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## **SPEEDY OVERVIEW**

Speedy is a Windows graphics performance benchmark. The program can be used in a variety of ways to compare the relative performance of different graphics hardware and display driver combinations.

Speedy tests a wide range of Windows Graphics Device Interface (GDI) calls and delivers a single SPEEDMARK number for comparison with other systems/devices running Speedy. The SPEEDMARK number is only meaningful if the systems/devices under test are similarly configured and Speedy itself is run in the same way for all tests.

## USING SPEEDY

The most straightforward use of the program is to choose **Auto Run** from the Control menu (or press the F2 key). Speedy will fill the screen with eight graphics applications running in parallel and deliver a number in the center of the screen. After 70 seconds of operation, a **SPEEDMARK** number will also appear in the center window. To terminate Speedy press the F10 key or choose Kill...Kill All Instances from the Control menu of any of the running applications.

When Speedy is launched and **Auto Run** selected, the number in the center of the screen represents the total number of pixels-per-second written by the eight separate applications, divided by 100,000. This number is computed once every second. After Speedy has been running for 70 seconds a mean is calculated and presented as the **SPEEDMARK** rating. The mean calculation does not include the first ten seconds of operation which typically will involve initialization and font caching. Although the test may continue to run indefinitely, the **SPEEDMARK** rating will not change after it is presented.

## INTERPRETING SPEEDY'S RESULTS

In order to get an accurate measure of performance, it is important to test different devices in the same or parallel configurations. For example, the SPEEDMARK delivered when running a test at 1204 x 768 by 256 colors should not be compared with the SPEEDMARK of a test run at 640 x 480 by 256 colors. Neither should different CPU platforms (e.g. a 386-25 and a 486-33) be compared unless relative performance of similarly configured computers is the object of the test.

Color depth should not be overlooked, comparing 1024 x 768 by 16.7 million color operation to 1024 x 768 by 256 color operation is only meaningful if the relative difference between the performance of the two color depths is the object of the test. Be careful to compare apples to apples or know that the apple to orange comparison is your objective.

Display refresh is also a factor in graphics performance. If you are comparing two devices one operating at 80Hz refresh and the other operating at 60Hz refresh, be sure to quote this difference when citing the test result.

The only useful way to describe the SPEEDMARK rating is in a sentence such as:

"Graphics accelerator X delivered a SPEEDMARK of 14.73 when run in 1024 x 768, 256 color mode at 72Hz refresh rate on a '486-33 ISA-bus computer."

## WHAT SPEEDY TESTS

The following applications make up Speedy's Auto Run test:

**MemToScr** is a memory to screen Bit Block Transfer (BitBlt) test which measures the efficiency with which the display hardware/driver combination transfers bitmapped data from host memory to screen memory.

**PolyHatch** measures the efficiency of the display hardware/driver combination when drawing polygons that are filled with a pattern.

**ScrToScr** is a screen to screen BitBlt test measuring the efficiency with which the display hardware/driver combination can relocate bitmapped data from one part of the screen to another.

**VecSolid** tests the efficiency of the display hardware/driver combination when drawing solid lines of varying colors.

**Rops** is a test that exercises all 256 raster operations as defined in the Windows GDI. A raster operation is a definition of how the bits in a source bitmap are logically combined with the bits in a destination bitmap.

**Fonts** tests the efficiency of the display hardware/driver combination when "realizing" or writing several True Type character sizes and colors.

**VecStyle** tests the efficiency of the display hardware/driver combination when drawing lines of varying colors and patterns.

**PolySolid** measures the efficiency of the display hardware/driver combination when drawing polygons that are filled with solid colors. Since the specified color may not be available in the current color palette, this call may require the driver to present a dithered color to most closely simulate the specified color.

In addition to the tests included in Speedy's Auto Run the following test is also available.

**DIBToScreen** tests the efficiency of the display hardware/driver combination when managing BitBlts where the source bitmap is not stored in the same format as the screen bitmap. This call tests the decoding ability of the driver.

## **ALTERNATE USE OF SPEEDY**

In addition to Auto Run, the purpose of which is to allow consistent testing across multiple installations or multiple executions, Speedy can run individual tests or custom tests.

Clicking on the Options menu will bring up a dialog box that allows you to select a discrete test for Speedy to run. After selecting the test and clicking on OK, the test will begin. A total number of pixels per second will be presented in the title bar.

If you wish to execute multiple tests in parallel choose "Spawn" from the Control menu and supply the number of additional instances to spawn. For example, if you spawn two instances, a total of three applications will be running. After supplying a number of applications to spawn, the application windows will appear tiled on the screen and an option box for Instance #1 will appear. Indicate the operation that you wish to execute in the first application window and click on OK. Additional option boxes will prompt you to define the test for each additional instance.

The "Weight" parameter of the option box lets you specify how many operations to perform before relinquishing control to the next application. Weight only has meaning when more than one application is executing. By default, each application will perform one operation and then pass control on to the next application. By changing the weight, you are controlling the number of operations performed by each application before passing control.

## **HOW SPEEDY DIFFERS FROM OTHER GRAPHICS PERFORMANCE TESTS**

There are two important ways in which Speedy differs from other graphics performance benchmarks.

Speedy tests multiple applications executing in parallel. Significant additional stress is added to the display driver when it is required to juggle multiple device contexts. The availability of multiple applications running simultaneously is one of the defining characteristics of the Windows operating system. The degree to which the CPU can offload graphics tasks and go about other chores, such as calculating pixels-per-second, is part of the performance advantage of a Windows graphics accelerator.

The second difference is that Speedy ramps through colors using Windows' RGB model regardless of the actual pixel depth of the display adapter. This means that a 256 color driver will need to dither in order to simulate colors that are not available in its palette. Other benchmark tests may not concern themselves with color depth so that executing on a 16.7 million color device is not visually different or more processor intensive than executing on a 16 color device.

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