Hardware

Q: **Dual-link DVI, Single-link DVI, DisplayPort and 2560x1600 resolutions with PCoIP products**

A: The information below describes the various display connectors (ports) and explains how they are used with a focus on achieving resolutions of 2560x1600. Depending on which PCoIP device you have, you can have multiple display connectors that have different uses, such as:

**DVI-I (integrated digital and analog video):** Can be used for digital displays with DVI cables or analog displays with a DVI-VGA adapter cable.

- Single-Link DVI: allows a maximum pixel clock of 165 MHz to be used on a single-link DVI video signal. The highest 60Hz-refresh VESA resolution supported by single-link connections is 1920x1200.
- Dual-link DVI: doubles the number of data pairs, which allows resolutions requiring an effective pixel clock of up to 330Hz to be supported. The highest 60Hz-refresh VESA resolution supported by dual-link DVI connections is 2560x1600.

**DVI-D (digital video only):** Can be used for digital displays with DVI cables.

- Single-Link DVI: allows a maximum pixel clock of 165 MHz to be used on a single-link DVI video signal. The highest 60Hz-refresh VESA resolution supported by single-link connections is 1920x1200.
- Dual-link DVI: doubles the number of data pairs, which allows resolutions
requiring an effective pixel clock of up to 330Hz to be supported. The highest 60Hz-refresh VESA resolution supported by dual-link DVI connections is 2560x1600.

**DisplayPort (DP):** Can be used for DisplayPort displays with a DisplayPort cable or DVI displays if a DP-DVI adapter cable is used.

Individual DisplayPort links can support dual-link data rates when operating in DisplayPort mode supporting resolutions of 2560x1600. They can also provide single-link data rates when operating in DisplayPort+/DVI mode.

**Notes:**

- PCoIP zero clients only supply single-link data rates through each DVI connector. Dual-link connectors are provided to allow for all digital DVI cable types to be used.
- To achieve 2560x1600@60Hz resolutions on a dual-link DVI capable monitor via a PCoIP zero client, you must use an adapter cable to combine two single-link DVI data outputs into a single dual-link DVI connection.

**Q:** How do I use the Dual-link DVI adapter cable to achieve 2560x1600 resolution on my TERA2140/2321 zero client?

**A:** The Dual-link DVI adapter is a Dual (18+1) pin male single-link DVI-D to single (24+1) pin female dual-link DVI-D, 100mm length cable. Dual-link displays need to be correctly connected with the dual-link DVI adapter cable(s) to ensure the best experience possible. TERA2140 Quad-DVI and TERA2321 Dual-DVI zero clients support dual-link DVI monitors with resolutions up to 2560x1600.
(1) Connecting a TERA2140 Quad-DVI device to dual-link DVI monitors supporting resolutions of 2560x1600.

For Dual-Link Monitor 1:

- Plug the Dual-link DVI adapter cable connector labeled 1 into port 1 on the TERA2140 zero client.
- Plug the Dual-link DVI adapter cable connector labeled 2 into port 3 on the TERA2140 zero client.
- Plug the Dual-link DVI adapter cable connector (Dual Link side) into the monitor.

For Dual-Link Monitor 2:

- Plug the Dual-link DVI adapter cable connector labeled 1 into port 2 on the TERA2140 zero client.
- Plug the Dual-link DVI adapter cable connector labeled 2 into port 4 on the TERA2140 zero client.
- Plug the Dual-link DVI adapter cable connector (Dual Link side) into the monitor.

(2) Connecting a TERA2321 Dual-DVI device to a dual-link DVI monitor supporting resolutions of 2560x1600.

- Plug the Dual-link DVI adapter cable connector labeled 1 into port 1 on the TERA2321 zero client.
- Plug the Dual-link DVI adapter cable connector labeled 2 into port 2 on the TERA2321 zero client.
- Plug the Dual-link DVI adapter cable connector (Dual Link side) into the monitor.
Q: Can a single zero client connect to multiple hosts simultaneously? Can multiple zero clients connect to multiple host cards in a workstation/PC simultaneously?

A: 1. No, a PCoIP zero client can only connect to one host at a time. To switch between hosts, you can use the session disconnect button on the zero client, and then connect to a different host, such as a remote workstation with a PCoIP host card or workstation with PCoIP software installed.

2. Yes. You can install multiple PCoIP remote workstation cards (host cards) into a workstation/PC and have multiple zero clients connecting to them simultaneously. It can be used in different scenarios and examples are as follows:

   - Multi-monitors: If you want more than two monitors (or 4 monitors in the case of TERA2) on the client end, you can have multiple zero clients connecting to multiple host cards installed to the same workstation/PC, with graphics to the host cards driven by a GPU that supports more than two monitors (or 4 monitors in the case of TERA2) or multiple GPUs that supports SLI.

   - Collaboration mode with multiple PCoIP sessions: If you want multiple users each with a zero client to remote to the same workstation/PC at the same time, you can install multiple host cards into a single workstation/PC and establish separate PCoIP sessions. This is an environment using PCoIP host cards where users simultaneously share the same host PC, and can support high-end imaging or 3D collaboration over long distances. The additional host card(s) can be driven by either an additional GPU or an active DVI splitter from the existing GPU. Because users are sharing access to the same host PC, users have simultaneous access to the PC mouse and keyboard function. This means that users must collaborate to operate the host PC to avoid conflicting mouse movement or keyboard input.

Q: Do PCoIP zero clients support USB headsets and web cameras?

A: Timing sensitive USB peripherals such as web cameras and USB headsets require USB isochronous data transfer support that depends on the PCoIP host and client used:

   - PCoIP zero clients and VMware View virtual desktops
When a web camera is connected to a root port, it will be forced to connect to the OHCI controller on the workstation, and will function at the lower speed (likely a warning will appear from Windows that the device can operate faster). Since firmware 4.1.0 support for isochronous audio devices have been included.

**VMware View with PCoIP Software and PCoIP Zero Client**
When connecting to a VMware View virtual desktop, USB isochronous data transfers are supported with PCoIP zero clients running firmware 3.3.x or later with VMware View 4.6 or later.

**Note:** Beginning with firmware 4.2.0, the Local USB Audio feature provides local termination of USB audio devices. Using this firmware along with the Teradici Virtual Audio Driver will be recommended when choosing to use USB audio peripherals. The Teradici Virtual Audio driver is also recommended with analog audio devices as it provides bi-directional analog audio support.

**PCoIP Remote Workstation and PCoIP Zero Client**
USB isochronous data transfers are supported when connecting a PCoIP zero client to a PCoIP host card. This includes the use of web-cams, USB headsets etc.

**Important Note:** It is highly recommended that deployments use analog headsets due to additional audio bandwidth and quality management capabilities compared to using USB audio peripherals.

When a high speed isochronous device is connected behind a HS hub, the HS hub will connect to the EHCI controller on the workstation. The webcam will appear in device manager underneath the EHCI controller tree, and will not show any warnings in device manager, but will not work.

**Software**

**Q:** How do I upload firmware on PCoIP zero clients or PCoIP host cards?**

**A:** This article applies to using the Administrative Web Interface (AWI) as the tool used to upload firmware. To upload the firmware using the PCoIP Management Console, refer to Management Console 2 (or 1.10.x) administrators' guide and search for "update firmware".
It is important to know which version of firmware is currently being used, as there are specific upgrade paths depending on the firmware version being upgraded.

<table>
<thead>
<tr>
<th>Currently Installed Firmware</th>
<th>Upgrade Installation Steps via AWI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Clients with FW5.x</td>
<td>Install newest firmware release</td>
</tr>
<tr>
<td>Zero Clients with FW4.7.1, 4.8.0, 4.7.2, 4.7.4</td>
<td>Install newest firmware release</td>
</tr>
<tr>
<td>Remote Workstation Cards with FW4.7.1, 4.7.2, 4.7.4</td>
<td>Install newest firmware release</td>
</tr>
</tbody>
</table>
| Zero Clients & Remote Workstation Cards with FW4.5.x through 4.6.x | 1. Install 4.8.x firmware release  
2. Install newest firmware release |
| Zero Clients & Remote Workstation Cards with FW4.0.3 through 4.2.0 | 1. Install 4.6.x firmware release  
2. Install 4.8.0 firmware release  
3. Install newest firmware release |

To upload the firmware on the **zero client**:

1. Log in to the AWI. (To access the web interface, browse to the IP address of the zero client from a browser and log in.)
2. Browse to **Upload -> Firmware**.
3. Click **Browse**.
4. Browse to the folder with the firmware file having the ".all" extension (e.g. tera1x00_rel1-9_v175.all)
5. Double Click the correct ".all" firmware file.
6. Click **Upload**.
7. Click the **OK** button on the popup dialogue window that reads "Are you sure? This will upload a new firmware image. This operation may take a few minutes". (When completed, the AWI page displays two buttons **Reset** and **Continue**).
8. Click **Reset**.
9. Click **OK**

The zero client firmware upload process is complete.

To upload the firmware on the **host card**:

1. Ensure the host PC or workstation is in an idle state (close all applications).
2. Log in to the AWI. (To access the web interface, browse to the IP address of the host card from a browser and log in.)
3. Browse to **Upload -&gt; Firmware**.
4. Click **Browse**.
5. Browse to the folder with the firmware file having the ".all" extension (e.g. tera1x00_rel1-9_v175.all).
6. Double Click the correct ".all" firmware file.
7. Click **Upload**.
8. Click the **OK** button on the popup dialogue window that reads "Are you sure? This will upload a new firmware image. This operation may take a few minutes". (When completed, the AWI page displays two buttons **Reset** and **Continue**).
9. Click **Reset**.
10. Click **OK**
11. Power off and then power on the host PC or workstation. It is necessary to power off (not just restart) the PC or workstation in order for the changes to take effect on the host card.

The host card firmware upload process is complete.
You can now start a PCoIP session.

**Q: Where is the PCoIP host card driver?**
**A:** PCoIP technology does not require users to load a driver on the host PC/workstation. However, for Firmware 2.x and above, an optional host software driver is available that provides features such as Local Cursor, which can greatly enhance user experience in a WAN environment.

**Q: Is an HD audio driver required?**
**A:** Windows 7 and 8.1 natively contain a high definition audio driver. We highly recommend that you use this native audio driver if your host PC/workstation uses Windows 7 and 8.1. For Linux, you must install the Realtek HD audio driver for audio support. The driver can be downloaded from Realtek's website.

**Q: Can I use a connection broker with PCoIP technology?**
**A:** Yes. The following companies have announced PCoIP support for their connection broker products.
Compatible with Zero Client Firmware 5.0.0 and higher:

- VMware View Connection Server
Leostream Connection Broker version 8 and higher

Compatible with Zero Client and Workstation Card Firmware older than 5.0.0:

- VMware View Connection Server
- Leostream Connection Broker
- Ericom PowerTerm WebConnect

Other brokers may offer PCoIP compatibility. Ask your connection broker provider for more information.

**Setup**

**Q**: How do I configure a PCoIP zero client?

**A**: You can configure the zero client using:

- Administrative Web Interface or On Screen Display (OSD) - to configure an individual PCoIP zero client
- PCoIP Management Console - for mass configuration of PCoIP zero clients
- Connection broker

For details, please see the Administrative Interface User Manual, PCoIP Management Console User Manual or contact connection broker supplier(s).

**Q**: What power level does the host PC/workstation enter during standby?

**A**: The BIOS configuration settings determine the power level of the host PC/workstation when it is in standby. You can press a function key while the PC boots to access the BIOS configuration settings.

For example, if S3 is configured in the BIOS, when standby is triggered through the Remote PC Power button or the OS, the host PC/workstation goes to power level S3.

**Q**: How do I connect the host card's power button cable?
A: Review and carefully follow the steps below to install the power button cable. This allows you to use your PCoIP zero client to remotely power on (or off) a host machine that has a PCoIP remote workstation card (host card) installed.

A. On the host card, connect the white end of the power button cable to the connector on the host card. The connector should be labeled either “JP5” (Tera1) or "JP1" (Tera2).

B. On the PC motherboard, locate the computer's front panel on/off switch cable. Disconnect the end of the cable that's attached to the motherboard and locate the power on/off signal pins. Connect the red wire on the host card power button cable to the positive terminal of the power on/off pin, and the black wire to the negative terminal. The negative terminal is typically a ground pin.

Please Note: The location of the power on/off switch pins will be different from one motherboard to another. See your motherboard user manual for details. The host PC/workstation will not power up if you have the connector inversely connected to the positive and negative terminal on the motherboard.

Please also note that on Tera2 host cards, there is a grounding jumper (J25). This jumper generally isn't needed, but is sometimes useful in PCs where the remote power button does not function as expected. Units such as the Dell R5400/5500 (different design) make use of this jumper to enable functionality of their power button when the power cable is connected to the motherboard. If the jumper is installed on pins 1-2, the polarity of the power cable is irrelevant; when on pins 2-3, polarity must be correct.

C. If possible, connect the PC’s front-panel on/off switch cable to the 2-pin header on the host card power button cable. If this isn’t possible, the PC’s front-panel on/off switch will be disabled.

The following diagram shows a typical configuration showing a 2-wire host card power button cable connected between the host card’s power button cable connector (A) and the PC motherboard’s 2-pin power button header (B), and to the front panel on/off switch on the host PC/workstation (C).
Q: What are the jumpers on the TERA2 host card used for?

A: All external connectors on TERA2 PCoIP host cards are for diagnostic purposes. Jumpers J15 and J25 are configurable and their functions are described below.

**Jumper J15**

This jumper will reset the host card back to factory default settings.
To reset:

1. Place the jumper on pins 2 and 3 on a unpowered PC/host card.
2. Power on the host PC/host card and wait until the heartbeat pulse is visible.
3. Power down the host PC/host card.
4. Put jumper back to pin 1-2.
5. Power on the host PC/host card.

**Jumper J25**

Adjustment of the ground jumper is not normally required. The power button output from the host card is isolated so that it can be connected to the motherboard in either polarity. Some motherboards do not work with an isolated input and thus require the ground jumper to be installed. This is done by shorting pins 2-3 which requires the power cable to match polarity with the motherboard pins. When left on the default settings (pins 1-2 shorted), the polarity of the power cable is ignored as the power button is now isolated.