The Display Properties page provides options for turning Direct3D acceleration on and off, and for tuning PowerVR behavior.

The features that you can switch on or off are mainly Direct3D features, giving you the flexibility to fine-tune your system on a per-application basis. Most applications will however run perfectly well with all Direct3D features switched on.

This is used to turn on and off the PowerVR Hardware Abstraction Layer (HAL). The HAL provides the interface between the PowerVR hardware, and the Direct3D software it is running. Turning off the PowerVR HAL temporarily stops PowerVR from accelerating Direct3D, allowing you to run Direct3D applications or games through software, or through another 3D accelerator.

This switches between maximizing PowerVR acceleration, which you would use for most modern systems, and ensuring that the card works with older 2D accelerators. If you want to take full advantage of PowerVR acceleration, select Optimized. If you notice problems with rendering, if textures are corrupted or missing, if the display is corrupted, or if your machine crashes, then try setting this to Standard.

If you are running an older 2D accelerator, please make sure that you have the latest drivers. For example, if you have a Matrox card, many of the problems you might have with PowerVR will be avoided by running version 3.63 of the drivers or later.

The Advanced page enables you to optimize PowerVR performance and quality for specific applications. It overrides the equivalent settings made by the application. Although most applications do not require any advanced settings, you can add, edit or remove your own settings.

You can reset an entry to its default PowerVR settings. If you want to remove an application’s settings completely, delete them.

Hint Settings enable you to optimize PowerVR performance and quality for specific applications. They override the equivalent settings made by the application. Although most applications do not require any advanced settings, you can add, edit or remove your own settings.

You can reset an entry to its default PowerVR settings. If you want to remove an application’s settings completely, delete them.

The PowerVR HAL is application-specific, so you can save different settings for different applications. You can add, edit, reset or delete settings.

To add an entry to the application list:

1. Click Add. The Add Application dialog box is displayed.
2. Type in the description of the application you want to add.
3. If the application was the last PowerSGL or Direct3D application you ran, then you can click Use Last to enter the rest of the application details. Otherwise, type in or browse to the file that runs this application.
4. Click OK.
5. Change the settings you want.
6. Click OK.

To edit an entry on the application list:

1. Select the application you want to edit, and click Edit. The Edit Application Details dialog box is displayed.
2. Edit the description of the application.
3. If the application was the last PowerSGL or Direct3D application you ran, then you can click Use Last to enter the rest of the application details. Otherwise, type in or browse to the file that runs this application.
4. Change the settings you want.
5. Click OK.

Deleting an entry from the list removes its PowerVR Display Properties settings, so that the application's own settings are used.

To delete an entry from the application list:

1. Click Delete. A message is displayed asking whether you want to delete just the selected application, or all of them.
2. Click Selected.

Deleting all of the entries

You can delete all of the entries on the list.

To delete all entries:

1. Click Delete. A message is displayed asking whether you want to delete just the selected application, or all of them.
2. Click All.

You can reset an entry to its default PowerVR settings. If you want to remove an application's settings completely, delete them by following the steps given above.

To reset an entry on the list:

1. Select the application you want to reset, and click Reset. A message is displayed asking whether you want to reset just the selected application, or all of them.
2. Click Selected.

Resetting all of the entries

You can reset all of the entries on the list to their default PowerVR settings.

To reset all entries:

1. Click Reset. A message is displayed asking whether you want to reset just the selected application, or all of them.
2. Click All.

This is used to turn on and off the PowerVR Hardware Abstraction Layer (HAL) for this application if it uses Direct3D.

The HAL provides the interface between the PowerVR hardware, and the Direct3D software it is running. Turning off the PowerVR HAL temporarily stops PowerVR from accelerating this application if it is a Direct3D application, allowing you to run it through software, or through another 3D accelerator.

Render Overlap controls the way in which the hardware and software interact when rendering 3D. Without Render Overlap, the hardware and software render at different times. With Render Overlap selected, the hardware and software can render at the same time.

Turn Render Overlap off if your screen is updating slowly, with symptoms such as menus or dialog boxes not appearing, otherwise leave it on to improve performance.

Allow Quads enables PowerVR to process sets of triangles as single, four-sided objects.

Turn Allow Quads off if there are distorted objects on the screen, otherwise leave it on to improve performance.

Dithering is a Direct3D feature that works in 16-bit color modes. It smoothes the transition between areas of different color, mixing alternate pixels to create the illusion of an intermediate color.

Turning Dithering on improves image quality, but may reduce frame rates.

MIP mapping is used to improve image quality as an object moves into the distance, by using smaller and smaller resolutions of the same texture.

If textures are missing or corrupted, turn Automatic MIP Mapping off. You can turn it on for image quality enhancement, but this may reduce frame rates in some games.

This turns adaptive bilinear filtering on or off for an application, when Override Application Filtering is switched on.

Bilinear filtering is a Direct3D feature that affects image quality when MIP Mapping. It enables the PCX2 chip to interpolate between pixels horizontally and vertically, to produce a more realistic display when rendering 3D. Adaptive bilinear filtering switches bilinear filtering on for objects close to the screen, where the quality is noticeable, and off when the object is more distant, so smaller and less visible.

Generally you will get a better display with this feature switched off, so that you are using full bilinear filtering when MIP Mapping. Some games that are not compatible with full bilinear filtering might show ‘joins’ between textures, in which case switching this on will improve the display.

Some applications use this Direct3D feature to give shiny highlights to an object.

In some games, this feature can lead to banding. It may also also slow down performance. If you experience any of these symptoms, turn Gouraud Specular off.

Some applications use this Direct3D feature to make objects disappear into the distance as if through fog, giving a depth cue to the user for perceiving distance. It differs from Table Fog in that it is more local, so that individual objects can have different vertex fog values, rather than a whole scene.

In some games, this feature can lead to banding. It may also also slow down performance. If you experience any of these symptoms, turn Vertex Fog off.

Some applications use this Direct3D feature to make objects disappear into the distance as if through fog, giving a depth cue for perceiving distance. It takes the fog value from a lookup table in PCX2. It differs from Vertex Fog in that it is more global, so that whole scenes can be given a fog value rather than each individual object.

Turning Table Fog on improves image quality without reducing frame rates.

This Direct3D feature is used for transparent textures. By turning Color Key on, an application can make some colors transparent, in a similar way to the blue background used for transparent cinema film.

Some games or applications need Color Key to be turned on simply to work through hardware acceleration, so if the software isn't actually working, try turning this on.

Also, if a application isn't using the correct color key, black outlines might appear around the edges of objects. If you see black outlines, try turning Color Key on.

This is a specialized PowerVR feature, which you can switch on to optimize between accuracy and performance.

If you find an application is running slowly, try reducing the translucency sort towards None. However, most applications should be able to run a Full Translucency Sort without affecting frame rates.

Filtering is a Direct3D feature that affects image quality.

Bilinear filtering enables the PCX2 chip to interpolate between pixels horizontally and vertically, to produce a more realistic display when rendering 3D. Point Sample uses no filtering.

Generally you will get a better display with Bilinear on. Some games that are not compatible with bilinear filtering might show ‘joins’ between textures, in which case selecting Point Sample will improve the display.

The Display Properties page

The Display Properties page provides options for turning Direct3D acceleration on and off, and for tuning PowerVR behavior.

PowerVR accelerates Direct3D through the the PowerVR Hardware Abstraction Layer (HAL). The HAL provides the interface between the PowerVR hardware, and the Direct3D software it is running. Turning off the PowerVR HAL temporarily stops PowerVR from accelerating Direct3D, allowing you to run Direct3D applications or games through software, or through another 3D accelerator.

The features that you can switch on or off are mainly Direct3D features. Most applications will run perfectly well with all Direct3D features switched on; however, the control panel gives you the flexibility to fine-tune your system on a per-application basis.

Below are some of the situations in which you might want to use the PowerVR Control Panel. Refer to the User Guide and the on-line documentation on the Apocalypse CD-ROM for more information.

Problem: **When using a Matrox display card, my computer hangs when a Direct3D game goes into full screen.**
Solution: Update your Matrox display drivers to v3.63 or later.

Solution: If using earlier drivers, set the 3D Acceleration to Standard.

Problem: **Some textures within the game are corrupt**
Solution: Enable Automatic MIP Mapping for the game.

Problem: **All game menus are displayed correctly but when playing a game, it fails to display the screen correctly.**
Solution: Enable Render Overlap for the game.

Problem: **Some textures within the game appear to have joining marks on the edges of the tiles.**
Solution: Disable Override Application Filtering and Use Adaptive when MIP Mapping.

Problem: **Mouse control in Direct3D applications is very jerky.**
Solution: Select Optimized under 3D Acceleration.

Problem: **The application won't work with hardware acceleration.**
Solution: Try turning Color Key on.

Problem: **Black outlines appear around the edges of objects.**
Solution: Try turning Color Key on.

Enable PowerVR HAL

This is used to turn on and off the PowerVR Hardware Abstraction Layer (HAL). The HAL provides the interface between the PowerVR hardware, and the Direct3D software it is running. Turning off the PowerVR HAL temporarily stops PowerVR from accelerating Direct3D, allowing you to run Direct3D applications or games through software, or through another 3D accelerator.

3D Acceleration

This switches between maximizing PowerVR acceleration, which you would use for most modern systems, and ensuring that the card works with older 2D accelerators. If you want to take full advantage of PowerVR acceleration, select Optimized. If you notice problems with rendering, if textures are corrupted or missing, if the display is corrupted, or if your machine crashes, then try setting this to Standard.

If you are running an older 2D accelerator, please make sure that you have the latest drivers. For example, if you have a Matrox card, many of the problems you might have with PowerVR will be avoided by running version 3.63 of the drivers or later.

Advanced Settings

The Advanced page enables you to optimize PowerVR performance and quality for specific applications. It overrides the equivalent settings made by the application. Although most applications do not require any advanced settings, you can add, edit or remove your own settings.

You can reset an entry to its default PowerVR settings. If you want to remove an application’s settings completely, delete them.

Hint Settings

Hint Settings enable you to optimize PowerVR performance and quality for specific applications. They override the equivalent settings made by the application. Although most applications do not require any advanced settings, you can add, edit or remove your own settings.

You can reset an entry to its default PowerVR settings. If you want to remove an application’s settings completely, delete them.

Application Details

The PowerVR HAL is application-specific, so you can save different settings for different applications.

You can add, edit, reset or delete settings.

Adding an entry

To add an entry to the application list:

1. Click Add. The Add Application dialog box is displayed.
2. Type in the description of the application you want to add.
3. If the application was the last PowerSGL or Direct3D application you ran, then you can click Use Last to enter the rest of the application details. Otherwise, type in or browse to the file that runs this application.
4. Click OK.
5. Change the settings you want.
6. Click OK.

Editing an entry

To edit an entry on the application list:

1. Select the application you want to edit, and click Edit. The Edit Application Details dialog box is displayed.
2. Edit the description of the application.
3. If the application was the last PowerSGL or Direct3D application you ran, then you can click Use Last to enter the rest of the application details. Otherwise, type in or browse to the file that runs this application.
4. Change the settings you want.
5. Click OK.

Deleting an entry

Deleting an entry from the list removes its PowerVR Display Properties settings, so that the application's own settings are used.

To delete an entry from the application list:

1. Click Delete. A message is displayed asking whether you want to delete just the selected application, or all of them.
2. Click Selected.

Deleting all of the entries
You can delete all of the entries on the list.

To delete all entries:

1. Click Delete. A message is displayed asking whether you want to delete just the selected application, or all of them.
2. Click All.

Resetting an entry

You can reset an entry to its default PowerVR settings. If you want to remove an application's settings completely, delete them by following the steps given above.

To reset an entry on the list:

1. Select the application you want to reset, and click Reset. A message is displayed asking whether you want to reset just the selected application, or all of them.
2. Click Selected.

Resetting all of the entries
You can reset all of the entries on the list to their default PowerVR settings.

To reset all entries:

1. Click Reset. A message is displayed asking whether you want to reset just the selected application, or all of them.
2. Click All.

Enable PowerVR HAL

This is used to turn on and off the PowerVR Hardware Abstraction Layer (HAL) for this application if it uses Direct3D.

The HAL provides the interface between the PowerVR hardware, and the Direct3D software it is running. Turning off the PowerVR HAL temporarily stops PowerVR from accelerating this application if it is a Direct3D application, allowing you to run it through software, or through another 3D accelerator.

Render Overlap

Render Overlap controls the way in which the hardware and software interact when rendering 3D. Without Render Overlap, the hardware and software render at different times. With Render Overlap selected, the hardware and software can render at the same time.

Turn Render Overlap off if your screen is updating slowly, with symptoms such as menus or dialog boxes not appearing, otherwise leave it on to improve performance.

Allow Quads

Allow Quads enables PowerVR to process sets of triangles as single, four-sided objects.

Turn Allow Quads off if there are distorted objects on the screen, otherwise leave it on to improve performance.

Dithering

Dithering is a Direct3D feature that works in 16-bit color modes. It smoothes the transition between areas of different color, mixing alternate pixels to create the illusion of an intermediate color.

Turning Dithering on improves image quality, but may reduce frame rates.

Automatic MIP Mapping

MIP mapping is used to improve image quality as an object moves into the distance, by using smaller and smaller resolutions of the same texture.

If textures are missing or corrupted, turn Automatic MIP Mapping off. You can turn it on for image quality enhancement, but this may reduce frame rates in some games.

Use Adaptive when MIP Mapping

This turns adaptive bilinear filtering on or off for an application, when Override Application Filtering is switched on.

Bilinear filtering is a Direct3D feature that affects image quality when MIP Mapping. It enables the PCX2 chip to interpolate between pixels horizontally and vertically, to produce a more realistic display when rendering 3D. Adaptive bilinear filtering switches bilinear filtering on for objects close to the screen, where the quality is noticeable, and off when the object is more distant, so smaller and less visible.

Generally you will get a better display with this feature switched off, so that you are using full bilinear filtering when MIP Mapping. Some games that are not compatible with full bilinear filtering might show ‘joins’ between textures, in which case switching this on will improve the display.

Gouraud Specular

Some applications use this Direct3D feature to give shiny highlights to an object.

In some games, this feature can lead to banding. It may also also slow down performance. If you experience any of these symptoms, turn Gouraud Specular off.

Vertex Fog

Some applications use this Direct3D feature to make objects disappear into the distance as if through fog, giving a depth cue to the user for perceiving distance. It differs from Table Fog in that it is more local, so that individual objects can have different vertex fog values, rather than a whole scene.

In some games, this feature can lead to banding. It may also also slow down performance. If you experience any of these symptoms, turn Vertex Fog off.

Table Fog

Some applications use this Direct3D feature to make objects disappear into the distance as if through fog, giving a depth cue for perceiving distance. It takes the fog value from a lookup table in PCX2. It differs from Vertex Fog in that it is more global, so that whole scenes can be given a fog value rather than each individual object.

Turning Table Fog on improves image quality without reducing frame rates.

Color Key

This Direct3D feature is used for transparent textures. By turning Color Key on, an application can make some colors transparent, in a similar way to the blue background used for transparent cinema film.

Some games or applications need Color Key to be turned on simply to work through hardware acceleration, so if the software isn't actually working, try turning this on.

Also, if an application isn't using the correct color key, black outlines might appear around the edges of objects. If you see black outlines, try turning Color Key on.

Override Application Sorting

This is a specialized PowerVR feature, which you can switch on to optimize between accuracy and performance.

With Translucency Sort at Full, PowerVR calculates every attribute of every element in a scene before sending it to the display. This means that it will create a totally accurate rendering, but may reduce the frame rate.

With Translucency Sort at None, PowerVR averages the attributes and reduces the number of passes necessary to render a scene. This reduces the accuracy, which may not even affect the display, and can increase the frame rate.

The settings in between calculate screen attributes to decreasing levels of accuracy, from Full down to None.

If you find an application is running slowly, try reducing the translucency sort. However, most applications should be able to run a Full Translucency Sort without affecting frame rates.

Override Application Filtering

Filtering is a Direct3D feature that affects image quality.

Bilinear filtering enables the PCX2 chip to interpolate between pixels horizontally and vertically, to produce a more realistic display when rendering 3D. Point Sample uses no filtering.

Although most applications set which type of filtering they want to use, you can override their settings by switching Override Application Filtering on, and then selecting either Bilinear or Point Sample.

Generally you will get a better display with Bilinear on. Some games that are not compatible with bilinear filtering might show ‘joins’ between textures, in which case selecting Point Sample will improve the display.