

Application Note

064

Display problems affecting Tera2 PCoIP systems

This application note describes how to resolve various display problems that can affect PCoIP systems that use Tera2 hosts and zero clients. The display problems are:

[No display on any connected monitor](#) See below

[High resolution displays revert to standard resolution when host computer restarts](#) See page 3

[Monitors continually revert to incorrect display topology](#) See page 5

No display on any connected monitor

Symptoms

When a PCoIP connection is established, the user may see a very brief image on one monitor that quickly blanks out. Then all monitors remain blank. The image may reappear every few seconds.

If the Event Log for the PCoIP host has been configured for 'verbose logging', the device's event log may fill with entries that indicate continual switching between restricted and unrestricted display resolution.

Applies to

This problem affects Tera2 PCoIP systems where the PCoIP host has firmware 4.1 or earlier *and* where only two video heads are connected to monitors and the display resolution on one or both video heads is 2560 x 1600.

Caused by

The problem is caused by misconfigured Monitor Emulation settings on Tera2 PCoIP host cards. By default, Monitor Emulation is enabled on all video outputs. However, Monitor Emulation must be disabled on any video outputs that are not connected to a monitor.

Briefly, the problem arises when:

1. The PCoIP host amends the Extended Display Identification Data (EDID) sent to the graphics card. To alert the graphics card to the EDID change, the PCoIP host toggles the Hot Plug Detect (HPD) signal.
2. The graphics card responds to the HPD signal and reads the EDID change. It then temporarily blanks video output on all video channels, including the channels with a monitor attached.
3. Consequently, the PCoIP host misinterprets this display change as incoming video on all four video channels, which would exceed its available processing bandwidth. The PCoIP host therefore attempts to restrict video resolution, which requires a further toggle on the HPD signal.
4. Once again, the graphics card responds to the HPD signal change by temporarily blanking all video output. And so the loop repeats.

Solutions

To resolve this problem, apply fixes 1, 2 or 3 as described below:

Fix 1: Apply Tera2 firmware 4.2.0 or newer

Apply Tera2 firmware from 4.2.0 or newer to your PCoIP host. This firmware is due scheduled for release in January 2014.

Fix 2: Unplug redundant video cables

(Not applicable for zero clients connected to blade workstations or virtual desktops.)

Unplug the redundant video cables connecting the graphics card to the video inputs on the PCoIP host card. For example, if no monitors are attached to video channels 3 and 4, unplug video cables from channels 3 and 4 on the graphics card.

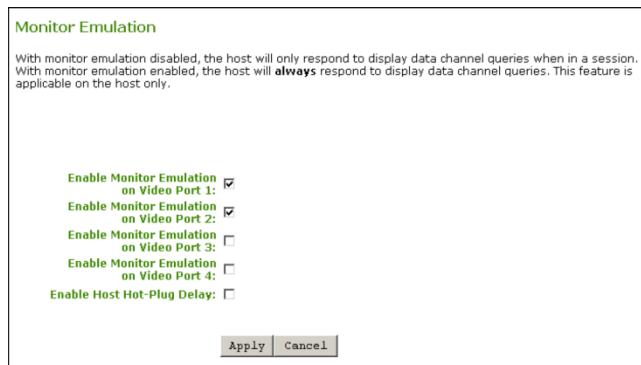
However, if the user subsequently needs to use all four video heads (at 1920 x 1200 resolution), you must physically reconnect the video cables.

Fix 3: Disable monitor emulation

You cannot apply Fix 2 to Amulet Hotkey blade workstations because video connections on the PCoIP host mezzanine card are permanently wired on the PCB. Instead, you must edit the PCoIP card configuration. Specifically, you must disable Monitor Emulation on those video channels that do not have a monitor attached to the associated video port on the zero client.

Follow these steps:

1. Identify which video ports on the zero client do *not* have a monitor attached.
Video ports are labelled 1 through 4 on the rear panel of quad video Amulet Hotkey DXZ4 and DXZ4-M zero clients.
2. Log on to the Teradici *PCoIP® Host Card* web interface. (To access the web interface, browse to the IP address of the PCoIP host and enter the password. The default password is **ahkdante**.)
Note: This web interface – also called the Administrative Web Interface (AWI) – enables you to remotely configure individual PCoIP hosts and zero clients using a web browser.
3. From the home page, choose Configuration > Monitor Emulation.
4. Clear the Enable Monitor Emulation check boxes for those video ports that do not have an associated monitor attached at the zero client.



AWI Monitor Emulation screen

5. Click Apply.
6. In the confirmation screen, click Continue or Reset to reset the PCoIP host.
7. Power cycle the host blade workstation. The new settings take effect when the blade restarts.

Note: For more information about Monitor Emulation, see the Teradici knowledge base article, *What is Monitor Emulation and how does it work? (15134-199)*:

<http://techsupport.teradici.com/ics/support/kbAnswer.asp?questionID=199>

High resolution displays revert to standard resolution when host computer restarts

Symptom

Dual monitors configured for 2560 x 1600 resolution revert to 1920 x 1200 when the host computer is rebooted during a PCoIP session.

Also, when Windows completes booting, it detects *four* monitors (two active and two disabled). If the user disables monitors 3 and 4 in the Screen Resolution page of the zero client On Screen Display (OSD), this causes 'Source signal on other port' and 'No source signal' messages to appear in overlay windows.

To re-establish 2560 x 1600 resolution on the attached monitors, the user can reconnect or hot-plug the monitor or they can re-establish the PCoIP session. However, a permanent fix is described below.

Cause

This situation occurs when the PCoIP host card has the following configuration:

- The Host Driver Function is disabled.
- Monitor Emulation is enabled on video channels 1 through 4.
- Firmware 4.1 is installed on the PCoIP host card.

With the Host Driver Function disabled, the PCoIP cannot interact with the operating system and so cannot determine whether the operating system has booted successfully or has stalled at the BIOS screen.

Consequently, the PCoIP host does not bridge hot plug events for monitors when the host computer boots up. That is, the PCoIP host does not toggle the Hot Plug Detect (HPD) signal to prompt the graphics card to retrieve EDID data.

In turn, because Monitor Emulation is enabled on all four video channels, the PCoIP host interprets the video output as four channels of high resolution (2560 x 1600) video. Because this would exceed its available processing bandwidth, the PCoIP host restricts video resolution to 1920 x 1200 on all video channels.

If the user subsequently reconnects the monitors or re-establishes the PCoIP session while the operating system is running, the PCoIP host *is* now able to detect these changes. It therefore toggles the HPD signal, causing the graphics to retrieve the correct EDID data and re-establish the correct display resolution on the two attached monitors.

Solutions

To resolve this problem, apply fix 1 or 2 as described below.

Fix 1: Apply Tera2 firmware 4.1.2 or newer

Apply Tera2 firmware 4.1.2 or newer to your PCoIP host. This firmware can be downloaded from the Teradici Support Center.

Note: The background and a workaround for this problem are described in Teradici knowledge base article, *Why does my monitor resolution setting revert to 1920x1200? (15134-1740)*:

<http://techsupport.teradici.com/ics/support/KBAnswer.asp?questionID=1740>

Fix 2: Enable the Host Driver Function and disable Monitor Emulation

To resolve this problem, you enable the PCoIP Host Driver Function and disable Monitor Emulation on those video channels that do not have a monitor attached to the associated video port on the zero client.

Note: The PCoIP Host Driver Function is an optional feature supported on PCoIP host cards with firmware 2.0 or later.

Follow these steps:

1. Log on to the Teradici *PCoIP® Host Card* web interface. (To access the web interface, browse to the IP address of the PCoIP host.)

Note: This web interface - also called the Administrative Web Interface (AWI) – enables you to remotely configure individual PCoIP hosts and zero clients using a web browser.

2. From the home page, choose Configuration > Host Driver Function
3. Select the Enable Host Driver Function check box.
4. Click Apply.
5. In the confirmation screen, click Continue or Reset to apply the setting on the PCoIP host.
6. Return to the AWI home page and choose Configuration > Monitor Emulation.
7. Clear the Enable Monitor Emulation check boxes for those video ports on the associated zero client that do not have a monitor attached.
8. Click Apply.
9. In the confirmation screen, click Continue or Reset to apply the setting on the PCoIP host.
10. Power cycle the host blade workstation. The new settings take effect when the blade restarts.

Monitors continually revert to incorrect display topology

Symptom

When using multiple monitors, the user experiences display problems associated with a misconfigured display topology. (Here, *display topology* refers to the physical arrangement of the monitors.)

For example, four monitors may be physically arranged in a grid or box (two rows of two monitors), but the computer interprets mouse movements as though the monitors were arranged in a single row.

This problem happens when a user connects to their usual PCoIP host from a different zero client (for example, in a hot desking environment). The problem reoccurs even after the user specifies the correct topology in the Display applet of Windows Control Panel.

Cause

This problem can occur when the following four conditions are true:

- The PCoIP Host Driver Function is enabled on the PCoIP host.
This function is an optional feature supported on PCoIP host cards with firmware 2.0 or later. It enables you to use the PCoIP Host Software package on the host computer.
- The PCoIP Host Software package is installed on the host computer.
This package is a collection of drivers and applications that allow Windows operating systems to interact with Teradici PCoIP host processors and PCoIP zero clients. In particular, the package includes the PCoIP Host Software Settings dialog.
- The 'Use client topology settings...' check box is selected in the PCoIP Host Software Settings dialog.
This check box determines whether or not the zero client display topology gets reported to the Windows operating system.
- An incorrect display topology is specified and enabled on the zero client.
The On Screen Display (OSD) for Tera2 zero clients enables you to configure the display topology. For example, you can specify the display layout (for example, monitors arranged in a horizontal row), and the video port, rotation and resolution for individual monitors.

When these four conditions are true, the zero client reports a specific display topology to the PCoIP Host Driver Function running on the host computer. In turn, the PCoIP Host Driver Function configures the Windows desktop to match the display topology reported by the zero client.

Note: For details about the PCoIP Host Driver Function and Host Software Package, see the *Teradici PCoIP Host Software for Windows User Guide*. For details about the zero client On Screen Display, see the *Teradici PCoIP Zero Client and Host Administrator Guide*.

Solutions

To resolve this problem, apply fix 1, 2 or 3 as described on the following pages.

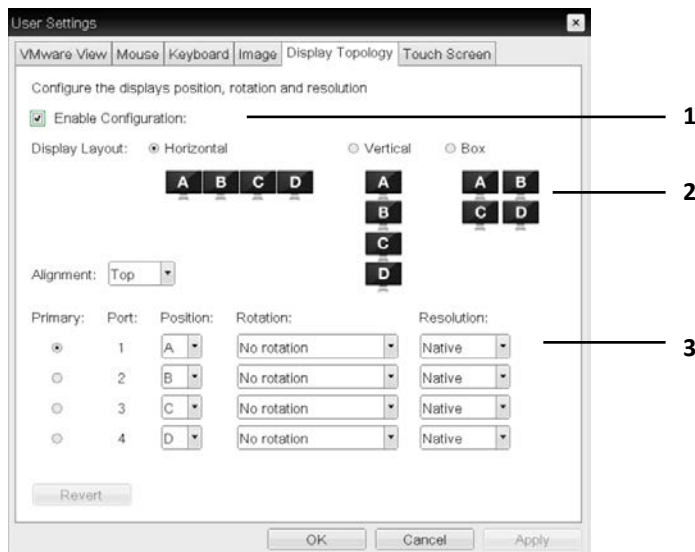
If the user is likely to connect to their remote workstation from different zero clients (for example, in a hot desking environment), the most reliable solution is to implement [fix 1](#).

Fix 1: Configure the correct display topology on each zero client

Note: We recommend this fix if the user is likely to connect to their remote workstation from different zero clients (for example, in a hot desking environment). Because the physical monitor arrangement may differ for each zero client, this fix ensures that the display topology is correctly specified on each zero client.

Repeat these steps on each zero client used by the user:

1. Launch the zero client On Screen Display (OSD).
2. From the Options menu, choose User Settings > Display Topology.
3. In the Display Topology tab, configure the monitor topology used by the zero client:
 - a. Select the Enable Configuration check box.
 - b. Specify the display layout for the attached monitors (eg, monitors arranged in a horizontal row), plus the position, screen rotation and resolution for each attached monitor.



Zero Client OSD, Display Topology tab. 1 Enable Configuration check box (selected). 2 Display layout. 3 Individual settings for attached monitors, including position, rotation and resolution.

4. Click OK to save the changes.

Note: The display topology specified in the zero client OSD will override any monitor layout defined using the Display applet in the Windows Control Panel on the host PC.

5. When the next PCoIP session starts, the PCoIP host software (running on the host computer) passes the correct display configuration to the Windows operating system.

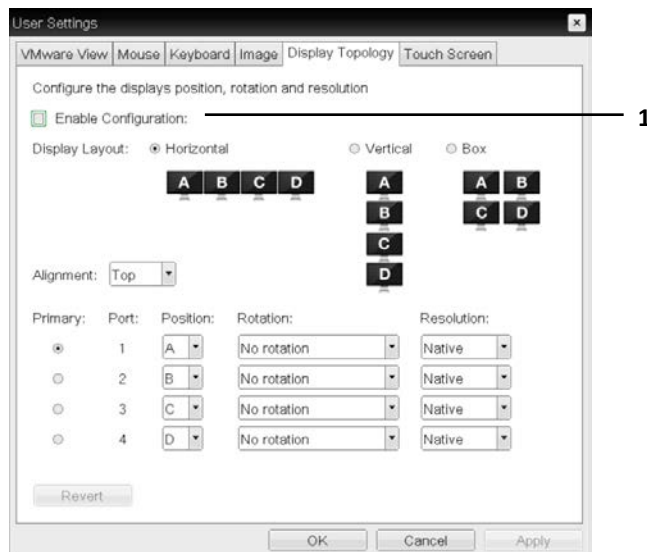
Note: When the PCoIP session starts, the monitors attached to the zero client may briefly go blank while the PCoIP Host Driver Function updates the Windows operating system with the correct display topology details. This is normal and expected behaviour.

Fix 2: Disable the display topology on each zero client

Note: If the user is likely to connect to their remote workstation from different zero clients (for example, in a hot desking environment), the most reliable solution is to implement [fix 1](#). We do not recommend fix 2 if the physical monitor arrangements are likely to differ for each zero client.

Repeat these steps on each zero client used by the user:

1. Disconnect the zero client from your network. For example, unplug the network cable.
You cannot configure zero clients when a PCoIP session is active. Disconnecting from the network is a necessary precaution to prevent the zero client from automatically re-establishing a PCoIP session.
2. Launch the zero client's On Screen Display (OSD).
Press the Menu button on the zero client front panel to display the OSD Connect screen. The Options menu in the Connect screen gives access to various configuration pages.
3. From the Options menu, choose User Settings > Display Topology.
4. **Note:** Depending on how the zero client is configured, you may need to enter a password before you can edit zero client settings. The default password for Amulet Hotkey zero clients is **ahkdante**.
5. In the Display Topology tab, clear the Enable Configuration check box.



Zero Client OSD, Display Topology tab. 1 Enable Configuration check box (cleared).

6. Click OK or Apply.
7. Reconnect the zero client to your network.
8. On the host PC, manually configure the display topology using the Display applet in the Windows Control Panel.

In future PCoIP sessions, Windows uses the display topology that you specified in the Control Panel and does not try to enforce a display topology defined in the zero client OSD.

Fix 3: Disable the Use Client Topology Settings feature on the host computer

Note: If the user is likely to connect to their remote workstation from different zero clients (for example, in a hot desking environment), the most reliable solution is to implement [fix 1](#). We do not recommend fix 3 if the physical monitor arrangements are likely to differ for each zero client.

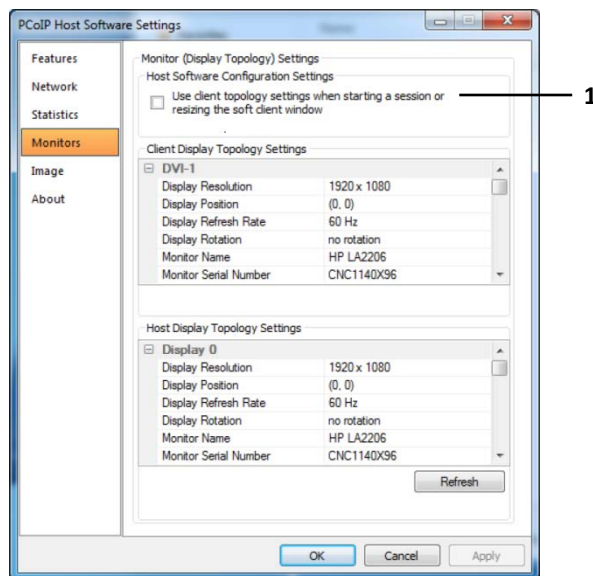
For this fix, you open the PCoIP Host Software Settings dialog on the host computer. You must then disable the setting that causes the PCoIP Host Driver Function to report the zero client display topology to the Windows operating system.

1. On the host PC, right-click the PCoIP icon in the Windows system tray and click Open Properties.



2. In the PCoIP Host Software Settings dialog, click Monitors in the left pane.
3. In the Monitors screen, clear the 'Use client topology settings...' check box.

By disabling this setting, you prevent the PCoIP Host Driver Function from writing the zero client display topology settings to the operating system on the host PC when a PCoIP session starts.



PCoIP Host Software Settings dialog, Monitors screen. 1 'Use client topology settings...' check box.

4. Click OK.
5. Disconnect then reconnect the PCoIP session.
6. On the host PC, manually configure the display topology using the Display applet in the Windows Control Panel.

In future PCoIP sessions, Windows remembers the display topology that you specified in the Control Panel and does not try to enforce a display topology defined in the zero client OSD.

Note: The background and a workaround for this problem are described in Teradici knowledge base article, *Why am I seeing display issues after installing firmware 4.0.2? (15134-1286)*:

<http://techsupport.teradici.com/ics/support/KBAnswer.asp?questionID=1286&hitOffset=&docID=5534>

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