WindSock SRM V1.4 - Windows System Resources Monitor

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FreeWare License   Known Bugs/Incompatibilities   Windows 3.0/3.1 Resources

WindSkRM displays the current status of your Windows System Resources. Five types of resources are displayed, System Memory (System Heap - Red), and four resource heaps: GDI (Green), User (Blue), Menu (3.1 only - Yellow), and String (3.1 only - Pink). The screen shows you the percentage of each of these resources that has been used, and the actual amount remaining to the system, in K bytes for System Heap, and in bytes for the resource heaps. When the program is minimised (an Icon), the Icon displays the percentage used of the rarest resource (identified by colour).

The System Memory monitor also shows you how much virtual (swapfile) memory you are using. This amount is represented by the light red portion of the System Memory monitor. It is usually best to 'stay in the red' by only using real (which is much faster) rather than swapfile memory.You can reduce your memory usage by closing windows that you do not need.

If you click your mouse anywhere in the SRM monitor window, you get a key to the resource displays. If you click on the SRM window's system menu button (the top left corner) or the SRM Icon, you will see a modified system menu. There are 5 extra commands: About, Help, and Quit are self-explanatory, the History option opens a window which displays a graph of your usage of system resources over the last 300 samples. This is useful for spotting trends. If the SRM has conducted less than 300 samples, you will get less information. The white bar shows you where the graph is currently being updated. When the window is full, the graph will wrap around, starting at the beginning again. The time represented depends on the test interval (set in the options dialog).

The Options command invokes a dialog which allows you to change various program options.These options allow you to set the test interval, turn the low resources alarm (beep) on and off, make the program/icon 'float', start the SRM as an icon, turn the logo animation off, or to set alarm thresholds to warn you of low resources. If your system resources start to get very low, it is a good idea to exit Windows and then re-start it because if you run out of resources, you are in __Big__ trouble.

You can use this utility both as an early warning system for low system resources situations, by running it constantly in the background (use the 'Start Iconic' option and install it as a startup program), or to identify 'Bad' programs by running them alongside it and watching for gradually increasing memory usage. If you suspect a program, but it does not 'eat' resources while running, it may be not releasing them when it shuts down. Try launching and closing the program a few times and see if the figures change.

Please report any bugs/suggestions to Chris Hewitt on CompuServe ID 100036,133.

SRM Options

The SRM Options Dialog controls various settings for the WindSock System Resources Monitor.
These settings are saved in a WINDSOCK.INI file in your windows directory.

Option Settings:

Audible Alarm
This control allows the audible low-resources alarm (beep) to be Enabled or Disabled. If the alarm is Enabled (checked), an audible alarm will be triggered if any of the alarm threshold figures are exceeded when WindSkRM performs it's tests. An Alarm Icon is in any case displayed on any resource monitors that are over the threshold, and on the minimised Icon.

Float on Top
When this control is checked, the SRM will 'float' above any other window on the screen (both as an Icon and a Window).

Start Iconic
If this control is checked the SRM will launch as an icon rather than as a full window. Use this option if you wish to install WindSkRM in your Windows startup so that it is always active in the background when you are running windows. If you are going to use this strategy, you may want to set the test interval to 30 or 60 seconds (You still have to install it yourself however).

Wave Logo
When this control is checked, the Windsock logo is animated when WindSkRM is running as an Icon. Turn this off if you find it distracting.

Test Every n Seconds:
This control allows you to set the interval at which the SRM monitors the system resources. This figure can be set between 1 and 60 seconds. Set the interval shorter in order to catch detailed changes in resource usage, and longer to run as a background (iconic) resource monitor.
Note that the resource usage histogram contains one entry for each **test** so if you set the update time to 1 second, the record will be 5 minutes long, and if you set it for 60 seconds, it will record for 5 Hours.

Alarm Thresholds:
These fields control the alarm thresholds for the five resources that WindSkRM is monitoring: System Memory is the total amount of memory which Windows has available for your programs and data; GDI Heap is the amount of memory that you have left for graphic objects; User Heap is the amount of memory remaining to store information about active windows,
Menu Heap is used to hold menu structures, and String Heap is used to hold menu and system strings.
Global Memory is expressed in k bytes, GDI, User, Menu, and String heap are percentages. Reasonable alarm thresholds for these are 300kb for Global Memory and 80% for the resource heaps (the defaults).

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This Program was developed using Borland C++ 3.0 and the Borland ObjectWindows Library.

Thanks to everyone who made suggestions for improvements and reported bugs with WindSock 1,1 (I got most of them), all the people on the BCPPWIN forum (from Borland and otherwise) for helping me out when I got in trouble, and Rick Insane Diego for **always** being there (He is rumoured to only exist in CyberSpace). Finally, anyone who is old enough to remember the 7K version of Realtime Startrek (developed after the University of Pittsburgh dropped the student 'core' limit from 10K to stop them playing games) will know what I mean when I thank the Military-Industrial complex for making this program possible (and free).

I have created this version (1.4) in response to complaints from various people that the 1.3 version used up too much real-estate on their displays. I have to agree, but I miss those nifty LED displays....I finally decided to give up and 'minimise' everything after a final (of several) missive from Jonathan Gift, so this is officially the Jonathan D. Gift 'Beta Tester of the Week' Commemorative Version of the SRM - have fun!

Chris Hewitt, Sydney, 9 June 1992

Known Bugs and Incompatibilities

Norton Desktop for Windows 1.0:

There is a problem with message handling between BC++ 3.0 programs and NDW 1.0. This is not a problem with NDW 2.0. The symptom is a UAE when using the Hist button.

Menu and String Resources do not seem to deallocate properly:

As far as I know, the monitor is accurate (I haven't found any others to compare it with) as of now, I assume that the new Win 3.1 heaps are managed in a different fashion to the GDI and User heaps.

The message: "Could not find Win 3.1 Heaps!" is experienced at startup, and Menu and String information is not displayed (Win 3.1 only).

Again, I have only seen this happen once. WindSkRM has been unable to get a handle on your Menu and/or String Heaps. Try re-starting the program. If this does not work, you could send me a DR Watson report on it, and I'll try to figure it out.

 Windows 3.0 and 3.1 System Resources

Resource Heaps are data segments that Windows uses to store information about Windows resource objects that are on the desktop or in programs that are active. This information is shared between all applications that are currently active in your system. In order to achieve this sharing, the resource heaps are allocated by two DLLs: GDI.EXE and USER.EXE (these are really DLLs, not EXE files). DLL data segments are available to any program in the System.

These Resource Heaps are limited to 64kb each - if you fill one, you will not be able to start new tasks (full in this case meaning 85% used) and Windows may crash. Each heap stores a different kind of resource, so if one heap is full, new objects of the type that belong to the full heap cannot be allocated in another heap that may still have spare space.

Windows 3.0 has two heaps: <u>GDI Heap</u> for graphics objects, and <u>User Heap</u> for program and task information. In Windows 3.0, the User Heap is usually the critical (most utilised) resource.

Contrary to rumours spread by certain trade papers, Windows 3.1 does not '...double the system resources from 64kb to 128kb...'. Actually Win 3.1 adds two new shared 64kb data heaps to USER.EXE: a.<u>Menu Heap</u> and a <u>String Heap</u>, These new heaps store information about menus and strings that Win 3.0 kept in the User Heap, consequently the user heap shrinks dramatically (the Menu Heap is often larger). The largest heap in Win 3.1 is usually the GDI Heap (which is actually slightly larger in 3.1).

Finally, your most important resource is probably <u>System Memory</u>. This is the total amount of memory (including swap space for 386 Enhanced mode) that is available to your Windows system.

System Memory
System Memory is the total memory available to Windows, including Base, Extended, and Swapfile (if you are running in Enhanced Mode) the percentage used includes memory assigned to SmartDrive and used by DOS. The important part of this figure is how much you have left. Too little and you will not be able to launch new applications, running out can cause Windows to crash.

GDI Heap
GDI Heap is a data segment belonging to GDI.EXE, one of the Windows Kernel programs. GDI memory is used to store Windows graphics objects such as Cursors, Fonts, Icons, Pens, and Brushes. Programs which use a lot of these objects will use up GDI Heap. Some Windows applications create graphics objects and forget to release them, this means that as you run programs during the day, your GDI Heap shrinks. This is a major cause of UAEs. The solution is 1) don't run 'Bad' programs, or 2) exit Windows and re-start when your heap fills up.

User Heap
User Heap is a data segment in another Windows kernel program (USER.EXE), which contains information about Windows that are currently on the screen. Closing applications that are currently running will reduce the usage of this resource. Some programs also use up User space, and if your User Heap gets low, you should close Windows and re-start.

Menu Heap (Win 3.1 Only)
Menu Heap is an additional shared data segment allocated in global memory by USER.EXE, which contains active Menu Structures.

String Heap (Win 3.1 Only)
String Heap is an additional shared data segment allocated in global memory by USER.EXE, which contains Menu and program strings.