

**RTPM**  
**Real-Time Performance Monitor**  
**Version 2.00**  
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**Synopsis**

This utility provides a real-time graphical display of 'CPU utilization' as well as a numerical display in the Windows caption of some other interesting user-selectable Windows information. RTPM is a rewrite of my Visual Basic WinEKG utility into C (using Microsoft's Visual C++). By using C, I've been able to get around some of the limitations of VB. As a result, RTPM is faster, has a smaller memory footprint and provides more capability than does WinEKG.

RTPM may be run as a window or minimized to a dynamic icon. When run as a window, the horizontal size of the window can be adjusted from 60 to 255 pixels. Each pixel corresponds to a single sample. Color and Control options are available thru the Control Box (System) menu. Color options allow the user to adjust the background and foreground colors used in the window. Control options provide the user the capability to select the parameters displayed in the graph and the caption; allow for customization of sampling interval; and provide for control of the graphical presentation. Either a line graph or a bar graph may be selected for the graphical display. Experience indicates that a bar graph is the best display for the graphic icon while a line graph is best for a window. The advantage of displaying the graph in a window is better resolution. The advantage of using a dynamic icon is speed and size. Current options along with window size and position are saved whenever the window is closed either by operator action or Windows exit. The Window State, i.e. - minimized or normal, is not saved, since typically, this state is determined by the setting of the 'Run Minimized' option of the Program Item Property in the Program Manager.

**FSR Warning feature**

For users of Windows 3.1, this utility will provide a warning when Free System Resources (FSR) fall below a selectable threshold.

**Version Description**

Version 2.00 (June 1995)

Eliminated selection of sample size. Sample size is now determined by horizontal size of window. Modified code to enhance speed.

Version 1.30 (May 1995) [Limited beta distribution]

Isolated problem which would cause utilization graph to display high utilization after exit from a full screen DOS session after reports of problem still occurring in version 1.20. Removed calibration routine as it is no longer necessary.

(Thanks to Gene Carey, [genec@hpuporsj.nsr.hp.com](mailto:genec@hpuporsj.nsr.hp.com) and Peter Tootill, CIS ID:72746,3202 for their reports on the problem.)

Version 1.20 (May 1995)

Added calibration routine to fix problem which would cause utilization graph display high utilization after exit from a full-screen DOS window.

Removed option to graph context switches. [This never worked reliably. Unable to fix.]

Version 1.11 (March 1995)

Fixed problem which would cause low limit of utilization graph to gradually increase when RTPM was run on systems using very fast processors (486-66+, Pentiums).

Version 1.10 (February 1995)

Fixed problem which would cause utilization graph to oscillate between 0% and 100% when RTPM

was run on systems using fast processors (486-40+, Pentiums).  
Added Control option to monitor free RAM in caption.

#### Version 1.03 (November 1994)

Fixed coding error which would cause StayOnTop option to not be properly selected. (Thanks to Dan Robino daniel.robino@hartford.com and Jeff Zubricky CIS ID[74734, 2656] for the bug report.)  
Added Control options to monitor free GDI resources and free USER resources in caption.

#### Version 1.02 (October 1994)

Fixed coding error which would intermittently cause the RTPM display to not display 0% utilization when no applications are running and the sample interval is greater than 1 second. For example, display would show 50% when utilization was 0% and sample interval = 2 seconds.  
(Thanks to Bryan Davis rbdavis@comp.uark.edu for the bug report.)

#### Version 1.01 (September 1994)

Fixed coding error which caused a resource leak when RTPM is minimized.  
(Thanks to Stephan Hetzelt CIS[100333,3515] for the bug report.)

#### Version 1.00 (August 1994)

- Initial Release

### **Options...**

The RTPM Options menu is available thru selection of the '**Options...**' item in the Control Box (System) menu of the utility. Available options are '**Controls...**', '**Colors...**', '**Stay On Top**' and '**About...**'.

### **Colors...**

Selection of this item brings up a dialog box which allows the user to customize the background and foreground colors of the graphical display. The Background scroll bar adjusts the color of the graph background. The Foreground scroll bar adjusts the color of the line used in the graph. Use the scroll bar thumb or arrows to cycle to the color you desire. A small display provides instant feedback on your color choices.

### **Controls...**

Selection of this item brings up a dialog box which allows the user to customize parameters of the RTPM utility.

The Graph dropdown listbox allows the user to select the Windows parameter to be graphed in the window. At present, the only option is Utilization. Utilization is a graph of the Windows CPU load.

The Caption dropdown listbox allows the user to select the Windows parameter to be displayed as a caption. Current captions are:

Free Virtual Memory    The amount of available virtual memory (physical + swapfile) displayed in kilobytes.

Active Tasks            The number of tasks currently active under Windows.

Free System Resources    The amount of available system resources displayed as a percentage. This number is the smaller of either Free GDI resources or Free USER resources.

Free GDI Resources    The amount of available GDI resources displayed as a percentage.

Free USER Resources	The amount of available USER resources displayed as a percentage.
Free RAM	The amount of unused physical memory displayed displayed in kilobytes.

The Sample Interval dropdown listbox allows the user to select the number of seconds which is to elapse between each update of the graphical display.

The Warn if FSR Less Than dropdown listbox allows the user to select the threshold, as a percentage of remaining Free System Resources, below which a warning will be issued.

The Graph Type option buttons allow the user to select either a bar graph or a line graph for the graphic display.

### **Stay On Top**

Selection of this item causes the RTPM window or icon to always be visible.

### **About...**

Selection of this item brings up copyright information about this utility.

## **Requirements**

The RTPM utility has no restrictions on where it can be located on your hard drive(s), but the .EXE file and the .INI file *must* be located in the same directory. RTPM uses the CTL3D.DLL. A copy is provided with RTPM. If you already have a copy of this DLL on your system, the provided copy can be deleted from your hard drive. No other setup is required. Start the utility via the RTPM.EXE file as you would any other small Windows utility or applet.

This utility makes no modifications to the Windows .INI files or any other files or directories. To delete this utility from your system, delete this file, the RTPM.EXE file and the RTPM.INI file. If you have added this utility to a program group then delete it from there as well.

## **'CPU Utilization' Measurement Methodology**

RTPM measures CPU load using an old technique designed for real-time pre-emptive multitasking systems. Since Windows does not use pre-emptive multitasking, except when running DOS sessions under Windows, RTPM uses a modification of this technique. In its standard form, one creates a background task which does nothing but increment a counter each time the task is invoked. A foreground task, which is invoked by the expiration of a periodic timer, inspects the value of the background counter and computes a difference between the current counter value and its previous value. This difference is inversely proportional to the CPU load. A 100% utilization results in no updates to the counter. To determine the 0% utilization, RTPM keeps track of the maximum value of the counter and scales accordingly. Since Windows does not allow for background tasks, RTPM uses a PeekMessage loop instead of a GetMessage loop as the Windows message handler. That's the basics. Most of the program code has to do with user input and display output.

## **Known Problems**

All known problems have been corrected in this version.

## **Right Of Use**

This program is shareware, but there is no fee for its use. Please see the copyright notice which is

accessible thru the Options menu "About..." selection. In lieu of payment, please send questions, constructive criticisms, bug reports and suggestions for improvement to the author via the CompuServe address displayed below.

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