PVRTune

User Manual

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1. Introduction

PVRTune, together with SGXPerfServer, are used to view and graph the values and rate-of-change of both hardware and software counters, in the SGX hardware and drivers.

1. SGXPerfServer

SGXPerfServer is a console application that runs as a server and waits for a client to connect across the network. There are three builds, one for Linux, one for Windows XP and one for Windows Vista.

1.1. Installation

The SGXPerfServer executable does not need to be installed to any particular location; it simply needs to be on or available to the computer containing the SGX.

1.2. Usage

1. On Windows XP, run “init.exe” from the driver package as per normal. See the DDK documentation for further information.
2. Run SGXPerfServer.

If successful, you will see console-window output resembling Figure 1. The last line of the output shown gives you the name and IP address of the server, which may be of use when connecting from PVRTune.

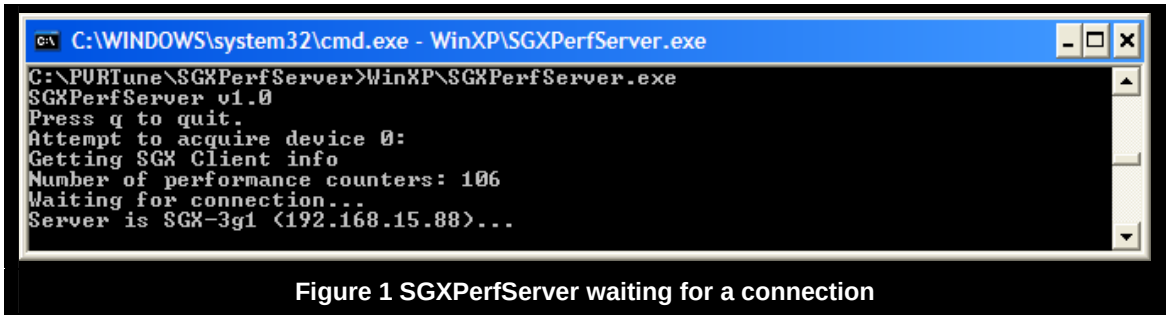

Figure 1 SGXPerfServer waiting for a connection

On Windows, if the incorrect build of SGXPerfServer is used, i.e. the Vista build is used on XP or vice-versa, you will see output resembling Figure 2. You will see the same output if your platform requires “init” to be running but it is not, see Step 1. (Note, though, that if SGXPerfServer is not run from a command-prompt, the console window will most likely close too quickly to see this output.)

Figure 2 SGXPerfServer failed to initialise

3. When it is not connected, SGXPerfServer will wait for a connection.
4. No more than one client may be attached simultaneously.
5. When SGXPerfServer is connected to a client, it will repeatedly read/sample the performance data from the drivers and send them over the network to PVRTune.
6. Press the ‘q’ key to quit.

2. PVRTune

PVRTune is a GUI application that connects as a client to SGXPerfServer across a network, allowing counters to be viewed remotely and commands to be sent to the SGX drivers. There are two builds: one for Linux and one for Windows.

Multiple copies of PVRTune may be run on the same computer, each attached to a different server, where a “server” is an SGX-equipped computer successfully running SGXPerfServer.

2.1. Installation

The PVRTune executable does not need to be installed to any particular location; it simply needs to be on or available to the computer on which it is to be run.

Desktop Linux and Windows installations allow PVRTune to be ran on the same computer as the SGX and SGXPerfServer; your platform may or may not support this. Performance profiling an application is generally simplified by running PVRTune on a second computer, particularly when running full-screen applications on the SGX computer.

2.2. Usage

Note that while these instructions utilise the menu options, all menu options are also available on the toolbar.

1. Launch PVRTune.
2. Once PVRTune is running, it presents a welcome screen.
3. Connect to SGXPerfServer, using one of the following options:
    4. “Connection\New…” pops up a dialog box in which the name or IP address of the server can be entered.
    5. “Connection\localhost” should be used when SGXPerfServer and PVRTune are both running on the same, SGX equipped, computer.
    6. “Connection\Recent Connections” offers a list of previously entered server names and IP addresses. This list will initially be empty.
7. On Windows, it may be necessary to disable the built-in Windows Firewall on the server or client computers. This can be done using the “Security Centre” in the Control Panel.
8. Once a connection is successfully made, the PVRTune user interface switches to the graph view, as shown in Figure 3.

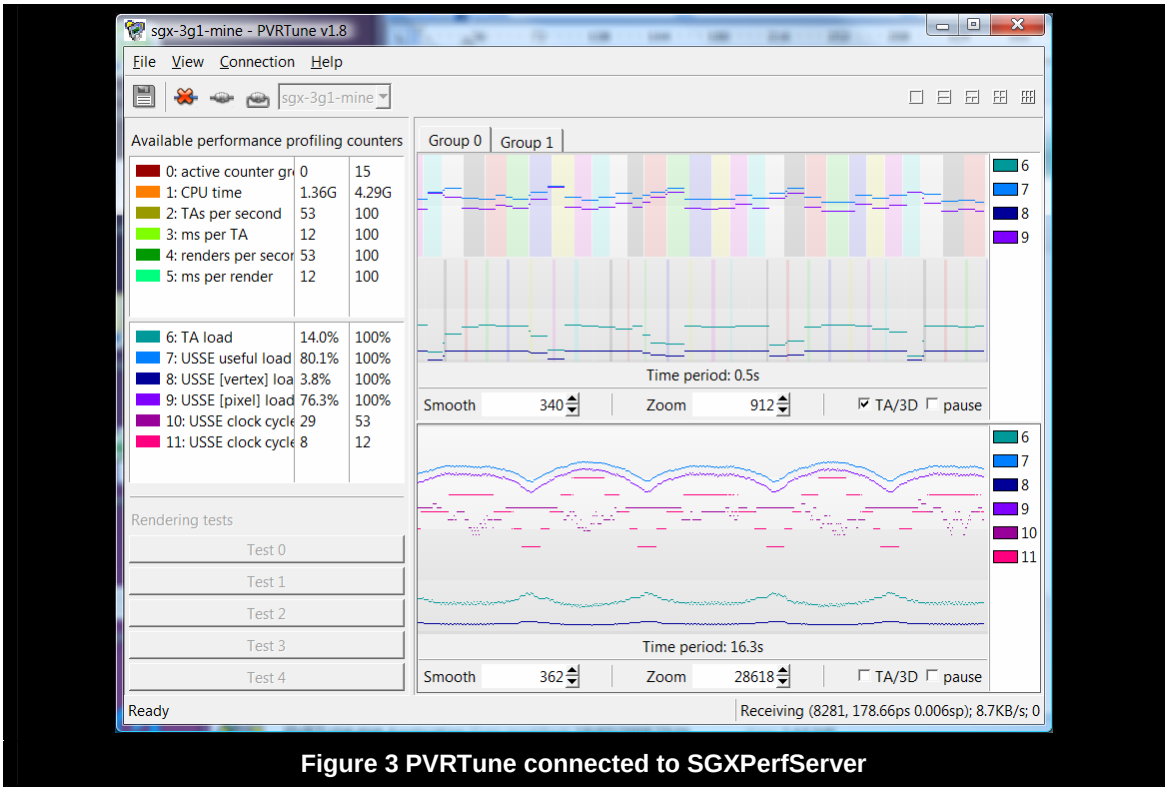

Figure 3 PVRTune connected to SGXPerfServer

9. Select which counters to view in graphs.
    10. There are two lists of counters on the left hand side of the window; they are software and hardware counters.
        11. Each counter in the list shows a name, a current value, and an “axis” value. This is the value that will be at the top of the graph window.
    12. On the right hand side of the window there is some number of graphs. You can change the number of graphs using the five icons in the top-right of the PVRTune window.
    13. Each graph has a list of counters on its right hand side.
    14. Counters can be copied from the list on the left, and from any graph to any other graph, using the mouse and drag and drop.
    15. Counters can be deleted from a graph by selecting them in the attached list and pressing “delete” on the keyboard.
    16. These settings are stored and used next time PVRTune is run.
17. Each graph has its own “smooth” and “zoom” controls, and a “time period” display.
    18. “Smooth” controls the amount of smoothing applied to the graphs. Too-low values give noisy graphs; too-high values smooth out all the detail.
    19. “Zoom” changes the number of micro-seconds per pixel; higher numbers zoom out the graph.
        20. The “time period” value uses the current zoom value and the width of the window to calculate the range of time currently shown in the graph.
    21. “TA/3D” enables rendering of TA and 3D timing data. Two rows of colours blocks are drawn in the background; the top row is 3D and the bottom row is TA. Colour indicates tha the core is active; gaps are left where the core is inactive. TA and 3D tasks belonging to the same frame number are rendered in the same colour, and colours are recycled every eight frames.
    22. “pause” pauses the graph; it will no longer track the live data (the data is still stored, however).
    23. These settings are stored and used next time PVRTune is run.

24. A graph can be panned by clicking and dragging in the graph view; this automatically enables “pause” for that graph.
25. A graph can be zoomed by placing the mouse cursor over the graph and using the mouse-wheel.
26. The smoothing values for a graph can be changed by holding the “Alt” key and using the mouse-wheel.

27. The active hardware counter group can be changed using the tabs that run along the top of the graphs. Changing this changes the list of available hardware counters, and sends a command to the SGX to switch the active counter group.
28. The number of graphs available can be changed using the View menu, or the top-right buttons.
29. The bottom-right of the window displays some [generally unimportant] status information: what PVRTune is currently doing, the number of times it has done it, the average number of times it is doing it per second, and the average time period between each occasion that it is done. The latter two values are the reciprocal of each other.
30. “File\Save…” is disabled, this feature is not yet implemented.
31. In the bottom-left of the window are several disabled buttons; these features are not yet implemented.
32. “Connection\Close” disconnects from the server and returns to the welcome screen.