# Teradici APEX™ 2800 Server Offload Card Administrator's Guide

TER1109003
Issue 3

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# Revision History

| Version | Date | Description |
|---|---|---|
| 3 | Sep 25, 2012 | • Replaced screen shots where new values are now seen<br>• Updated information as related to new features in the latest software release |
| 2 | Feb 24, 2012 | • Updated the document for ESXi 5.0.<br>• Added Lenovo RD240 to list of tested VDI Server Platforms<br>• Added information about disabling the ESXi interrupt remapping to the Troubleshooting section<br>• Removed the information about the PCoIP Imaging Caching Size<br>• Added hyperlink to Patents webpage from the Copyrights page |
| 1 | Jan 27, 2012 | Initial release |

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# Definitions

| Definition | Description |
|---|---|
| AWI | Administrative Web Interface |
| CLI | Command Line Interface |
| CPU | Central Processing Unit |
| ECC | Error Correction Code |
| FPS | Frames Per Second |
| GPU | Graphics Processing Unit |
| GUI | Graphical User Interface presented by the client On Screen Display when not operating in a PC-over-IP session |
| MC | Management Console |
| Mpps | Mega pixels per second |
| OS | Operating System |
| OSD | On Screen Display |
| PCIe | Peripheral Component Interconnect Express |
| PC-over-IP® | Personal Computer over Internet Protocol |
| PCoIP® | Personal Computer over Internet Protocol (PC-over-IP) |
| PCoIP Zero Client | Desktop side of PC-over-IP system (that is, client). For example, PCoIP zero client or PCoIP integrated display |
| PCoIP Host | Host side of PC-over-IP system |
| QoS | Quality of Service |
| vCPU | Virtual CPU within a virtual machine |
| VSC | View Connection Server |
| VDI | Virtual Desktop Infrastructure |
| VIB | VMware vSphere Installation Bundle |
| VM | Virtual Machine |
| VPN | Virtual Private Network |

| Definition | Description |
| --- | --- |
| Zero Client | See PCoIP zero client |

# 1 Introduction

The Teradici APEX™ 2800 server offload card provides hardware-accelerated PCoIP® image encoding for server-hosted VMware View virtual desktops (often referred to as Virtual Desktop Infrastructure or VDI). Available as a standard PCI Express (PCIe) expansion card for industry-standard servers, the APEX 2800 card monitors the graphical demands of VDI displays and automatically offloads the PCoIP encoding tasks of the most demanding displays from the vCPUs to the APEX 2800 card.

As demands change, the card seamlessly and automatically shifts between hardware encoding on the APEX 2800 card and software encoding on the virtual desktops' vCPU(s). This lets the APEX 2800 card support a large number of virtual desktops while providing optimal use of resources. The APEX 2800 card offloads up to 100 displays depending on the maximum display resolution set up in the environment, and is described in the table below.

Note: Each virtual machine display is monitored separately. The number of displays offloaded may vary based on screen resolution and display activity.

| *Max Width* | *Max Height* | *Max number of offloaded displays* |
|---|---|---|
| **Portrait mode enabled** | | |
| 2560 | 1600 | 25 |
| 1920 | 1200 | 40 |
| 1680 | 1050 | 50 |
| 1280 | 1024 | 100 |
| **Portrait mode disabled** | | |
| 2560 | 1600 | 40 |
| 1920 | 1200 | 64 |
| 1680 | 1050 | 85 |
| 1280 | 1024 | 100 |

**Figure 1-1: APEX 2800 firmware 2.0 maximum number of display offloads at different resolutions.**

## 1.1 Benefits

- Protected end-user experience from pixel-encoding CPU peaks
- Increased VDI consolidation ratios per server
- Full integration into VMware View and managed through View Administrator
- Simple install and setup

For more details, see http://www.teradici.com/pcoip/pcoip-products/pcoip-server-offload-card.php.

## 1.2 System Requirements

The APEX 2800 card can be used in virtual desktop environments that meet the following system requirements.

### 1.2.1 Virtual Desktop Server Platform

- Server platform with an available PCI Express (PCIe) x8, full height, half length compatible card slot
- ESXi 4.1 Update 1 build 348481, 4.1 Update 2 build 502767, or ESXi 5.0, ESXi 5.0.0 U1
- VMware View 4.6 or View 5.0
- Supported virtual machine operating systems:
  - Windows 7 32-bit/64-bit
  - Windows Vista 32-bit/64-bit
  - Windows XP
- Maximum of two APEX 2800 cards per server with up to 200 displays offloaded.

To get the latest drivers, register at http://techsupport.teradici.com and subscribe to Knowledge Base article 650.

### 1.2.2 Client

- PCoIP zero clients with firmware 3.5 or later
- VMware View 4.6 clients or later
- Displays with a resolution of 2560 x 1600 or less (Displays with a higher resolution settings may become available in future software releases)

### 1.2.3 Network

The PCoIP protocol provides a real-time delivery of a rich user desktop experience. To ensure a responsive desktop, the PCoIP protocol must be deployed across a properly architected virtual desktop network infrastructure that meets bandwidth, QoS, latency and packet-loss requirements. For more details, see the *PCoIP Protocol Virtual Desktop Network Design Checklist* TER1105004 document at http://techsupport.teradici.com.

# 2 Installation and Configuration

This section steps you through the process to set up and configure the APEX 2800 card.

Warning:

Power down and disconnect devices from AC power before handling them. Failure to do this can result in personal injury or equipment damage. Some circuitry on the server PC can continue to operate even though the front panel power switch is off.

Ensure you observe correct anti-static handling to avoid potential ESD damage to the card.

## 2.1 Before you Begin

1. Get the latest drivers by registering at the Teradici support website http://techsupport.teradici.com, review and subscribe to Knowledge Base article 650.
2. Download the APEX 2800 drivers to a convenient PC.

## 2.2 Installing the APEX 2800 Card

1. Make sure all virtual machines hosted by the server are powered down or migrated to another server.
2. In the VMware vSphere client, right-click on the ESXi server in the inventory, and then select **Enter Maintenance Mode**.

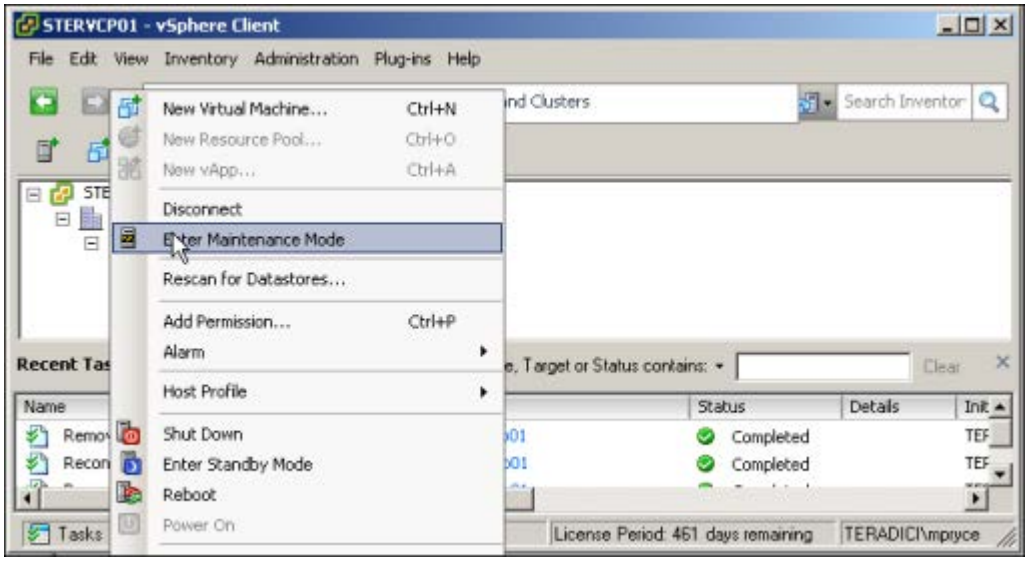


**Figure 2-1: VMware vShpere Client configuration for the Apex 2800 install**

3. Make sure the server is turned off and disconnected from AC power.
4. Insert the APEX 2800 card into an available PCI Express slot and secure the metal bracket.
5. Plug the server into a surge-protected AC outlet, and then power it on.

## 2.3 Installing the ESXi Driver Package

1. Enable remote login on the VMware ESXi server:
   a. Press **F2** to enter customization.
   b. Enter your username and password.
   c. Enable SSH:
      - ESXi 5.0: Select **Troubleshooting Mode Options > Enable SSH.**
      - ESXi 4.1: Select **Troubleshooting Mode Options > Enable Remote Tech Support** (SSH).
2. Copy the driver package from your PC to the ESXi server using secure copy.
   a. Download and install WinSCP on your PC.
   b. Start WinSCP and specify your ESXi server host name (IP address), username and password.
   c. Make sure the **File protocol** field is SCP.
   d. Click **Login**.

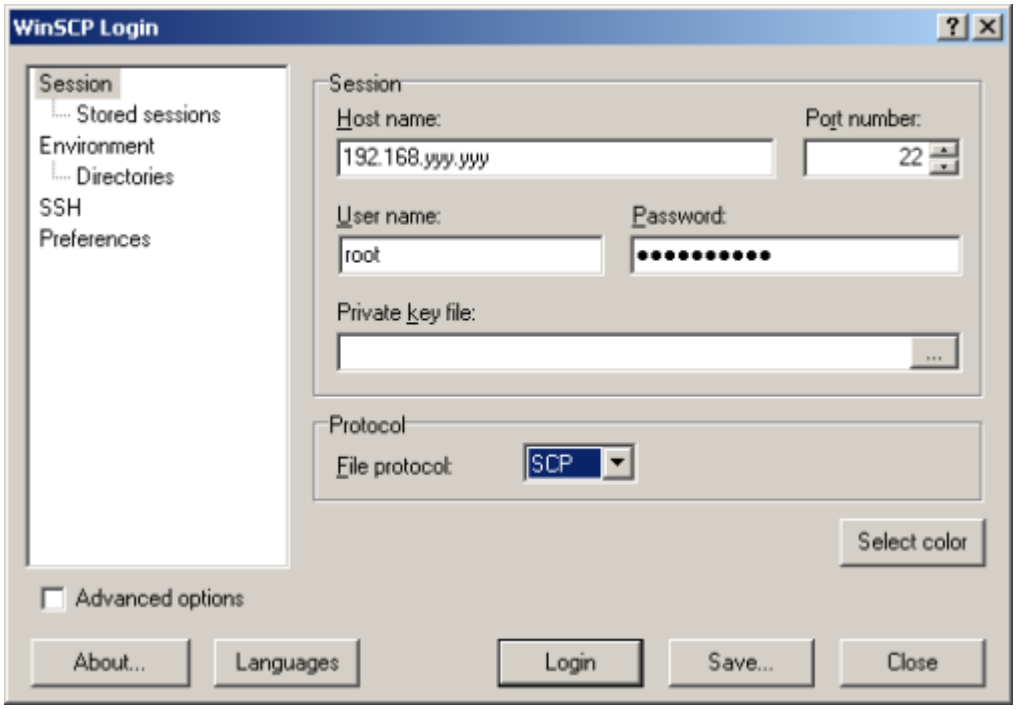


**Figure 2-2: WinSCP Login Window**

   e. Drag the apex2800-version-esxi-*version-xxxxx*.zip package to the **/tmp** folder in your ESXi server.

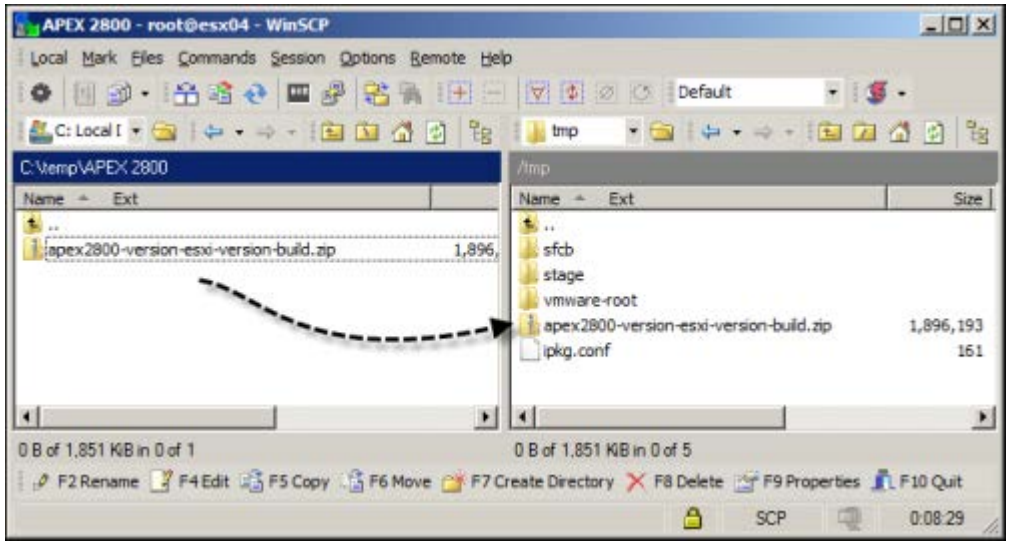


**Figure 2-3: WinSCP browser window showing placement of the zip file to the tmp folder.**

3. Connect to the ESXi server using an SSH client (e.g., PuTTy) from your PC and install the driver package:
   a. Navigate to the **/tmp** folder.
   b. Depending on your EXSi version, type:
      - **ESXi 5.0** `esxcli software vib install -d /tmp/apex2800-`*version*`-esxi-`*version*`-`*xxxxxx*`.zip`
      - **ESXi 4.1:** `esxupdate --bundle apex2800-`*version*`-esxi-`*version*`-`*xxxxxx*`.zip update`

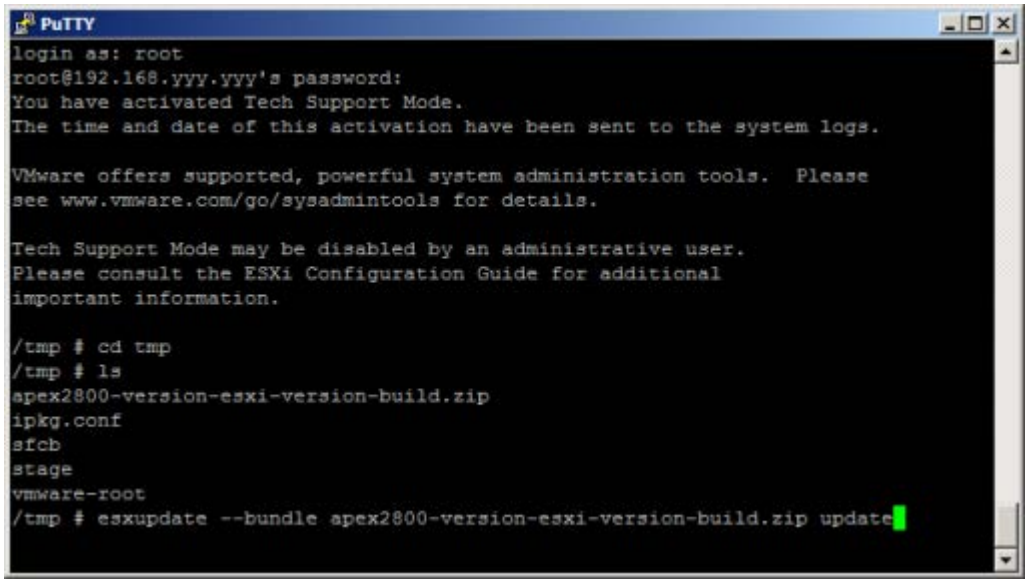


**Figure 2-4: Zip command format for ESXi 4.1.**

The following message appears when the installation finishes.

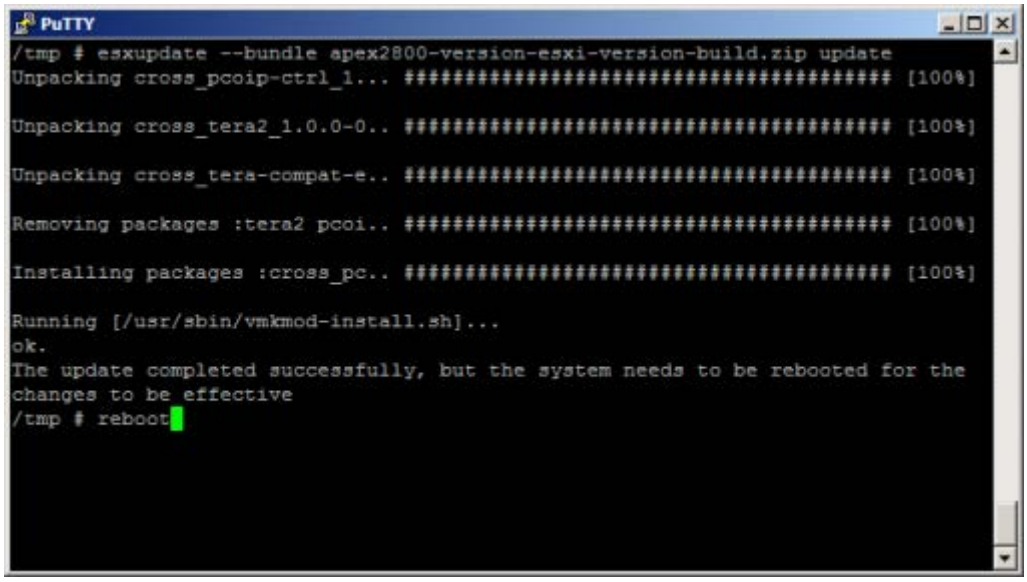


**Figure 2-5: Successful zip command results for ESXi 4.1 with the reboot command.**

4. Type **reboot** at the prompt to restart the ESXi server.

From the vSphere Client, right-click the **ESXi server** in the inventory, and then select **Exit Maintenance Mode**.

## 2.4 Installing the Virtual Machine Driver

You must install the APEX 2800 virtual machine driver on each virtual machine.

1. Power up the virtual machine.
2. Open a console window to the virtual machine from the vSphere client.

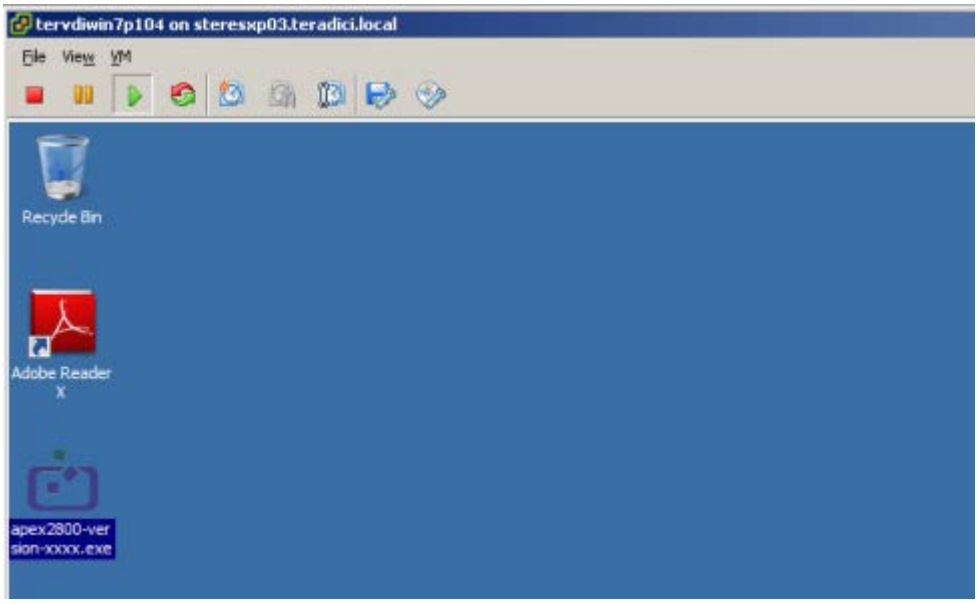


**Figure 2-6: Virtual Machine Desktop**

3. Run the apex2800-version-*xxxxxx*.exe on the virtual machine and follow the onscreen steps.

   Note: You cannot install this package from within a PCoIP session to the virtual machine. You must install it from the vSphere VMConsole.

4. After the installation finishes, choose to reboot the machine later.

   Important Note: Make sure to power the virtual machine off and then back on again. This ensures that the ESXi inspects the updated virtual machine image. A simple reboot does not cause the driver to take effect.

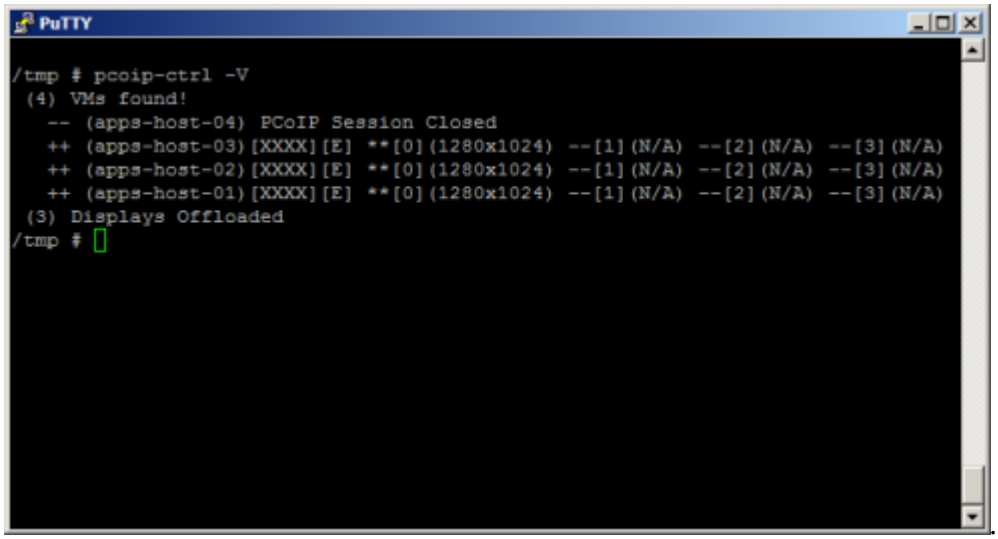


**Figure 2-7: Pcoip-ctrl output with the -V option**

## 2.5 Verifying the Policy Settings

1. From the View Connection Server, select **Global Policies**.
2. Make sure that the **PCoIP hardware acceleration** setting is enabled for any policies that inherit from the global policy.
3. In any custom policies, make sure the option for enabling and disabling PCoIP hardware acceleration is set to **Allow**.

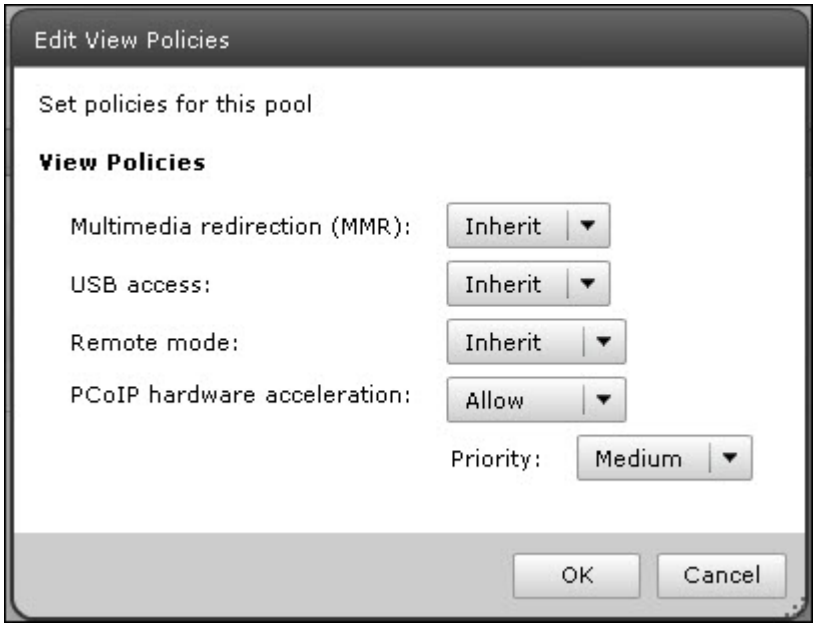


**Figure 2-8: View Connection Server Global Policies configuration window.**

4. Click **OK**.

## 2.6 Installing Additional APEX 2800 Cards

When additional APEX 2800 cards are installed on the same server, they act as a single resource and can automatically offload additional displays. To install an additional card and check its status, repeat the following steps:

Installing the APEX 2800 Card

Viewing the Status of the APEX 2800 Card

# 3 Administration

This section describes the management functions for your APEX 2800 card(s).

To manage the APEX 2800 card, use View Administrator. It does not require the installation of any other management tool.

## 3.1 Setting Priority Levels

You can refine how the APEX 2800 card prioritizes display offloads when the card is operating at full capacity. By assigning one of five available priority levels to the global pool, a specific desktop pool, or an individual user in View Connection Server, you can apply your knowledge about the known graphic demands of existing desktop pools to the APEX 2800 card's prioritization of display offloads.

Note: In VMware View 4.6 and 5.0, the default priority level for PCoIP hardware acceleration is set to Medium.

This ensures that displays belonging to higher priority desktop pools are encoded on the APEX 2800 card processor before lower priority displays, regardless of the amount of pixel activity being generated by the higher priority desktops. To change the priority from Medium to another level, follow the steps in the next sections.

### 3.1.1 Assigning the Priority to the Global Pool

To change the priority setting for your global pool:

1. From the View Connection Server, select **Policies** > **Global Policies**.

   The **View Policies** window appears:

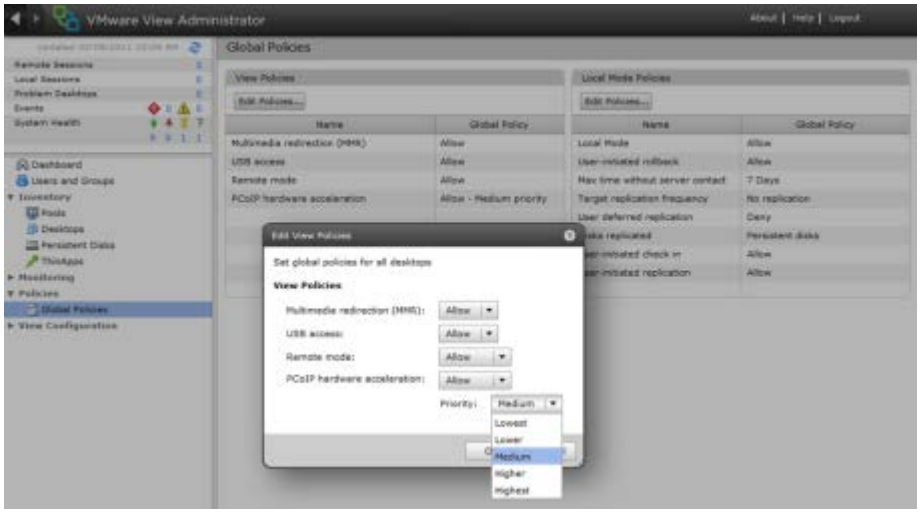


**Figure 3-1: View Connection Server Global Policies priority settings.**

2. The **PCoIP hardware acceleration** drop-down box is set to **Allow** (by default). You can change the **Priority** setting to any of the available options. This change is applied to your desktop pools that currently are set up to inherit the global setting.

### 3.1.2 Assigning the Priority to a Desktop Pool

To assign a priority level to a desktop pool:

1. From the View Connection Server, select **Inventory** > **Pools**.
2. Double-click the ID of the applicable desktop pool, and then click the **Policies** tab.
3. Configure session policies for the pool.
   - To configure general session policies, click **Edit Policies** from the **View Policies** window.
   - To configure local session policies for the pool, click **Edit Policies** from the **Local Mode Policies** window.

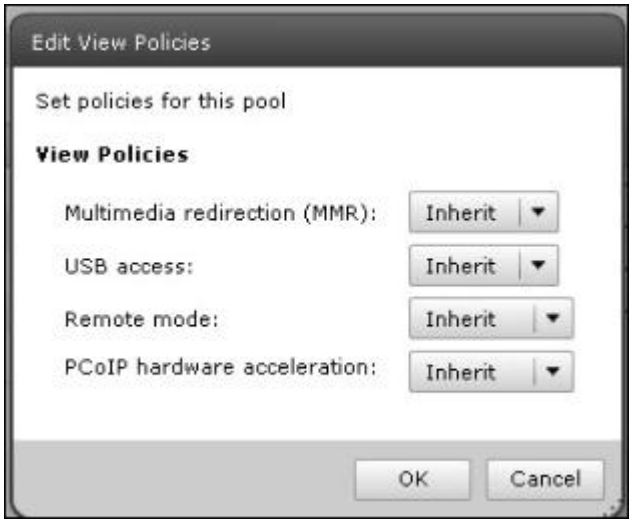


**Figure 3-2: VCS local inventory pools policies.**

1. The **Priority** drop-down box becomes enabled. Change the **Priority** setting as required.

**Figure 3-3: VCS local inventory pools Policies Priority setting.**

2. Click **OK** to save your changes. The new priority setting is applied to all users within the desktop pool (except any users that have a **Priority** setting applied to them individually).

### 3.1.3 Assigning the Priority to an Individual End User

To assign a priority to a specific end user within a desktop pool:

1. From the View Connection Server, select **Inventory > Pools**.
2. Click **User Overrides**.
3. Select the user to which you want to apply the priority setting.
4. Click **Next**. The **Edit View Policies** window appears.

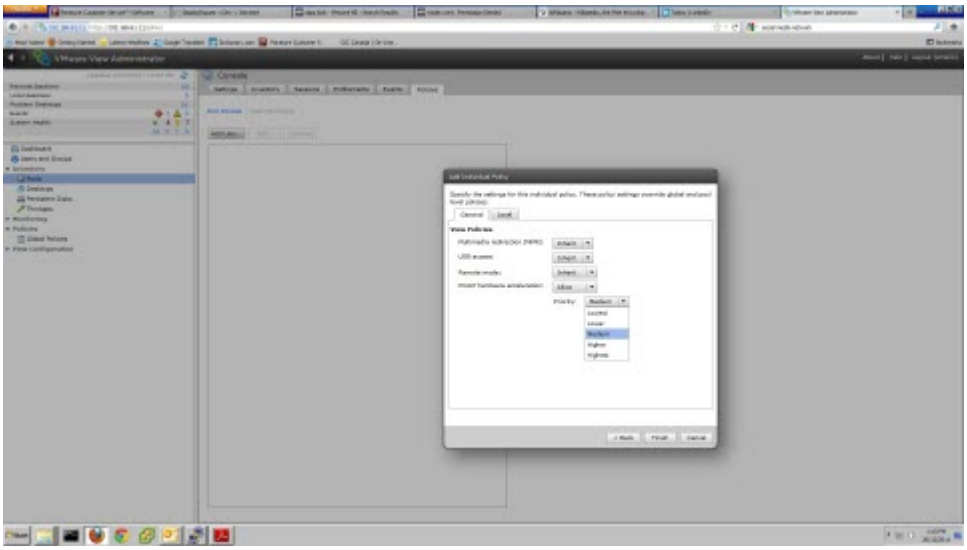

**Figure 3-4: VCS Global Policies individual priority options.**

5. Set the **PCoIP hardware acceleration** field to **Allow**.
6. Change the **Priority** setting as required.

## 3.2 Session Variables

Most of the PCoIP session settings configured in View are maintained by the APEX 2800 card. The following table shows common session settings and if they are supported by the APEX 2800 card.

**Table 3-1: Apex 2800 supported common session variables**

| Session Setting | Supported by the APEX 2800 Card |
|---|---|
| **PCoIP Image Quality Levels:** | |
| • Minimum Image Quality | • Yes |
| • Maximum Initial Image Quality | • Yes |
| • Maximum Frame Rate | • No. This is set to 24 frames per second (fps) which is the default for VMware View using the PCoIP protocol. |
| Maximum PCoIP Session Bandwidth | Supported dynamically receiving the bandwidth limit values from the PCoIP software in VMware View. |
| PCoIP Session Bandwidth Floor | Supported dynamically receiving the bandwidth floor from the PCoIP software in VMware View. |
| Turn Off Build-to-Lossless | Yes |

## 3.3 APEX 2800 Command Line Interface (CLI)

The APEX 2800 card supports a command line interface from the ESXi, which you can use to configure and monitor your APEX 2800 cards.

Note: All configured settings, with the exception of the offload indicator setting, appear in the PCoIP Server Logs.

### 3.3.1 Command Structure

From the ESXi CLI:

**ESXi 4.1:** `pcoip-ctrl [-d<device number>][-x][-e][-L log level][-I][-V][-O][-P “name value”][-X name]`

**ESXi 5.0:** `/opt/teradici/pcoip-ctrl [-d<device number>][-x][-e][-L log level][-I][-V][-O][-P “name value”][-X name]`

Note: The only difference between the two ESXi versions is that for ESXi 5.0 you must add **/opt/teradici/** before the command.

### 3.3.2 Commands

**Table 3-2: Pcoip-ctrl command line switches**

| | |
|---|---|
| **Null Switches** | **Output the command usage information** |

| **Null Switches** | **Output the command usage information** | |
|---|---|---|
| -d | Specify the device number (bus number) to control | |
| -x | Disable the APEX 2800 device specified using the -d option | |
| -e | Enable the APEX 2800 device specified using the -d option | |
| -I | Output the general driver and device information | |
| -V | Output virtual machine and display usage information | |
| -C | Output all software and firmware log event categories and current levels | |
| -O | Output all virtual machine properties | |
| -P <property_name property_value) | Set the specified property value | |
| | offload_indicator | Enable/disable the red dot offload indicator if eligible. (Disabled by default) |
| | bw_enable_threshold<br>bw_disable_threshold | Enable/disable network bandwidth thresholds for offload canceling for View 5.0 clients |
| -X <property_name> | Remove the specified property | |
| -L <log level> | Set the default log level in the APEX 2800 ESXi driver and firmware: (ex. pcoip-ctrl -L0) | |
| | 0 | CRITICAL log level |
| | 1 | ERROR log level |
| | 2 | INFO log level |
| --get-max-resolution | Retrieve a list of supported maximum resolutions and the current maximum resolution | |
| --set-max-resolution | Select a particular maximum resolution | |
| --enable-portrait-mode | Enables portrait mode. It is disabled by default | |

| Null Switches | Output the command usage information |
|---|---|
| --disable-portrait-mode | Disables portrait mode |
| --reset-properties | Reset all properties to the manufacturing default (deletes all properties set by the user) |
| --get-encoder-mode-switch-thresholds | Retrieves the client capability thresholds at which the encoder mode is switched |
| --set-encoder-mode-switch-thresholds "<enable_kbps> <disable_kbps>" | Sets the client capabilit thresholds at which the encoder mode is switched. |

### 3.3.3 Enabling/Disabling the APEX 2800 Card

You can enable or disable the APEX 2800 card using the pcoip-ctrl command from the ESXi CLI.

Note: The VM must be eligible for offloading for these settings to take effect.

**Disable the APEX 2800 card.**

Example: To disable the APEX 2800 card in bus number 6, type `ESX>pcoip-ctrl -d 6 -x`

**Enable the APEX 2800 card.**

Example: To enable the APEX 2800 card in bus number 6, type `ESX>pcoip-ctrl –d 6 –e`

Note: If you use ESXi 5.0, remember to add **/opt/teradici/**`[command]`.

### 3.3.4 Working with the Property Settings

This section describes the property values available in the APEX 2800 card. For the full list of available commands, see APEX 2800 Command Line Interface (CLI).

**Table 3-3: APEX 2800 property values**

| APEX 2800 Property | Description |
|---|---|
| offload_indicator | Set the red dot display offload indicator option.<br>**Operation:** Provides a way to see if a display is offloaded at the end user's display by a small dot overlay appearing at the top left corner of the screen.<br>• Red dot: The display is offloaded using PCoIP hardware compression in the APEX 2800 card.<br>• Blue dot: The display is using PCoIP software compression and is not offloaded.<br>**Property value:**<br>• 1: Enable the offload indicator |

| | |
|---|---|
| | • 2: Disable the offload indicator<br>**Default:** Disabled |
| bw_disable_threshold<br>bw_enable_threshold | Set the enable/disable network bandwidth threshold for offload canceling. To view the enable or disable state for a VM, type `pcoip-ctrl -V`.<br>Note: This setting applies for VMware View 5.0 clients and later.<br>**Operation:** When the network bandwidth for a session goes below the threshold, display offloading is cancelled. Once the network bandwidth is above the threshold, the display(s) are eligible for offloading again based on the VM priority and APEX 2800 card resource availability.<br>**Property value:** 0 to any bandwidth number.<br>**Usage:** At lower network bandwidths, there is a smaller load on the APEX 2800 card and as a result, less offload benefit. Automatically cancelling display offload below a network threshold helps maximize the benefit of the APEX 2800 card.<br>Also, automatic display offload cancelling below a network threshold lets the session take advantage of WAN bandwidth optimization features in PCoIP software such as client image caching (if available on the client).<br>Note: The APEX 2800 card does not support client image caching at this time. It will be available in a future release.<br>**Default:**<br>Session bandwidth threshold for offload cancelling: 800 Kbps.<br>Session bandwidth threshold for offload enabling : 1 Mbps. |

**Setting a Property**

To set an APEX 2800 card feature property type `ESX> pcoip-ctrl –P <property_name property_value>`

Example (to enable the offload indicator):

```
ESX>pcoip-ctrl -P "offload_indicator 1"
```

Example (to disable the offload indicator):

```
ESX>pcoip-ctrl -P "offload_indicator 0"
```

Note: If you use ESXi 5.0 or later, remember to add **/opt/teradici/**`[command]`.

### 3.3.5 Displaying General Device and Driver Information

To display general information about the APEX 2800 card and ESXi driver, type `pcoip-ctrl –I`.

Note: If you use ESXi 5.0, remember to add **/opt/teradici/**`[command]`.

See Viewing the Status of the APEX 2800 Card.

### 3.3.6 Setting the Log Level for the APEX 2800 ESXi Driver and Firmware

The APEX 2800 ESXi driver and firmware support multiple levels of logging to balance sufficient data, system performance, and log file size. There are three log levels that are set in

both the APEX 2800 ESXi driver as well as in the APEX 2800 card firmware. These levels include:

**Table 3-4: APEX 2800 log levels.**

| Log Level | Description |
|---|---|
| 0-Critical | The system can no longer function correctly. This log level only shows the critical event messages in the log. |
| 1-Error | This is the default log level. It includes critical and error event message but does not include Information messages. |
| 2-Info | This event log shows all log levels. |

Example

```
ESX>pcoip-ctrl -L 1
```

Note: We recommend you use a syslog server to ensure necessary information is available in the event of an issue. See Enabling a Syslog Server for more details.

Note: If you use ESXi 5.0 or above, remember to add **/opt/teradici/**`[command]`

**Displaying Firmware Log Event Categories**

To view the current level of event messages that appear in your error log, type `pcoip-ctrl -C -d <device number>`.

Example:

```
pcoip-ctrl -C -d 4
```

Note: If you use ESXi 5.0 or above, remember to add **/opt/teradici/**`[command].`

**Displaying Software and Firmware Log Event Categories**

To view the current level of event messages that appear in your error log, type `pcoip-ctrl -C -d <device number>`.

Example:

```
pcoip-ctrl -C -d 4
```

Note: If you use ESXi 5.0 or above, remember to add **/opt/teradici/**`[command].`

### 3.3.7 Displaying the APEX 2800 Properties for a VM

To view the properties for a virtual machine, type `pcoip-ctrl -O`.

Note: If you use ESXi 5.0 or above, remember to add **/opt/teradici/**`[command].`

Example:

```
bw_disable_threshold ==> 0
bw_enable_threshold ==> 100
offload_indicator ==> 1
```

## 3.4 Monitoring the VDI Server Load

### 3.4.1 ESXtop PCPU

You can use esxtop to monitor the physical CPU loading for a VDI server by using the PCPU statistics. While you can do this live, we recommend you run esxtop in batch mode to save the values to a file.

Use the esxtop command: `esxtop –b > myfile.csv` to save server performance information to a file. You can view this with Microsoft Excel® or another applicable tool. For instructions on the esxtop batch mode see VMware's Knowledge Base articlehttp://kb.vmware.com/kb/1033346 (current at time of writing).

The PCPU values appear at the top part of the window as shown in the following figure:

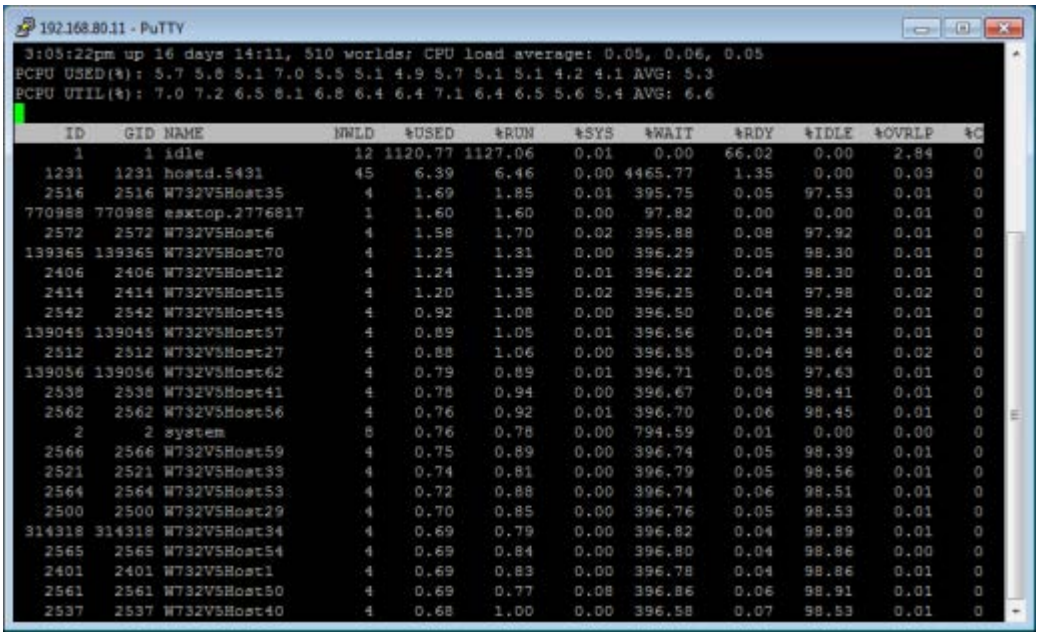


**Figure 3-5: Esxtop command output**

### 3.4.2 vCenter Performance Tab

**Figure 3-6: vCenter Performance Tab**

Note: While you can monitor the server CPU resources through vCenter, it is not recommended for benchmarking the APEX 2800 card since the usage is only updated every 20 seconds. This timing misses spikes in server CPU loads.

## 3.5 Viewing the Status of the APEX 2800 Card

When the installation and configuration of the APEX 2800 card is complete, you can verify the working status of the APEX 2800 card.

Note: The latest software driver adds additional information showing the number of displays supported and the display orientation highlighted below.

Note: If you use ESXi 5.0 or later, remember to add **/opt/teradici/**[command].

1. Enter the following command in your SSH session:

   ```
   /opt/teradici/pcoip-ctrl -I
   ```

- This outputs the following for APEX driver 1.x and ESXi 5.0:

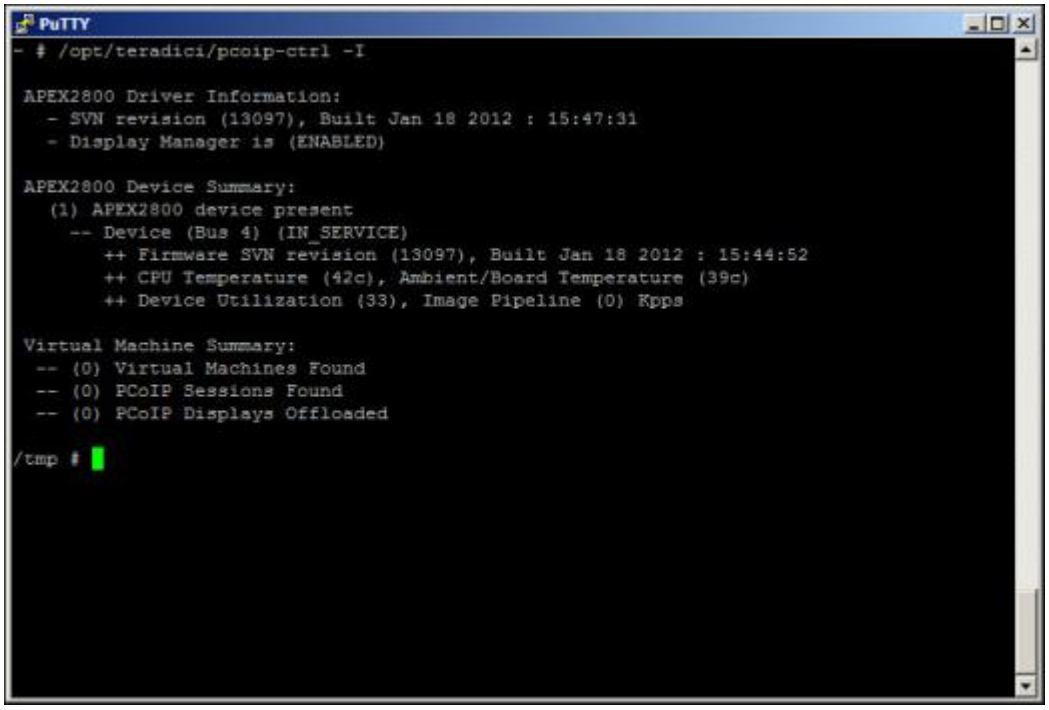


**Figure 3-7: Pcoip-ctrl output with the -I option, ESXi 5.0 and driver 1.x**

This outputs the following for driver 2.0 and ESXi 5.0:

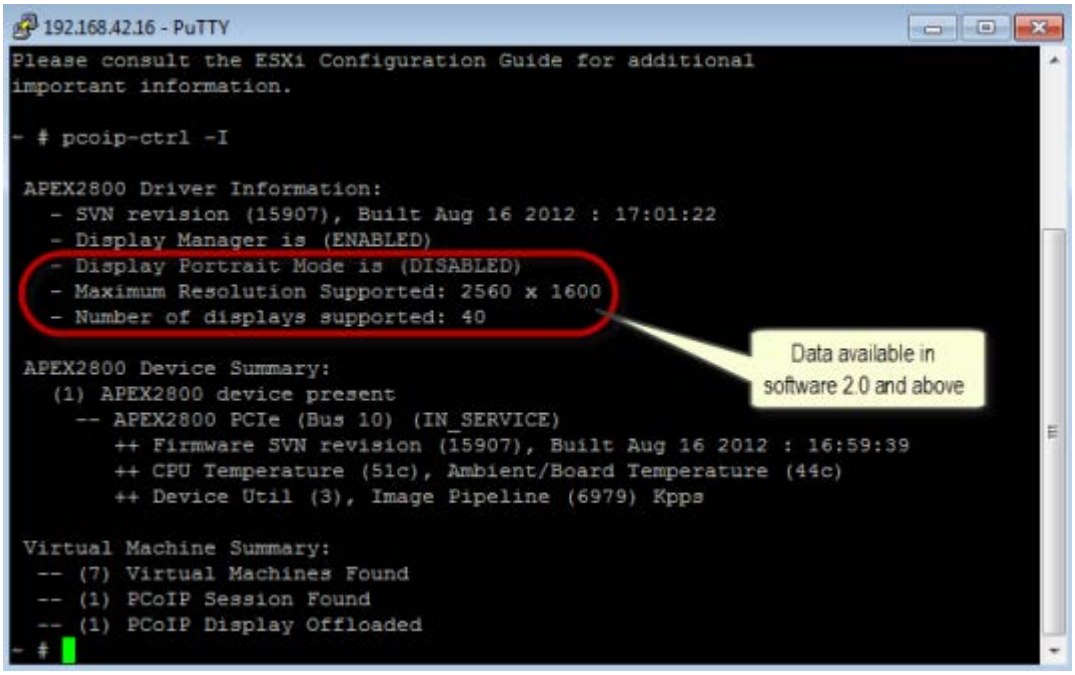


**Figure 3-8: Pcoip-ctrl output with the -I option, ESXi 5.0 and driver 2.x**

The line containing "(1) APEX2800 device present" indicates that the card is installed correctly.

Other information provided includes:

- Onboard temperatures (for both the processor and board)
- Device utilization: This shows the current activity for the card. The value ranges from 0 to 99 with 0 indicating idle.
- Image pipeline: The rate at which the card is processing pixels (measured in kilopixels per second).
- Portrait mode status (software 2.0 and above).
- Number of displays supported (software 2.0 and above).

## 3.6 Viewing the Usage and Monitoring Status of the Virtual Machines

You can view information about each virtual machine which the APEX 2800 card is currently monitoring. The figure below and the following command provides information about each display and if a particular display is offloaded:

```
ESXi>pcoip-ctrl -V
```

Note: If you use ESXi 5.0 or above, remember to add **/opt/teradici/**`[command]`.

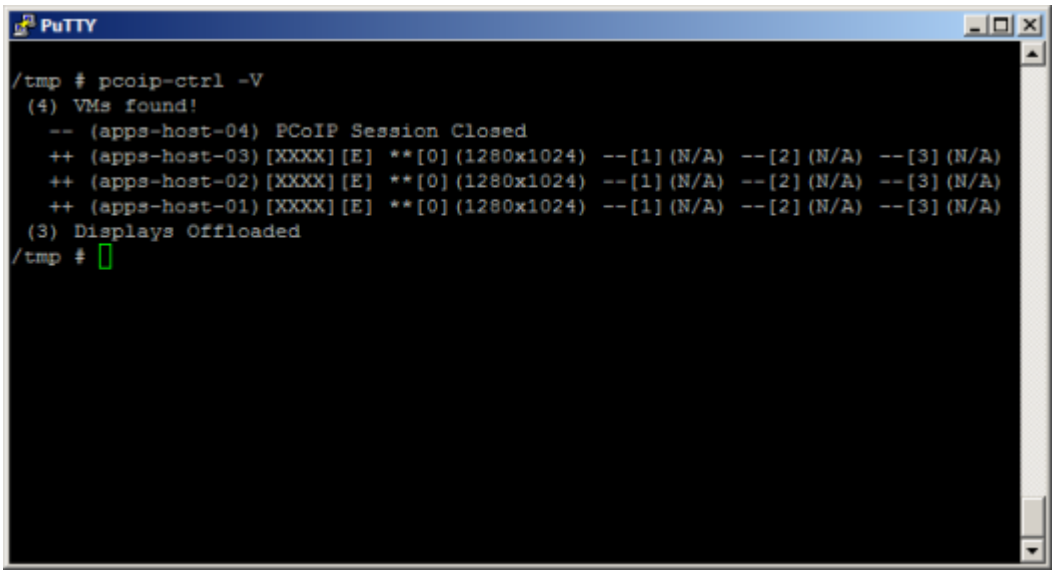


**Figure 3-9: Pcoip-ctrl command output with the -V option**

### 3.6.1 Legend:

**(XX):** Number of displays currently offloaded. In the figure, there are three displays offloaded.

**(HostName) Unavailable:** (Not shown in the figure.) Indicates the VM does not have the APEX 2800 VM software installed and running.

**(HostName) PCoIP Session Closed:** Indicates the VM is not currently in an active PCoIP session. If APEX 2800 hardware acceleration is disabled for this user's VM in View Connection Server, this command also reports the PCoIP session as closed.

**(HostName)(APEX VM Driver build #) [E] **[0](display #0 resolution) –[1](display #1 resolution)** (Not shown in the figure.)

- **[E] Indicates the VM is either above the bandwidth threshold, or is connected to a client not capable of image caching.**
- **[D] Indicates the VM is connected to a PCoIP client that supports image caching, and the bandwidth available between the VM and PCoIP client is below the configurable bandwidth threshold.**

  Note: The bandwidth threshold setting only applies to VMware View 5.0 (or later) clients.

- **** indicates that particular display is offloaded.
- -- indicates the display is not offloaded (uses PCoIP software encoding).

## 3.7 Viewing and Setting the Maximum Display Resolution

To view the configured maximum display resolution use the **--get-max-resolution** option with the **pcoip-ctrl** command.

Example.

```
# /opt/teradici/pcoip-ctrl --get-max-resolution
```

Note: The displayed output also describes the command to select a new resolution.

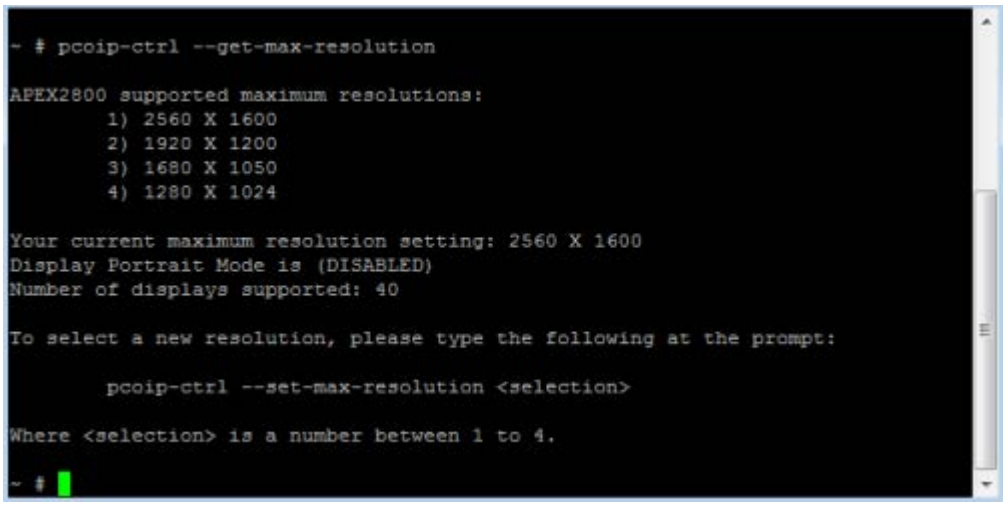


**Figure 3-10: Pcoip-ctrl output with the --get-max-resolution option**

To select a new resolution use the **--set-max-resolution <selection>** option.

Use 1-4 as the selection value where each number represents the configurable resolution as shown in the figure above and listed below.

1. 2560 X 1600

2. 1920 X 1200
3. 1680 X 1050
4. 1280 X 1024

Example

To set a new maximum resolution of 1920 x 1200 use the associated number 2.

```
/opt/teradici/pcoip-ctrl --set-max-resolution 2
```

# 4 Troubleshooting

This section describes some troubleshooting procedures specific to the APEX 2800 card. For more details, see the Knowledge Base at http://techsupport.teradici.com.

## 4.1 Enabling a Syslog Server

It is important to enable a syslog server to capture the log data in the event of an issue. Due to the volume of information, the event logs are over-written quickly. Also, the logs can be lost during a reboot. Enabling a syslog server in the advanced settings of your ESXi host ensures necessary data is available for troubleshooting.

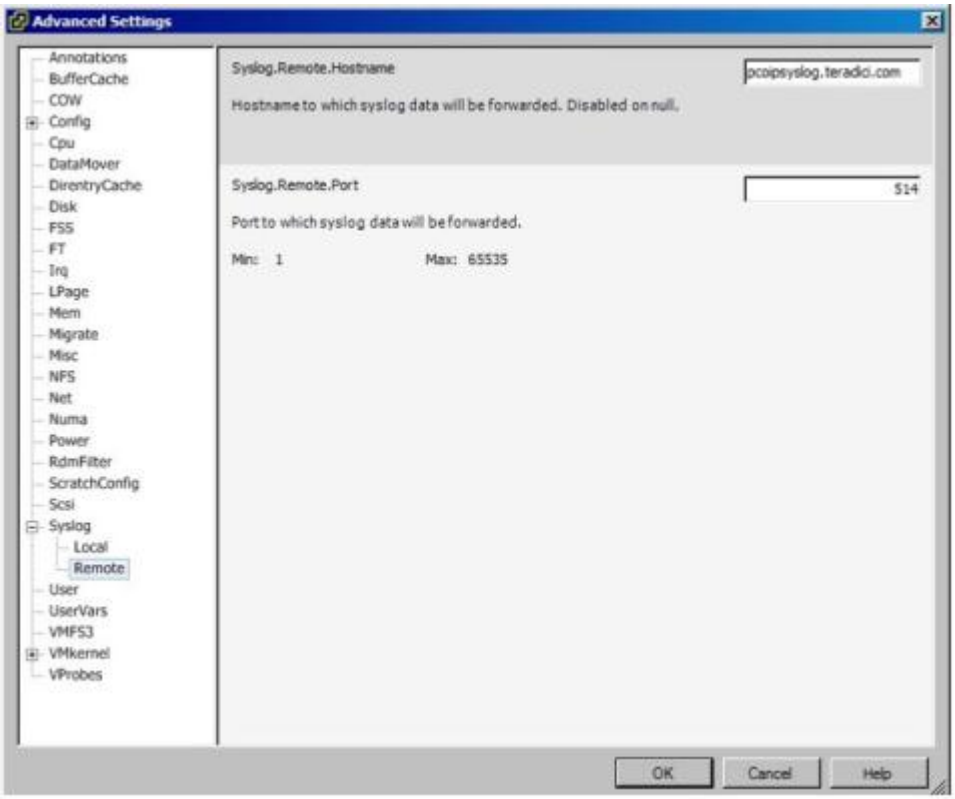


**Figure 4-1: ESXi Host Advanced Settings (Enabling a Syslog Server )**

If a syslog server is not available, you can move your logging to a non-scratch directory by following the steps outlined in the following VMware Knowledge Base articles:

http://kb.vmware.com/kb/1016621

http://kb.vmware.com/kb/1005030

## 4.2 Determining the APEX 2800 Card Status

### 4.2.1 From an Administrative Console

To view the status of one, or multiple APEX 2800 cards, enter the following command in your SSH session:

```
pcoip-ctrl -I
```

For more information about pcoip-ctrl -I command, see Viewing the Status of the APEX 2800 Card.

Note: If you use ESXi 5.0 or later, remember to add **/opt/teradici/**`[command]`.

### 4.2.2 At the User's Desk

If you have enabled the offload indicator, you can also determine if an individual display is offloaded by viewing the individual screen:

**Offloaded (using PCoIP hardware compression in the APEX 2800 card):** A small, red square appears in the top left-hand corner of the screen.

**Not offloaded (using PCoIP software compression):** A small blue square appears in the top left-hand corner of the screen.

Note: By default the offload indicator is disabled.

**Figure 4-2: APEX 2800 desktop offload indicator.**

## 4.3 Identifying a Failed Card

Enter the following command in your SSH session:

```
pcoip-ctrl –I
```

If the output does not show information for your card or the number of devices present does not match the number of installed cards (maximum of two), then one or more APEX 2800 cards have failed.

For more information about the `pcoip-ctrl -I` command, see Viewing the Status of the APEX 2800 Card.

Note: If you use ESXi 5.0 or later, remember to add **/opt/teradici/**`[command]`.

## 4.4 Disabling the ESXi Interrupt Remapping (Communication with PCIe Devices Stops)

In some cases unrelated to the APEX 2800 card, enabling the interrupt remapping on the server can cause a loss of communication with PCIe devices. This problem can occur to any other PCIe card. The interrupt remapping triggers the halt of any display offload onto the card. As such, it is recommended to disable the ESXi interrupt remapping. See the VMware Knowledge Base Article 1030265 for details (current at time of writing).

# 5 Appendix A: VDI Server Platforms Tested

VDI server platforms tested to date:

- Cisco C200
- Cisco C250
- Cisco C260
- Dell R610
- Dell R710
- Dell 2970
- HP DL385G7
- HP DL585G7
- IBM x3650
- IBM x369
- Lenovo RD240
- Dell R720