

DEVMAN FOR SERIES 60

FORMALLY KNOWN AS MEMORY MONITOR

BY MICHAEL ULLRICH

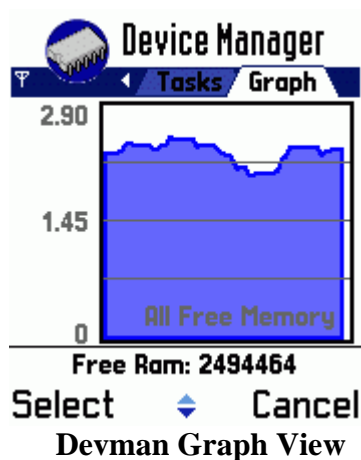
1 Introduction

The purpose of this utility is to switch and manage running tasks and to monitor memory. Devman (short for Device Manager) uses minimal memory and has many customisable features to help you utilise your device in an efficient manner.

It is also a useful tool for programmers, enabling them to spy on any thread running on the device and monitoring memory usage by time.

This version of Devman is for the Series 60 platform and has been tested and validated on the following devices: Nokia N-Gage QD, Nokia N-Gage, Nokia 6630, Nokia 3600, Nokia 3620, Nokia 3660, Nokia 7650, Nokia 3650, Nokia 7610, Nokia 6620, Nokia 6680, Nokia 6600, Nokia 9210, Nokia 9210i, + more!.

Other versions of Devman for the Series 80 platform are also available, which has been tested and validated on the following devices: Nokia 9210, 9210i, 9210c, 9290, Nokia 9300, and Nokia 9500.



2 Instructions

General usage

The task switcher functionality is designed to be used as follows:

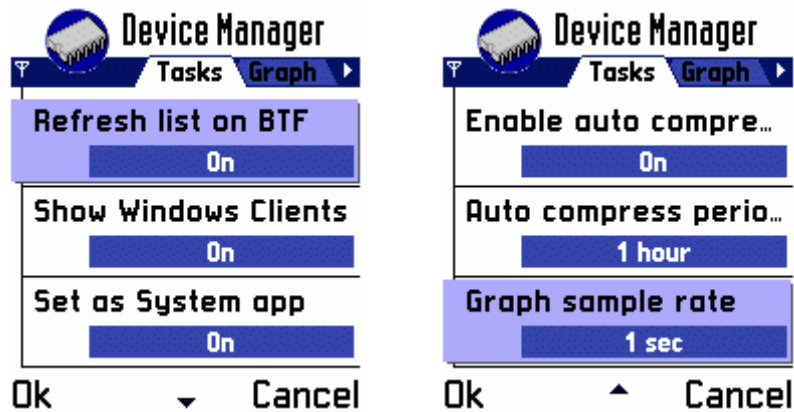
- to switch to Devman perform an extended press of the application key
- to switch to another application, highlight it in the task list using the joystick and select by depressing the joystick
- to view a tasks heap size, stack size, and system attributes select the right application key
- to view the memory usage of a spied on task or all free memory press the joystick to the right.
- for further information on other functions see the following sections



2.2 Devman Preferences

Menu: Preferences

View: Task View and Graph View



The preferences are saved automatically when selecting ok to exit the dialog.

Refresh list on BTF (brought to front) enables refreshing of task list after Devman is brought to front. This ensures that the task list contains all the apps that are currently running on the device.

Show only Windows Clients in the App View disables displaying of threads that own windows but do not have visible windows or switchable to windows.

Set as System application will make Devman a Symbian OS system application. This will ensure that it does not get closed down by the Symbian OS low memory framework or by the backup framework. Note: If you attempt to backup your device using PC Suite, it will find the application is locked. To backup Devman, exit before starting a backup.

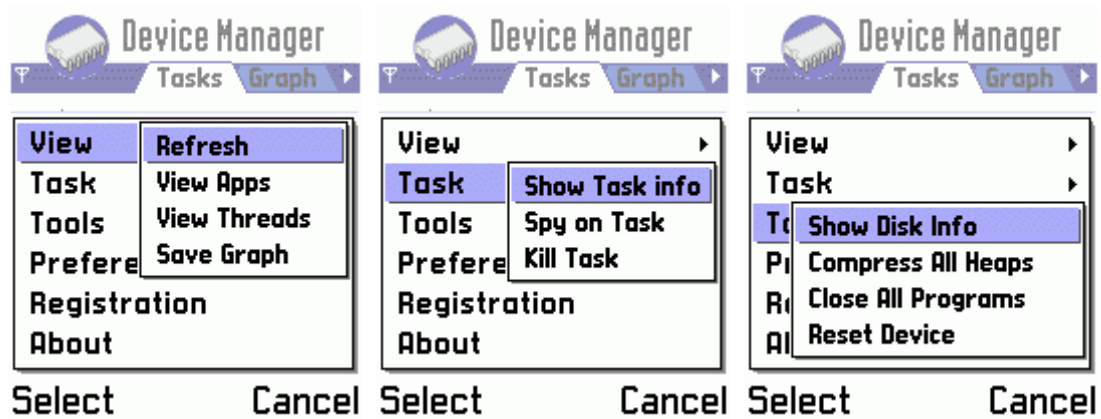
Enable auto compress heaps allows Devman to compress heaps at a set period of time. See Compress All Heaps section for further information. The following two options are available if this option is enabled.

Auto compress heaps period sets the amount of time between each compress heap.

Graph sample rate allows the user to select how often they want Devman to sample either all available free memory or the heap that they are currently spying on.

2.3 View Options

There are two view options in Devman - Task View and Graph View. Task View can either show applications or all threads.



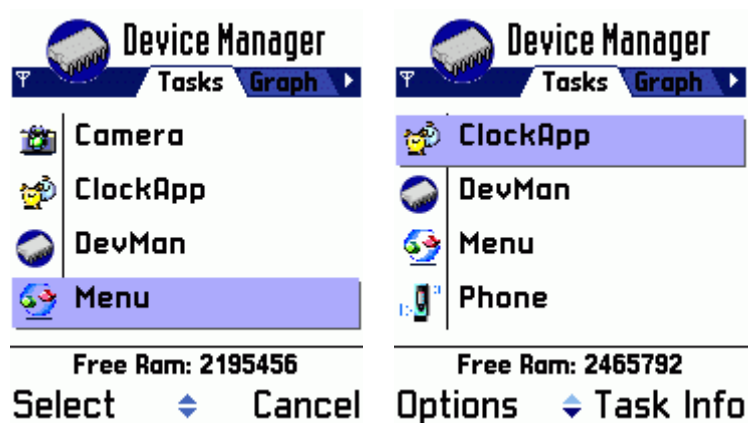
2.3.1 Switch View

Menu: None
View: Task View and Graph View

This option toggles between Task View and Graph View. To switch between the views press the joystick either left or right.

2.3.2 Application View

Menu: View/View Apps
View: Task View



This option shows all tasks that have a window (unless the preference *Show only Windows Clients in the App View* is selected).

2.3.3 Thread View

Menu: View/View Threads

View: Task View



This option shows all threads that are running on the device.

2.3.4 Refresh View

Menu: View/Refresh

View: Task View

This option refreshes the Task List.

2.3.5 Save Graph

Menu: View/Refresh

View: Graph View

This option saves a snapshot of the graph in mbm format in the c:\ drive.

2.4 Task Tools

2.4.1 Go to Selected Task

Menu: NA
View: Task View

Pressing the joystick on the highlighted task will allow you to go to the selected task if it is a window owning task.

2.4.2 Show Selected Task's Information

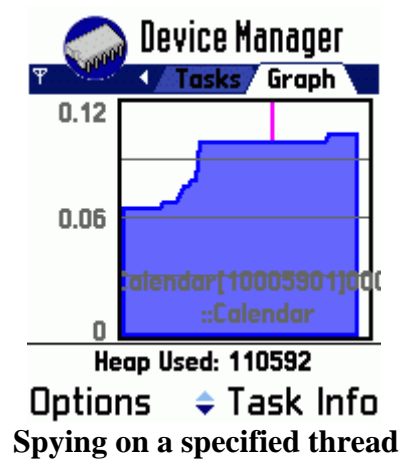
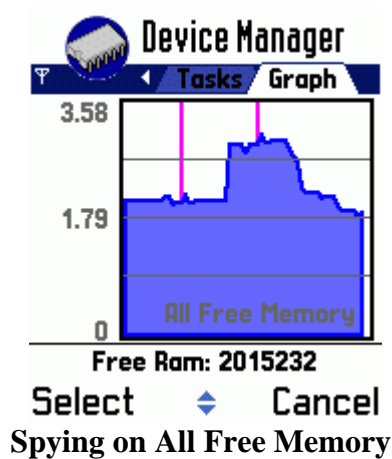
Menu: Task/Show Task info
View: Task View and Graph View



Selecting this option shows information about the highlighted application in the Task View or about the Spied on application in the Graph View.

2.4.3 Spy on Selected Task

Menu: Task/Spy on Selected Task
View: Task View



This option allows you to set the context of what the graph is plotting.

All Free Memory

To view All Free Memory highlight the All Free Memory item in the Task List (this is always at the top of the Task List) and select Spy. This plots all memory available to all application heaps running on the device. The sample rate is selectable in Preferences.

Spy on specified Thread

To spy on a specific thread or application, highlight the desired thread and select Spy. This plots the size of the selected application's heap. The sample rate is selectable in Preferences.

Status Bar in Graph View

The "All Free Memory" View shows is the total amount of free RAM available to the Symbian OS from the global heap in KB (KiloBytes).

The "Spy on Thread" View shows the total amount of memory allocated to the spied on thread's heap in KB (KiloBytes).

2.4.4 Kill Selected Task

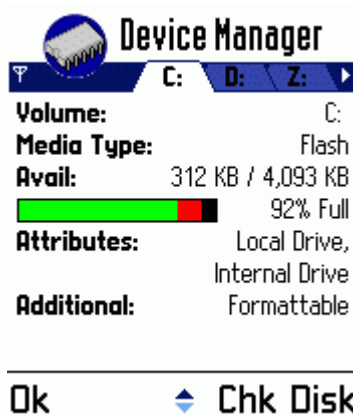
Menu: Task/Kill Task
View: Task View

The "Kill Task" function is similar to end task on the Task manager in Windows which allows you to terminate applications or specific threads. The 'c' key can also be used to kill a task.

2.5 General Tools

2.5.1 Show Disk Information

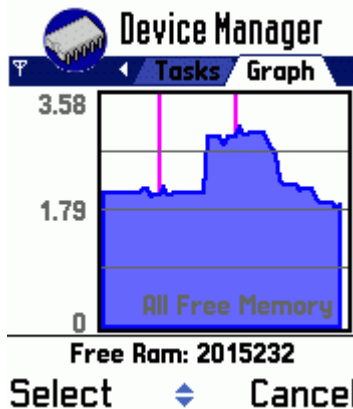
Menu: Tools/Show Disk Info
View: Task View and Graph View



"Show Disk Info" displays information about each drive the device currently has mounted. To change drive, use the left and right arrow keys. To check the integrity of a drive, select "Check Disk" using the right hand application key. If an error is found with the drive, you get a further option to perform a "Scan Drive" which attempts to fix the drive. These are standard Symbian OS calls to the file server, and Devman does not try to rectify any file system faults using custom procedures.

2.5.2 Compress All Heaps

Menu: Tools/Compress All Heaps
View: Task View and Graph View



"Compress All Heaps" releases excess allocated memory from the top of all heaps. To elaborate, memory is allocated from the global heap and mapped to a process in chunks. eg: a user may request 580KB of RAM, but the system may allocate 600KB of RAM due to chunk, segment or granularity size. This is normal, however more memory has been allocated than is required. To free the excess memory that is available at the top address range of the process's heap, use the Compress Heaps

functionality. Several hundred KB are often freed using this function. Note: fragmented free memory that is contained in the middle of the heap is not freed with the function.

A marker is inserted onto the Graph View each time Compress All Heaps is called.

2.5.3 Close All Programs

Menu: Tools/Close All Programs
View: Task View and Graph View

"Close All Programs" shuts down all non-system programs (including applications, non-essential servers, and application engines), which frees up available memory. The user can also re-select this item, which will re-open all programs which were closed by this action. This is useful for copying off data files that are locked in general use of the device, for de-fragmenting memory, or for running memory intensive applications or games.

Memory gets fragmented over time by programs allocating and freeing memory over and over again. eg: When you boot your device you may have 3.5MB of free RAM with all programs closed. Two weeks later you may have 2.5MB of free RAM when the device is in a similar state (same programs open).

For efficient heap use it is ideal to allocate memory in contiguous chunks and free it in reverse order. In reality this rarely happens, and as memory gets allocated and freed (in many different size chunks) over time there are areas of the heap which are free but due to their size often cannot be readily re-allocated within the process. This is an example of memory fragmentation. The memory is free, and can be utilised by the process if it requires small enough allocations, but is usually unavailable to the global heap due to constraints of the chunk size/MMU. One way to remedy this is to unload all the applications, engines and servers and reload them, then all the heaps would be able to be re-allocated in a more efficient manner. "Close All Programs" will shut down all non-essential threads and reload them (once it is reselected) thus de-fragmenting some of the memory.

2.5.4 Reset Device

Menu: Tools/Reset Device
View: Task View and Graph View

The Reset Device options performs a warm boot of the device.

2.6 *About, and Registration*

2.6.2 Registration

Menu: Registration

View: Task View and Graph View

Shows Registration information. See Section 3.

2.6.2 About and System up time

Menu: Help/About

View: Task View and Graph View



This shows standard About information and the RAM size and ROM size on the device (as reported by the Hardware Abstraction Layer).

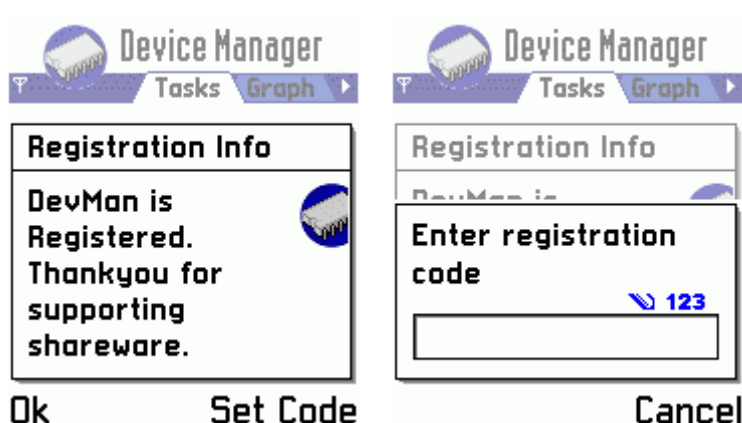
3 Product Registration

This product is free to use for the first 25 days from the date of Devman's installation.

After registration, the registration information screen which is shown at the Devman start up will no longer be displayed.

If you do not choose to register, then after 25 days when App Manger is run, you will be presented with the Registration screen. If you do not input a valid Registration Code then App Manger will exit.

3.1 How to get a Registration code



Check out www.mikeullrich.com for how to get a reg code.

During registration you will be asked for a Customer ID. The Customer ID that Devman for Series 60 uses is the IMEI number. This can be displayed by entering *#06# into the phone keypad on the Phone application screen.

Once this serial number is entered, a Registration Code will be generated. This can be entered into the Registration Screen by selecting **Set Code**, entering the code, and selecting **Ok**.

Note: The IMEI number is usually 15 digits and does not contain dashes ("-"), even though the Handango instructions may say so.

If there is any problems entering the registration code, please send an email with your devices IMEI code, and the reference number of your product purchase to Devman@mikeullrich.com.

4 Support, Help, Suggestions

If you require any support or help, have discovered any defects, or have any suggestions for further enhancements please contact Devman@mikeullrich.com

5 FAQ

Q: What are the purple/magenta vertical lines that appear on the graph?

A: These lines denote when a Compress All Heaps function has been executed, whether by manual or automatically.

Q: Why during a backup of the device does it say that Devman is locked?

A: This is because Devman can be set as a System Application, which prevents it from being shut down in low memory situations or by the backup framework. To back up Devman, exit before commencing backup.

Q: When would I use auto compress heaps functionality?

A: 9210 devices come in three main revisions, 3.xx and 4.xx ROMs for 9210 and 5.xx ROMs for 9210i. You can check this by entering `*#0000#` on the phone keypad. 4.xx and 5.xx ROMs have an improved memory handler which will shut down less used applications and perform a compress all heaps in a low memory situation. 3.xx ROMs do not have this, so you can periodically set Devman to compress all heaps. Normally you would have the auto compress all heaps functionality disabled on case closed.