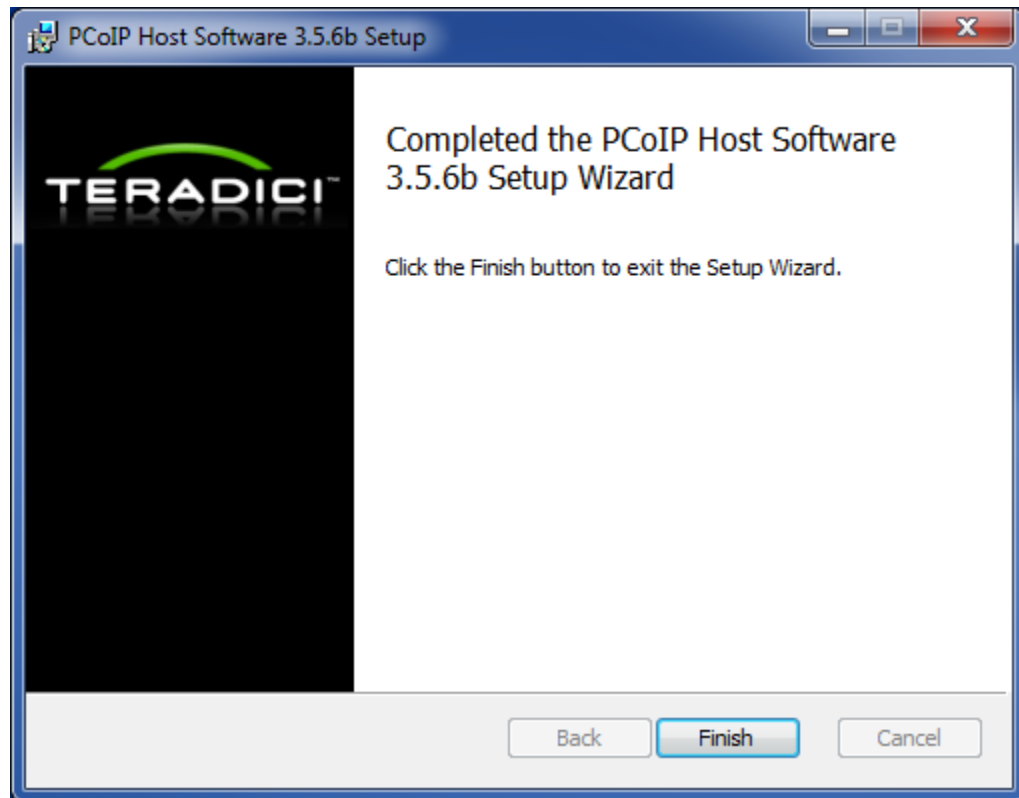
Note: For Windows Vista and Windows 7: During the installation when the drivers are installed, a Windows Security dialog may appear. Click **Install** to continue with the installation. You can also check the **Always trust software from Teradici Corporation** check box to avoid seeing this dialog in the future.



**Figure 3-10: PCoIP Host Software Package Install**

9. Click **Finish** to complete the installation.

Note: If a message appears indicating Windows must reboot, click **Yes** to reboot the PC or workstation. After Windows reboots, the installer automatically runs to finish the installation.



**Figure 3-11: PCoIP Host Software Completed**

## 4 Uninstalling PCoIP Host Software

You can easily remove the PCoIP host software from the PC or workstation at any time using the following steps. If you no longer need the software, you should also disable the Host Driver Function in firmware. See section 4.2 for details.

### 4.1 Uninstalling the PCoIP Host Software for Windows

To uninstall the PCoIP host software for Windows:

1. On the PC or workstation, go to the Control Panel
2. Depending on your operating system:
  - On Windows XP, go to **Add/Remove Programs**.
  - On Windows Vista and later, go to **Programs and Features**.
3. Select the **PCoIP Host Software** entry, and then click **Uninstall**.
4. Follow the onscreen instructions.

**Note:** When you install an older version of the PCoIP host software, you must uninstall the newer version, reboot the PC, and then install the older version. Sometimes the older version fails to install. If this happens, reboot the PC and then retry the installation.

**Note:** The wake-on-LAN (WOL) settings are discarded during an uninstallation or upgrade. You must reconfigure the WOL settings after installing a new version of the software.

### 4.2 Disabling Host Driver Function

Disabling the PCoIP Host Driver Function on the PCoIP host prevents Windows from seeing an unknown PCI device under **Device Manager** and the **Found New Hardware Wizard** dialog associated with the unknown 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 then log in.
3. From the **Configuration** menu, select **Host Driver Function**. The webpage is shown in Figure 3-1
4. Uncheck the **Enable Host Driver Function** check box, and then click **Apply**. This generates a prompt that 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 Agent

After you install the PCoIP Host Software Package, the PCoIP Agent is available. To access the PCoIP Agent, double-click the icon located in the Windows system tray.



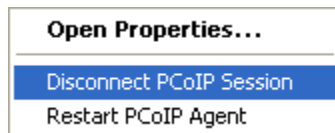
**Figure 5-1: Example Desktop with PCoIP Agent Icon in System Tray**

The Agent provides multiple tabs that let you access different features. These features are described in sections 5.1 through 5.6.

The Agent supports an additional feature that lets you disconnect the PCoIP session, if one is active. To initiate this feature:

- Right-click the PCoIP Agent in the Windows system tray. Figure 5-2 shows the Agent right-click menu.
- Call the `pcoip_agent.exe` executable with the “-disconnect” command-line argument. This method is useful for making a disconnect-session shortcut, or mapping to a **Favorite** key on some keyboards.

**Note:** The executable is located in the installed directory. The default install directory is “C:\Program Files\Teradici Corporation\PCoIP Host Software”.



**Figure 5-2: PCoIP Agent Right-Click System Tray Menu**

The Agent also supports an IT auditing feature that writes information about the workstation and PCoIP host card to a file. To invoke this feature, call the `pcoip_agent.exe` executable with the “-info <filename>” command line option. The following is an example of the contents of an output file:

```
Host Name: desktop1
Host IP: 192.168.0.13
Host MAC: 00-2b-68-33-11-28
PCoIP Host SW Version: 3.5.10b
PCoIP Host SW Build Date: Jan 24 2012 17:04:42
PCoIP Host card MAC: 00-30-04-0D-61-26
PCoIP Host card IP: 192.168.99.21
```

The PCoIP Service automatically starts the PCoIP Agent when Windows is started. The Agent is the only configurable software in the software package.

## 5.1 Features

The following figure shows the **Features** tab of the Agent.

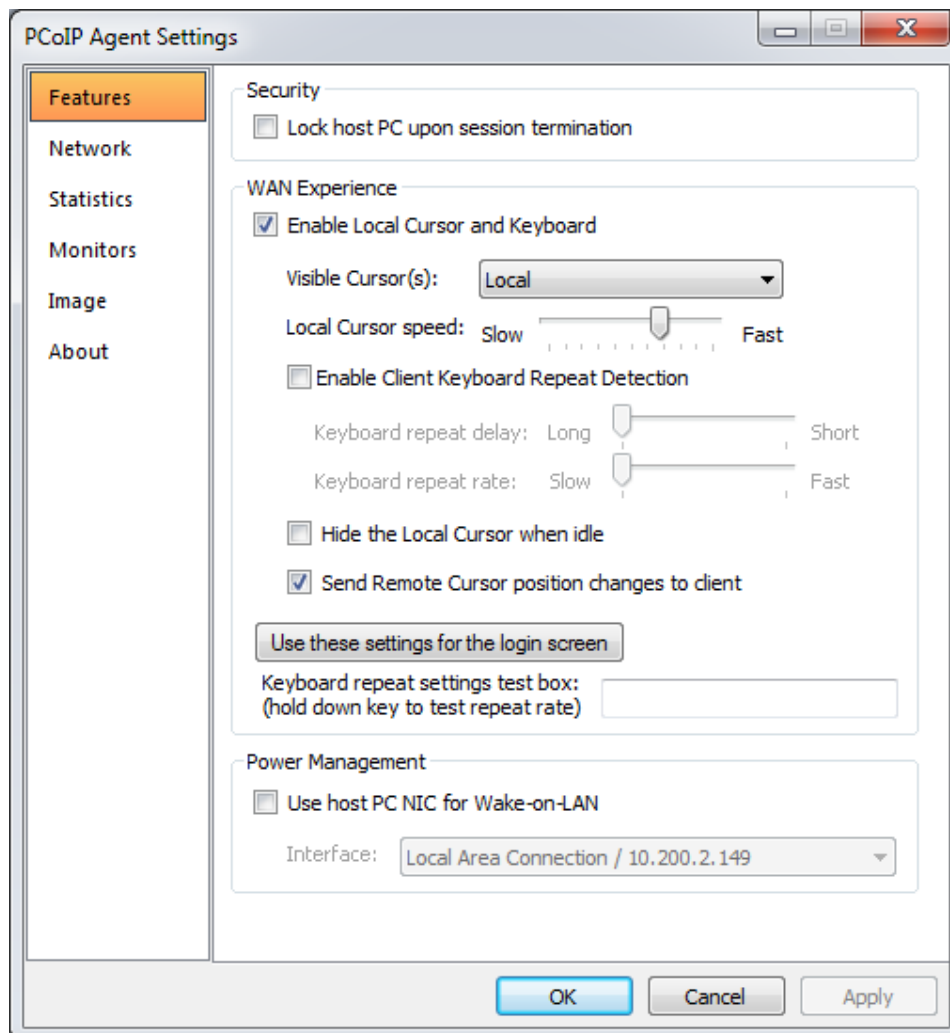


Figure 5-3: PCoIP Agent Settings – Features

The following options are configurable in PCoIP Agent:

### Security

The Security feature lets you lock the PC or workstation to ensure other users do not log into another user's Windows 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.

### 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 Windows cursor moving in tandem. With higher network latencies, the local cursor overlay moves according to the user's movements, and the Windows cursor follows with visible lag. Because the overlay provides instantaneous feedback, the user can move the mouse freely without having to wait for the Windows 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 zero client and the movement is reflected via the local cursor overlay in real time. The movements and mouse clicks are then sent to the PCoIP host and then to Windows via the exposed PCoIP Host Function PCI device and device drivers. When Windows receives the movement information, the cursor on the PC or workstation is updated.

The local keyboard feature works on a similar concept. The zero 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 displayed 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 Agent **Features** tab. Move the mouse over the link to see a tooltip explaining how to fix the problem.

Note: PCoIP host software release 3.2.20 and firmware release 3.2.0 add support for rotated displays. Users wishing to use the **Enable Local Cursor and Keyboard** feature on systems with rotated displays may encounter problems. See section 6.3 for details.

Note: When a soft client session is active, you cannot disable the **Local Cursor and Keyboard** feature. See section 2.2 for details.

- **Visible Cursor(s):** The available options are:
  - Local
  - Remote
  - Local and Remote

Note: When the local cursor feature is enabled and the **Visible Cursor** option is set to **Local**, the remote cursor is hidden for applications using the standard Windows cursors. Applications that override the Windows standard cursor (such as Windows Paint) may display both the local and remote cursors. We are working on correcting this issue in a future release. Some users find it difficult to use an application with two cursors. These users should either disable the local cursor feature or set the visible cursor equal to **Remote**. The local cursor feature increases the maximum tolerable latency from 40-60 ms to ~80-100 ms.

Note: The **Remote** visible cursor option should only be used with PCoIP systems running firmware release 3.2.0 or later. The local cursor may become visible if the PCoIP host and client are running a firmware release prior to 3.2.0.

Note: When the Remote visible cursor is selected, the user is prevented from selecting the **Hide local cursor when idle** option.

- **Cursor speed:** Sets the speed of the local cursor overlay. The local cursor speed setting is separate from the mouse speed in Windows.

Note: You can also configure the zero client cursor speed through the PCoIP On Screen Display (OSD). See the TER0606004 *PCoIP Administrative Interface User Manual*.

Note: The Cursor speed slider only works with zero clients. You cannot adjust the soft client cursor speed.

- **Enable Client Keyboard Repeat Detection:** Check this box to have the client perform keyboard repeat detection. Uncheck this box to have Windows perform keyboard repeat detection.

Note: This feature should be enabled 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. To avoid this problem, enable client keyboard repeat detection.

Note: This feature is supported on PCoIP systems running firmware release 3.2.0 or later.

- **Keyboard repeat delay:** Set the amount 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.
- **Keyboard 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 **Keyboard repeat delay** and **Keyboard repeat rate** through the OSD. See the TER0606004 *PCoIP Administrative Interface User Manual*.

- **Hide the Local Cursor when idle:** Check this box to have the local cursor overlay disappear after one second of idle mouse movement. Uncheck this box to always have the local cursor overlay shown.
- **Send Remote Cursor position changes to client:** Check this box to enable forwarding host PC or workstation cursor location updates to the client. Client HID devices only control the client cursor when this feature is disabled.

Note: Some applications update the cursor position while the user enters data. This feature should be enabled to let these updates be reflected on the client.

- **Use these settings for the login screen button:** Click this button to use the current settings on the screen for the Windows login screen.

Note: On Windows XP 32-bit, the Windows standard arrow cursor may not be hidden at the login screen even if the option is set. This is seen on PCoIP sessions with 125 or more ms of network latency.

Note: Starting with release 3.1.11, the PCoIP host software for Windows installer configures default settings for the local cursor login settings and the settings are overwritten each time the host software is installed. The installer configures the settings to enable the local cursor, sets the visible cursor equal to Local, disables hiding the local cursor when idle and enables sending remote cursor position changes to the client. You can modify these settings using the Agent after you install the host software but they are overwritten if the host software is reinstalled or upgraded/downgraded. You cannot disable the local cursor on the login screen. This is done to prevent problems when



establishing a PCoIP session from a soft client, which requires the local cursor feature to always be enabled.

- **Keyboard repeat settings test box:** Position the cursor in this test box and hold down a key to test the keyboard repeat settings.

**Note:** You can configure the host software configuration settings for each user account on the PC or workstation.

### Power Management

The Power Management section lets you choose the PC or workstation NIC as an alternative to the PCoIP Host NIC for Wake-on-LAN (WOL) power management.

If there is an update to the PC or workstation NIC IP address, the Agent picks up the new IP and automatically sends it to the zero client. The Agent handles the following cases autonomously:

- **The IP address on the selected NIC changes:** The IP address is sent to the zero client.
- **The selected NIC is no longer available:** The Agent starts a timer for 20 seconds. If the selected interface becomes valid again (that is, gets an IP address) the Agent sends the new IP address to the zero client. If the timer times out, a balloon tooltip appears to advise users that the WOL configuration is invalid. Agent automatically disables WOL.
- Agent detects no valid NICs, and automatically disables the WOL feature on the zero client. This case is mutually exclusive with the second case.

**Note:** The PCoIP host software for Windows for View brokered connections does not support the **Power Management** feature because the PCoIP host device cannot be placed in a low power state.

PCoIP power management lets a PC or workstation that is in a sleep or shutdown state be wakened or powered up by a WOL Magic Packet.

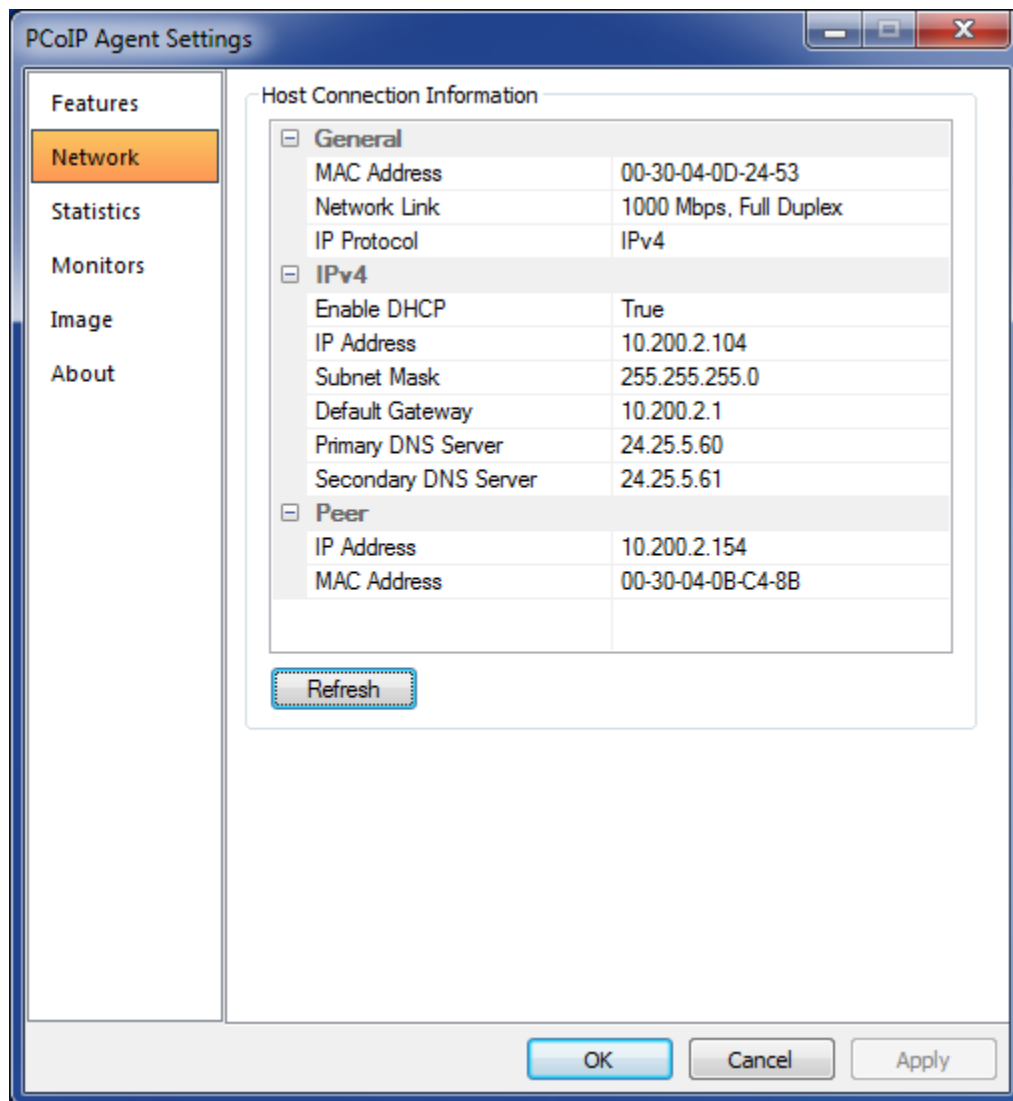
- **Use host PC NIC for Wake-on-LAN:** Select this option to use a NIC on the PC or workstation, instead of the NIC on the PCoIP Host, for waking up the Host PC. The Agent lists all PC or workstation NICs that have a valid IP address.
- **Interface:** Select the NIC on the PC or workstation to use from the drop-down list.

**Note:** Make sure the WOL feature is configured properly on the selected PC or workstation NIC when using this option.

**Note:** The WOL settings are discarded when uninstalling or upgrading the PCoIP host software. You must reconfigure WOL after you install a new version of the software.

## 5.2 Network

The following figure shows the **Network** tab of the Agent. This table lets you view the network settings of the PCoIP host.



**Figure 5-4: PCoIP Agent Settings – Network**

The **Network** 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) if the host is loaded with firmware release 2.2.0 or later. It also displays the IP and MAC addresses of the zero 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 Agent software does not support changing the network settings. You can configure the network settings through the PCoIP Management Console (see the TER0812002 *PCoIP Management Console User Manual*), the PCoIP Administrative Interface (see the TER0606004 *PCoIP Administrative Interface User Manual*), or a connection broker.*

## 5.3 Statistics

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

The statistics are reset when a PCoIP session starts, or when you click the **Reset** button.

**Note:** Systems using host software release 3.1.11 and later display the statistics reported by the PCoIP host card. Clicking the **Reset** button resets the PCoIP host statistics. Systems using host software releases prior to 3.x.x, report the change in PCoIP host card statistics since the Agent started. Clicking the **Reset** button does not reset the PCoIP host statistics.

**Note:** You can also access the PCoIP host card statistics through the PCoIP Administrative Interface (see the TER0606004 *PCoIP Administrative Interface User Manual*).

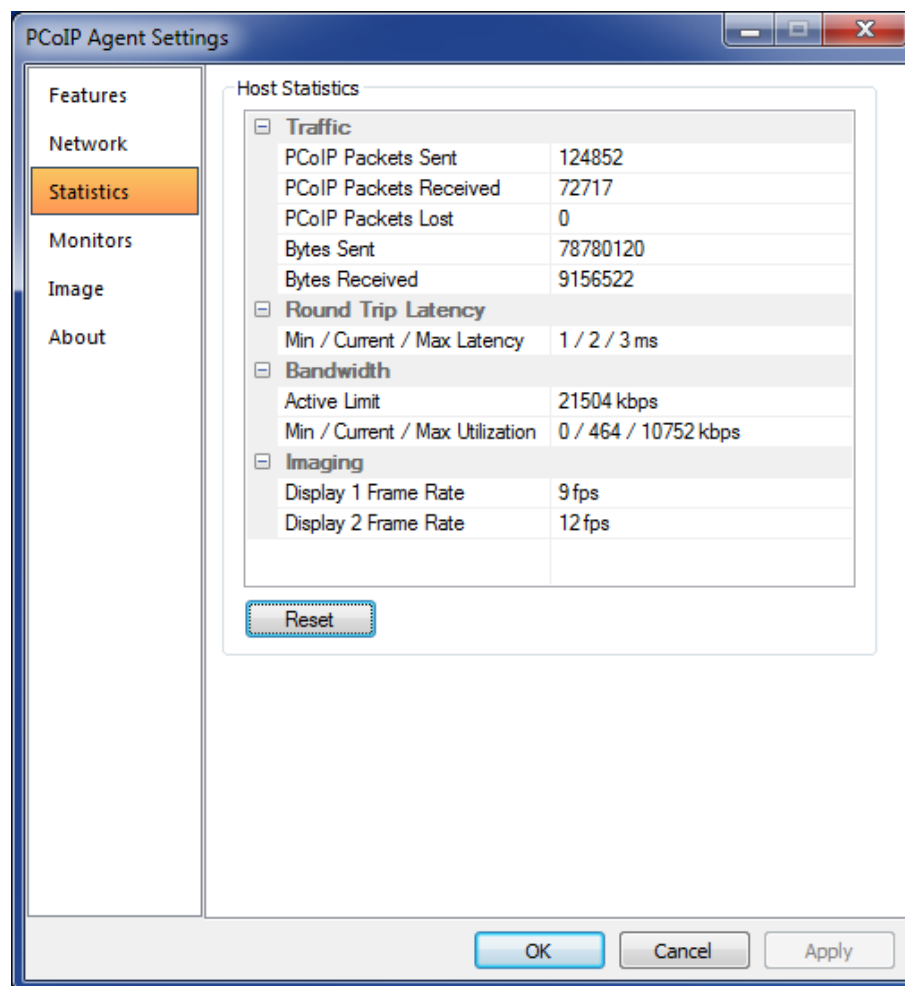


Figure 5-5: PCoIP Agent Information – Statistics

You can view the following PCoIP host 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 reports the total round trip PCoIP system (for example, host to zero client, and back to host) and network latency in milliseconds (+/- 1 ms). The Agent 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 TER0606004 *PCoIP Administrative Interface User Manual*) 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 1 Frame Rate:** The frame rate of Display 1. The statistic is reported in frames per second (fps).
- **Display 2 Frame Rate:** The frame rate of Display 2. The statistic is reported in frames per second (fps).

## 5.4 Monitors

The following figure shows the **Agent Monitors** tab. This page lets you configure the Agent to write the client display topology settings to the host OS at the start of a session. This page also lets you view the client and host display topology settings.

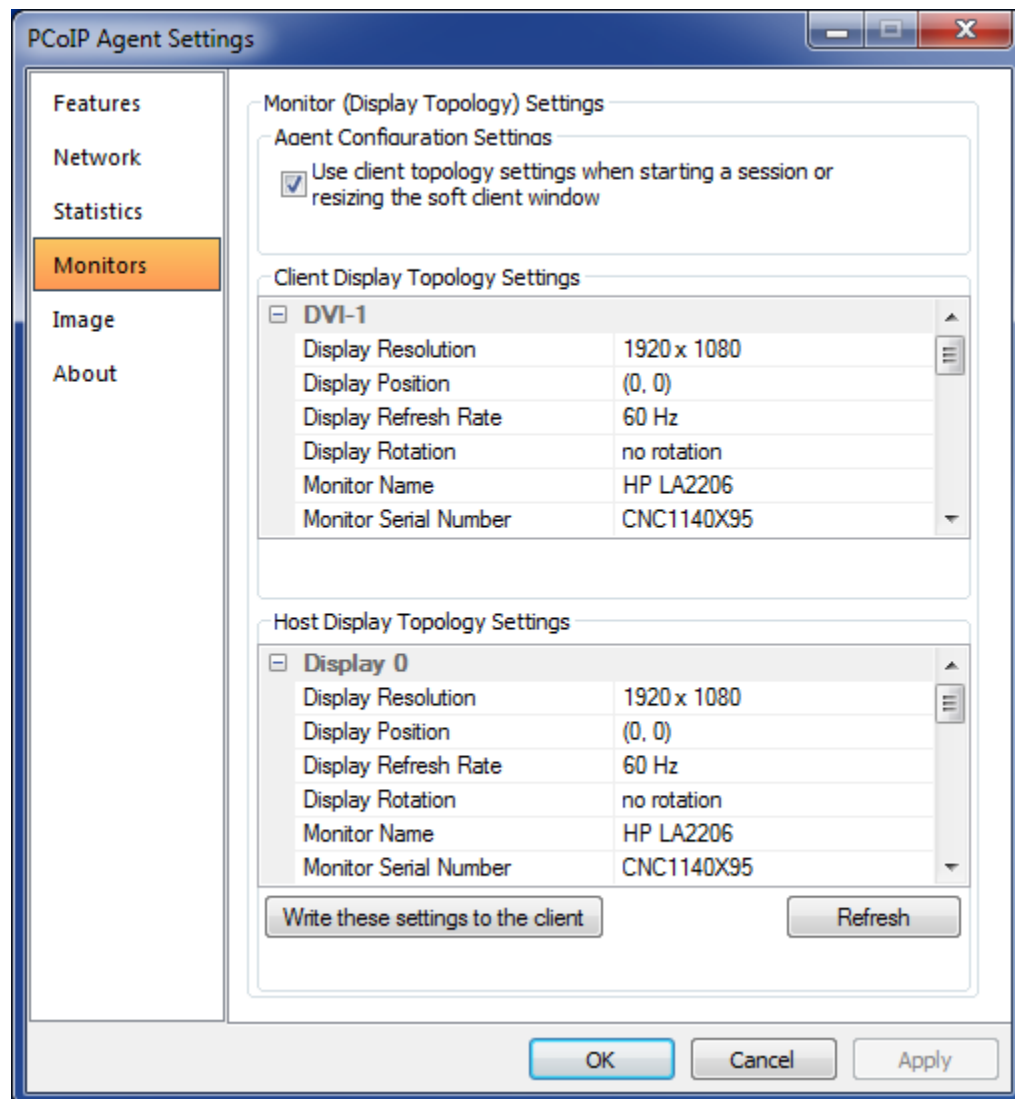


Figure 5-6: PCoIP Agent Settings – Monitors

You can configure the following options and/or view the following settings:

#### Agent Configuration Settings

The Agent Configuration Settings section lets you choose to write the client display topology settings to the host OS. When this feature is enabled, the host topology settings are updated at the start of a session for both soft and zero clients. The topology settings are also updated when the size of the soft client window is adjusted.

- **Use client topology settings when starting a session or resizing the soft client window:** The client display topology settings are written to the host OS at the start of a session and when the soft client window is resized when the following conditions are true:
  - this box is checked
  - the **Enable Configuration** check box on the zero client **OSD Options->User Settings->Display Topology** page is checked (only applies to zero clients)

- the PCoIP host and zero client are running firmware release 3.2.0 or later
- the VMware View soft client version is release 4.6 or later

Note: This feature only works with clients in PCoIP sessions. The client topology settings are not written to the host OS when in an RDP session.

Note: If a problem occurs while trying to write the client display topology settings to the host OS, a **Why are the client topology settings not in use?** link appears on the **Agent Monitors** tab. Move the mouse over the link to see a tooltip explaining how to fix the problem.

Note: Testing has shown this feature does not work on all systems. Table 6-2 lists the different system configurations for which this feature was tested as well as problems that were observed.

### Client Display Topology Settings

The Client Display Topology Settings section displays the client display topology settings.

- **Display Resolution:** The number of pixels in each dimension that can appear
- **Display Position:** The X and Y coordinates of the display's upper left-hand corner
- **Display Refresh Rate:** The display's refresh rate in Hz
- **Display Rotation:** Specifies the rotation of the display relative to the normal landscape display orientation (no rotation, 90° clockwise, 180° rotation, or 90° counter-clockwise)

Note: This parameter specifies the rotation of the physical display, not the image.

- **Monitor Name, Serial Number, Vendor ID and Product ID:** The client extracts this information from the attached monitor's EDID (Extended Display Identification Data)

### Host Display Topology Settings

The Host Display Topology Settings section shows the active topology settings read by the Agent from the host OS.

- Display Resolution, Display Position, Display Refresh Rate and Display Rotation: See the description of these terms listed in the previous section.
- **Monitor Name, Serial Number, Vendor ID and Product ID:** The Agent extracts this information from the EDID reported by the host OS.
- **Write these settings to the client:** Click this button to write the current host display topology settings to the client.
- **Refresh:** Click this button to get the most up to date client and host display topology settings.

## 5.5 Image

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

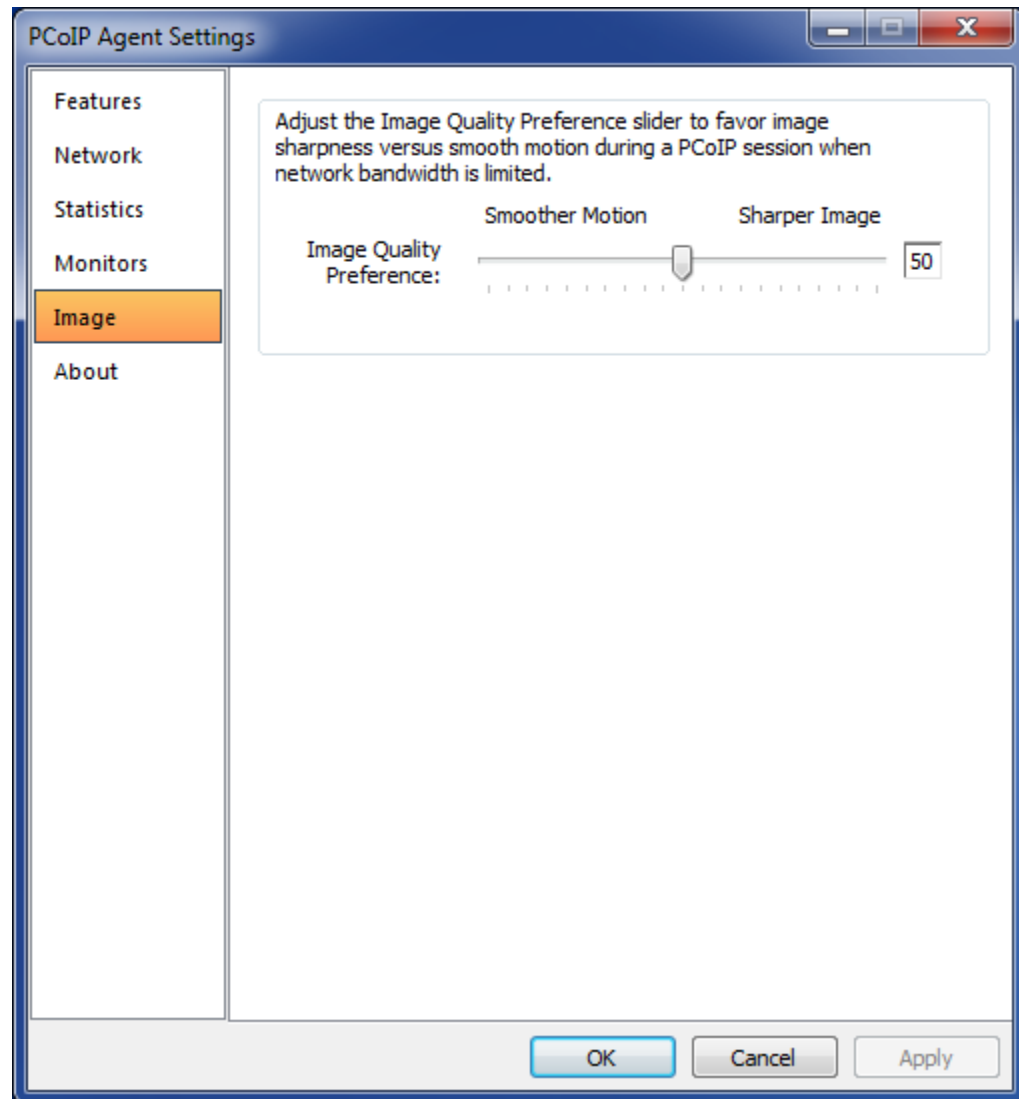


Figure 5-7: PCoIP Agent Settings – Image

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 the image quality preference setting.*

## 5.6 About

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

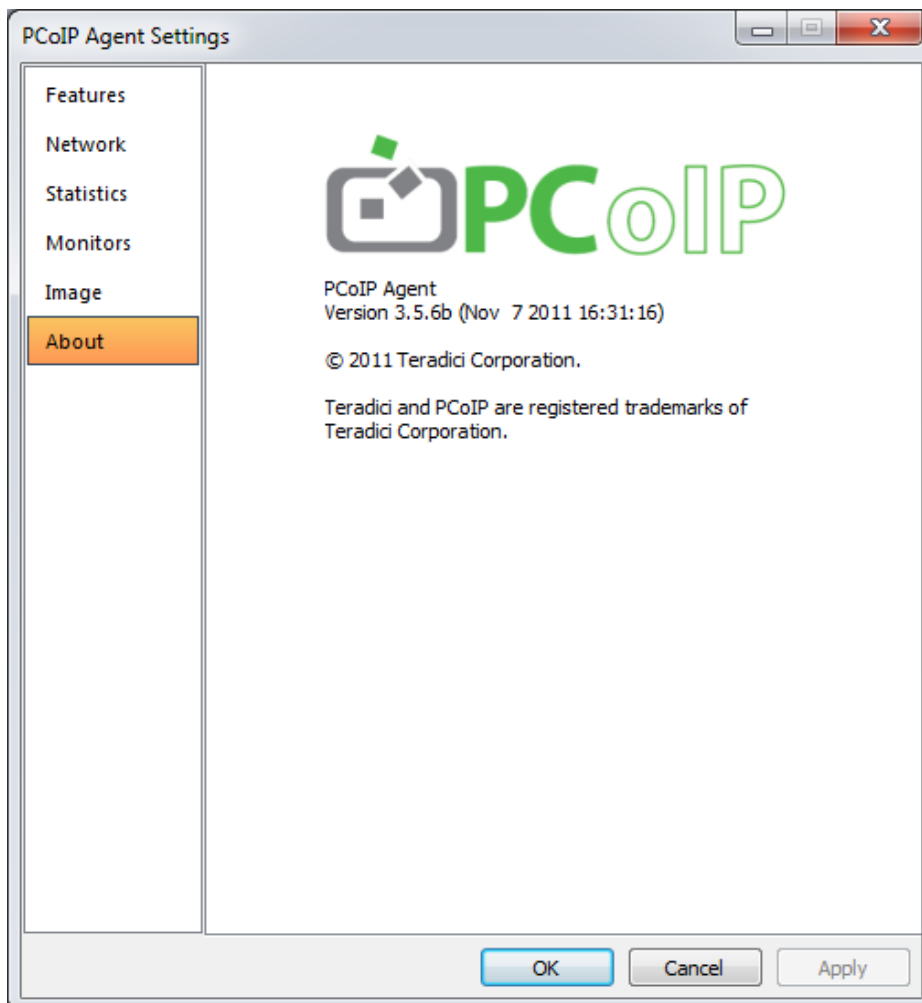


Figure 5-8: PCoIP Agent Information – About



## 6 Troubleshooting

This section outlines some common issues and suggested solutions. For more troubleshooting details, see the Knowledge Base available from the Teradici Support web site at <http://techsupport.teradici.com>.

**Table 6-1: Troubleshooting**

Item	Description	Solution
1	The <b>Image Quality Preference</b> slider is grayed out.	This occurs when the host card is not running a FW release that supports the image quality preference setting. Install FW release 3.5.0 or later.
2	The <b>Local Cursor and Keyboard</b> feature is enabled but the cursor response is sluggish when moving the mouse.	This can occur when using a zero client with a mouse connected to the client through a hub. Log into the zero client web interface while a session is active and open the <b>Diagnostics-&gt;Attached Devices</b> web page. The mouse <b>Status</b> field equals <b>Locally Connected</b> when the mouse is properly connected. If the <i>Status</i> field is not <b>Locally Connected</b> , ensure the mouse is connected directly to one of the zero client USB ports or try replacing the mouse.  <i>Note: Some mouse devices include an integrated USB hub. The local cursor feature will not work properly with these devices.</i>
3	The <b>Send Remote Cursor position changes to client</b> feature does not work with a soft client.	Host software release 3.5.20 includes support for sending host cursor changes to the client (see section 5.1). This feature does not work with soft clients running releases prior to and including 5.0. This feature will be supported in a future soft client release.
4	Animated cursors do not appear properly when the visible cursor is "Local" or "Local and Remote".	When the local cursor is visible and an animated cursor is active, the host software displays only the first frame rather than all of the cursor frames. This results in a static cursor shape instead of an animated cursor.  Workaround: Set the visible cursor equal to "Remote" or disable the "Local Cursor and Keyboard" feature.
9	The <b>Use these settings for the login screen</b> button is grayed out.	You must have Administrator rights to set the settings for the login screen. Under Windows Vista and Windows 7, the User Account Control (UAC) prevents the PCoIP Agent from accessing the registry. On Windows Vista systems disable the UAC to enable the use of this button. On Windows 7 systems set the UAC slider bar equal to <b>Never Notify</b> . Reboot the host PC or workstation after modifying the UAC setting to activate the new setting.  Host software release 3.1.11 and later prevents users from disabling the local cursor feature on the login screen. When the <b>Enable Local Cursor and Keyboard</b> feature is disabled, you cannot update the login screen

Item	Description	Solution
		settings.
10	When two displays are connected to the zero client and the graphics software driver enables Clone mode (the same image appears on both screens) the local cursor overlay only appears on one of the displays.	<p>The current PCoIP host software only supports displaying one local cursor, which means Clone mode is not supported.</p> <p>When using host software release 3.1.11 the local cursor overlay is only drawn on the monitor connected to zero clients' lowest numbered DVI port. Users wishing the overlay to be drawn on the other monitor should swap the zero client monitor cables.</p> <p>When using host software releases 1.x.x or 3.2.20 and later, the local cursor overlay is only drawn on the primary monitor as determined by Windows. To draw the overlay on the other monitor, set the other monitor to be the primary monitor.</p>
11	Only the left, middle, right, forwards, and backwards buttons work on the mouse when local cursor and keyboard is enabled.	The current PCoIP host software supports the left, middle, right, forwards, and backwards mouse buttons in local cursor mode.
12	The multimedia keys on the keyboard do not work when local cursor and keyboard is enabled.	<p>PCoIP host software releases prior to release 3.3.20 support only the standard keyboard keys.</p> <p>Multimedia keys (USB HID usage page 12) are supported on systems running host software release 3.3.20 or higher and firmware release 3.3.0 or higher.</p> <p>Power keys (USB HID usage page 1) are supported on systems running host software release 3.5.20 or later and firmware release 3.4.0 or later.</p>
13	The local cursor and keyboard feature is not automatically enabled at the login screen after the host PC finishes booting, even though it is enabled via the PCoIP Agent.	The local cursor and keyboard feature requires the PCoIP Agent to be running. On some Windows systems, it may take up to 30 seconds before the PCoIP Agent starts while in the login screen.
14	The local cursor speed is different than the Windows cursor speed.	<p>The local cursor does not use Windows' pointer speed nor acceleration settings. The local cursor speed is configured using the <b>Local cursor speed</b> slider on the Agent <b>Features</b> tab or the zero client OSD.</p> <p>The <b>Cursor speed slider</b> only works with zero clients. You cannot adjust the soft client cursor speed.</p>
15	Some features in the PCoIP Agent are grayed out and the help tooltip says <i>No link to the PCoIP device or Feature not</i>	<p>Ensure the installed version of the PCoIP host software is the same version released with the firmware on the PCoIP host and zero client (see Table 2-1).</p> <ol style="list-style-type: none"> <li>1. Ensure the PCoIP session is active.</li> <li>2. Ensure the <b>Host Driver Function</b> is enabled (see section</li> </ol>

Item	Description	Solution
	<i>supported.</i>	<p>3.1).</p> <p>3. Disconnect and reconnect the PCoIP session.</p> <p>4. Restart the PC or workstation.</p> <p>5. Uninstall and reinstall the PCoIP host software.</p>
16	The <b>Enable Local Cursor and Keyboard</b> checkbox is grayed out.	<p>Hover the mouse over the <b>Why is this unavailable?</b> text. The tooltip that appears lists possible causes and solutions.</p> <p>Review the local cursor and keyboard requirements in section 6.1 of this document.</p>
17	On Windows XP 32-bit, the Windows standard arrow cursor is still shown on the login screen, even though the option to hide it is set.	<p>The current software exhibits this behavior on PCoIP sessions with 125 or more ms of network latency.</p> <p>Try disconnecting and reconnecting the PCoIP session.</p>
18	Key presses on the keyboard are dropped when the <b>Local Cursor and Keyboard</b> feature is enabled and the latency of the PCoIP session exceeds 60 ms.	<p>This occurs if the keyboard is attached to the zero client through a USB hub. To fix this connect the keyboard directly to the zero client.</p> <p>This can happen when the latency of the connection exceeds 150 ms. To fix this check the <b>Enable Client Keyboard Repeat Detection</b> box on the Agent <b>Features</b> tab.</p>
19	The local cursor does not move when the <b>Local Cursor and Keyboard</b> feature is enabled.	<p>This will happen if the mouse is attached to the zero client through a USB hub. To fix this connect the mouse directly to the zero client.</p>
20	Keyboard and mice connected to the client do not work immediately after disabling the local cursor and keyboard feature.	<p>When the state of the local cursor feature changes to disabled, the zero client keyboard and mice must be enumerated by Windows. This process can take more than 30 seconds to complete.</p>
21	The system is configured to use the client display topology settings but the settings are not activated when the PCoIP session starts.	<p>Position the mouse over the <b>Why are the client topology settings not in use?</b> The tooltip that appears lists possible causes and solutions.</p> <p>Review the using the client display topology settings requirements in section 6.2 of this document.</p> <p>See section 6.3 for additional details.</p> <p>The problem might be caused by the graphics driver. Graphics driver problems observed while testing this feature included the graphics driver not responding to monitor hot plug events, rotating the display without properly informing the host OS and not providing accurate EDID information to the host OS. Upgrade the graphics driver to the latest supported version.</p> <p>The graphics driver may not support the client display</p>

Item	Description	Solution
		<p>resolution setting. Try setting the client setting to <b>Native</b>. If this works test with other resolutions until an acceptable resolution is found.</p> <p>A problem may occur if the zero client has a monitor connected to one of its DVI ports and the monitor is turned off. Either disconnect the monitor or turn on the monitor.</p>
22	On a dual monitor setup with the local cursor enabled the Windows cursor is active on one display while the local cursor is active on the second display.	<p>This may occur while using host software release 3.1.11 with firmware releases 3.0 and 3.1.x. These releases impose a restriction where the zero client's lowest numbered DVI connector must be the left monitor in a horizontal display arrangement or the top monitor in a vertical display arrangement.</p> <p>Solutions to the problem:</p> <ul style="list-style-type: none"> <li>• Install host software release 3.2.20 or later and firmware release 3.2.0 or later, which no longer restrict the monitor arrangement.</li> <li>• If using host software release 3.1.11 and firmware releases 3.0 or 3.1.x connect the zero client monitors according to the following rules. Horizontal display arrangements must connect the left monitor to the lowest numbered DVI port. Vertical display arrangements must connect the top monitor to the lowest numbered DVI port.</li> </ul>
23	Zero client resets while connecting to a PCoIP host.	<p>This occurs under the following conditions:</p> <ul style="list-style-type: none"> <li>• host is running firmware release 3.2.x</li> <li>• zero client is running firmware release 3.1.x</li> <li>• host software release 3.2.20 or higher is loaded on the PC/workstation</li> </ul> <p><b>Resolution:</b> Download the firmware release 3.2.x or later to the zero client.</p>
24	Host software does not work after modifying the audio permissions on the PCoIP host card.	<p>The PCoIP host card has a configuration setting that lets you enable/disable HD audio. This setting is configured on the host card's <b>Permissions-&gt;Audio</b> web page. If this setting is modified after the host software is installed, the host software does not work when the PC/workstation is rebooted.</p> <p><b>Resolution:</b></p> <ol style="list-style-type: none"> <li>1. Uninstall the host software</li> <li>2. Modify the audio setting</li> <li>3. Reboot the PC/workstation</li> <li>4. Install the host software</li> </ol>

## 6.1 Requirements for Local Cursor and Keyboard Feature

The local cursor and keyboard feature depends on a number of requirements. If the **Enable Local Cursor and Keyboard** checkbox is grayed out, ensure the following requirements are met:

- 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 the option was changed from disabled to enabled.
- A PCoIP session is established between the PCoIP host and zero client or soft 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.
- The display or displays are not rotated

**Note:** This requirement is true for systems running firmware releases prior to 3.2.0 and host software releases prior to 3.2.20. Systems using firmware release 3.2.0 or later and host software release 3.2.20 or later can enable the local cursor with rotated displays on some systems. Table 6-2 lists the different system configurations this feature was tested in along with problems that were observed.

- The mouse and keyboard devices 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 clients' OSD.
- Multi-monitor systems that arrange the monitors horizontally must connect the left display to the zero clients' lowest numbered DVI connector and systems that arrange the monitors vertically must connect the top display to the zero clients' lowest numbered DVI connector.

**Note:** This requirement is true for systems running firmware release 3.0 and 3.1.x with host software release 3.1.11. This requirement does not apply to systems running firmware release 3.2.0 or higher and host software release 3.2.20 or later.

- The local cursor feature might not work with some non-native display resolutions. This only affects connections from zero client devices. We recommend you use the display's native resolution or choose a resolution on which the feature works.

**Note:** This requirement is true for systems running firmware release 3.x.x with host software release 3.x.x. This requirement does not apply to systems running firmware releases prior to 3.x.x and host software releases prior to 3.x.x.

## 6.2 Requirements for Using the Client Display Topology

Using the client display topology settings on the host depends on a number of requirements. If the **Why are the client topology settings not in use?** text appears on the **Monitors** tab, ensure the following requirements are met:

- PCoIP host and zero client are running firmware that supports using the client display topology settings (firmware release 3.2.0 or later).
- The version of the VMware View soft client is release 4.6 or later.
- The Use client topology settings when starting a session or resizing the soft client window tab is checked.
- When using a zero client, the **Enable Configuration** check box on the zero client OSD **Options->User Settings->Display Topology** page is checked
- The **Host Driver Function** option is enabled on the PCoIP host and the PC or workstation is restarted after the option was changed from disabled to enabled.
- A PCoIP session is established between the PCoIP host and client.
- The graphics card is configured to use the monitor's built in scaling when a non-native resolution is selected.

Note: Table 6-2 lists the different system configurations that this feature was tested in along with problems that were observed.

## 6.3 Tested System Configurations

PCoIP host software release 3.2.20 and firmware release 3.2 0 added support for rotated displays and using the client display topology settings. Depending on the workstation configuration, you may encounter problems if you use the **Enable Local Cursor and Keyboard** or **Use client topology** settings when starting a session or resizing the soft client window features.

Soft clients running on Windows XP systems do not support rotation. On these systems, Windows does not report valid rotation information. To rotate the soft-client window, run the client from a workstation running Windows Vista or Windows 7.

Periodically the Agent reads the current host display topology settings from the OS. Testing has shown this information is not correct on some systems with rotated displays or when establishing sessions with one host from multiple zero clients. These problems occur on systems with specific graphics cards, drivers and OS versions. Table 6-2 lists a combination of tested graphics cards, drivers and OS's. The OS column of each tested combination includes one or more of the following symbols/codes. Blank entries indicate the combination was not tested.

- ✓ – tested and verified
- CK – change key
- NR – rotation not supported
- NC – use client topology not supported

To enable the **Enable Local Cursor and Keyboard** or **Use client topology** settings when starting a session or resizing the soft client window features on systems with rotated displays, choose a tested and verified configuration or conduct tests if using an untested configuration.

System configurations with the rotation not supported (NR) code showed problems where the local cursor failed to become active and the client topology settings are not activated at the start of a session. This happened when a display was rotated or the client topology settings rotated a display. The problem occurs because a Windows display API called by the Agent

reports incorrect screen orientation information. Currently this problem only affects XP systems with NVIDIA graphics cards.

System configurations with the use client topology not supported (NC) code showed problems where the client topology settings are not activated at the start of a session. This happened when two different zero client devices connect to a host at different times. The problem occurs because a Windows display API called by the Agent reports information about the previously connected monitors. When this happens the Agent cannot determine which system display corresponds to the client display(s). Currently this problem only affects XP systems with NVIDIA graphics cards.

System configurations with the change key (CK) code showed problems where the local cursor and Windows cursor are not in sync when the display is rotated 90° clockwise or 90° counter-clockwise. The problem occurs because the Windows display API called by the Agent reports displays rotated 90° clockwise as being rotated 90° counter-clockwise and vice-a-versa. You can modify the Agent registry key to work around this problem. Change the registry key **LocalCursorSwapPortraitOrient** in the folder HKEY\_CURRENT\_USER\Software\Teradici Corporation\PCoIP Agent\Settings from the default value '0' to '1'.

**Table 6-2: Tested System Configurations**

Graphics Card Model Number	Graphics Driver Version	XP 32	XP 64	Vista 32	Vista 64	Win 7 32	Win 7 64
NVIDIA GeForce 7900 GS	258.96	NR, NC		✓	✓		
NVIDIA GeForce 8600 GT	191.21			✓	✓		
NVIDIA GeForce 9500 GT	197.45			✓			
NVIDIA GeForce 9600 GT	258.96	NR, NC	NR, NC			✓	✓
NVIDIA GeForce 9800 GT	258.96	NR, NC	NR, NC		✓	✓	✓
ATI Radeon HD 3650	8.753.0.0 (Catalyst 10.7)	CK, NC			✓		✓
ATI FirePro RG220	8.723.0.0 (Catalyst 10.4)	NC		✓	✓		