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1. Introduction

Everyone hates program crashes. The fact is they happen frequently even in normal environments. Wouldn't it be great to get rid of crashes, and keep programs running?

Watchdog - O - Matic is a software watchdog that monitors and diagnoses any program you want. When the program being monitored encounters an error, Watchdog - O - Matic automatically solves the problem and logs the error. If the monitored application crashes or hangs, Watchdog - O - Matic will handle this and restart the application. Maximize uptime and don't let your critical programs crash! Protect yourself with Watchdog - O - Matic.

Main features:

- No more embarrassing and expensive system outages
- Automatic crash handling and program recovery
- Know instantly when your server fails
- Monitor applications automatically when they are started
- Isolate the crash and keep your application running
- Detection of hanging (not responding) applications
- Self-check option: if a problem occurs that would stop the watchdog, then the computer will reboot. Even if the watchdog fails, your software will be back running in no time (*)
- CPU average check: restart target if it's below or over the threshold (*)
- Memory check: restart the program if the memory usage is too big (*)
- Scheduler: start, stop, restart and watch your application automatically (*)

2. Installing

To install the Watchdog - O - Matic application, download the setup program using the link you received. If the download has finished, start the setup program you just downloaded. The setup wizard will guide you through various setup screens. When finished, the application will be running.

Note: For NT/2000/XP/Vista users: you need administrator rights to run this setup utility. Log in as a user with administrator rights before using this setup.

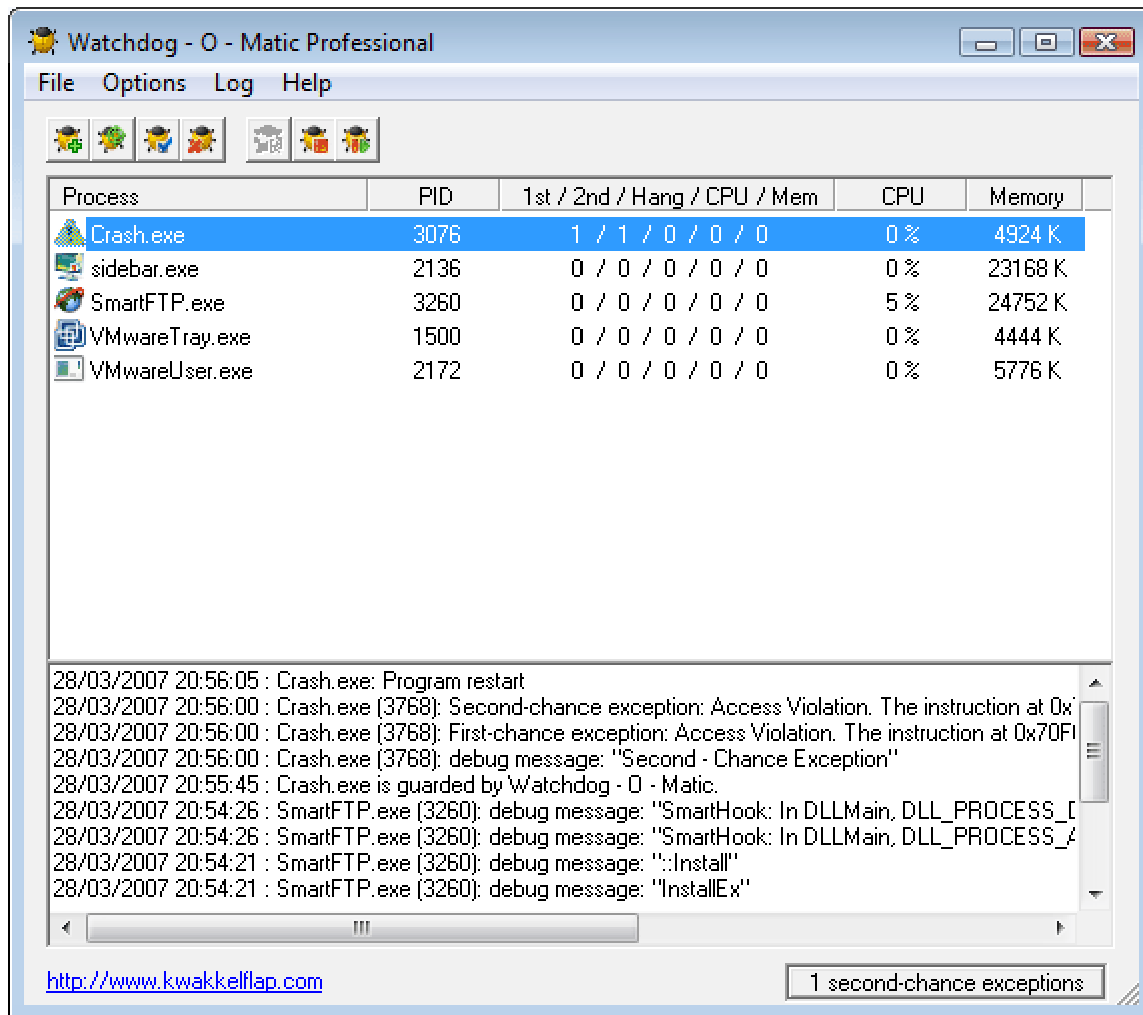
To uninstall the Watchdog - O - Matic application select Add/Remove programs from the Windows Control Panel. Choose the Watchdog - O - Matic application in the list and click the 'Add/Remove' button.

3. Configuring

The Watchdog - O - Matic application runs in the background. You can see a Tray Icon in the system tray (it's the yellow bug). You can right click the icon to get a menu. Or you can double click the icon to show the Watchdog - O - Matic program.



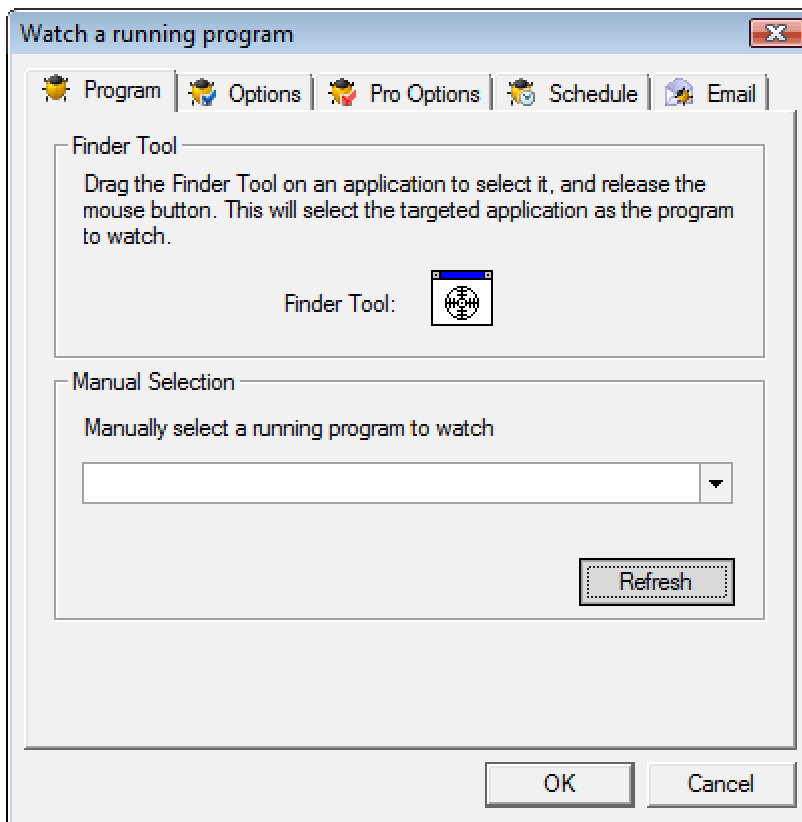
3.1 Parts of the application



Tip: You can test the quality of certain software by looking at the First/Second /Hangs exception numbers. High amounts of first chance exceptions generally means that the applications makes mistakes, but the mistakes are corrected. This is not good and results in an unstable program. Second chance exceptions are actual software crashes.

3.2 Testing Watchdog - O – Matic

To test the Watchdog - O - Matic program, you can do the following. Crash test application” by selecting Start/Programs/Watchdog and clicking on the Crash icon. This is a test application. In Watchdog – O – Matic, select 'Watch an active program' in the File menu (or in the popup menu). A new dialog box will appear. Choose 'Crash.exe' in the dropdown list. Don't bother with the other options for now. Click ok and you will see that the crash program is added to the Watchdog - O - Matic list.



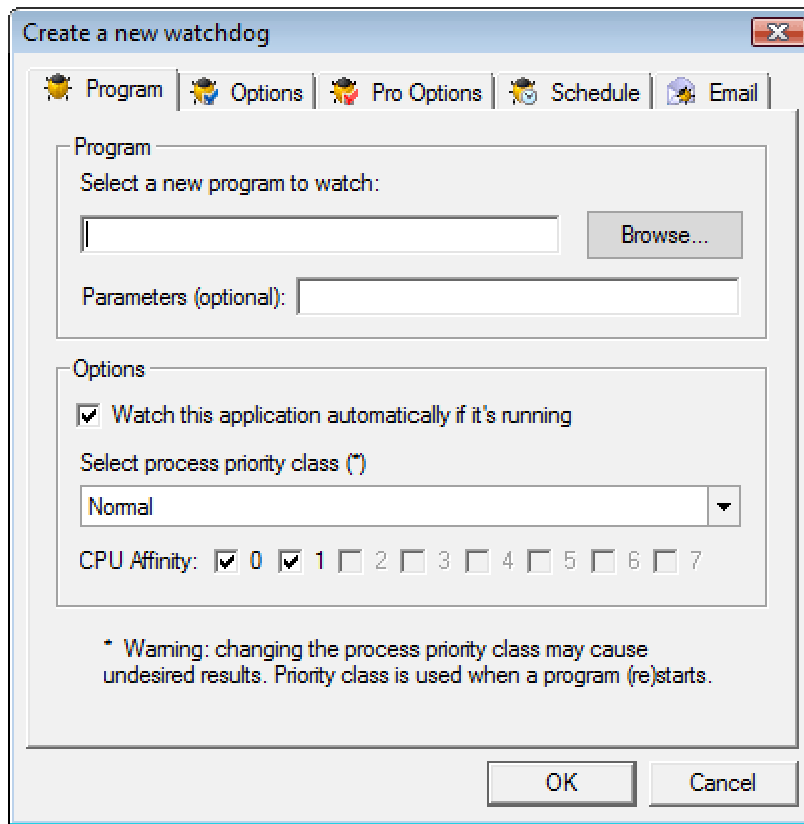
If you press the first button in the crash app, you will see the 'First' number in the 'First/Second Except.' increasing. This means the monitored program has made a first chance exception, but handled the exception correctly. If you press the second button, the crash app will crash. The second number in the Watchdog - O - Matic application will increase and the test program will disappear for a few moments, and return. Without Watchdog - O - Matic, the test application would have crashed and shown a message box.

Delete the running program by selecting it, and pressing the delete key or use the delete icon. The test app will close itself down. If you want to see what would have happened without the Watchdog - O - Matic application, run the test application a second time, but don't attach Watchdog - O - Matic. Test the buttons again. The first button will apparently do nothing (although it creates an error the test application can handle). The second button will make the program crash and you will see a very familiar message box.

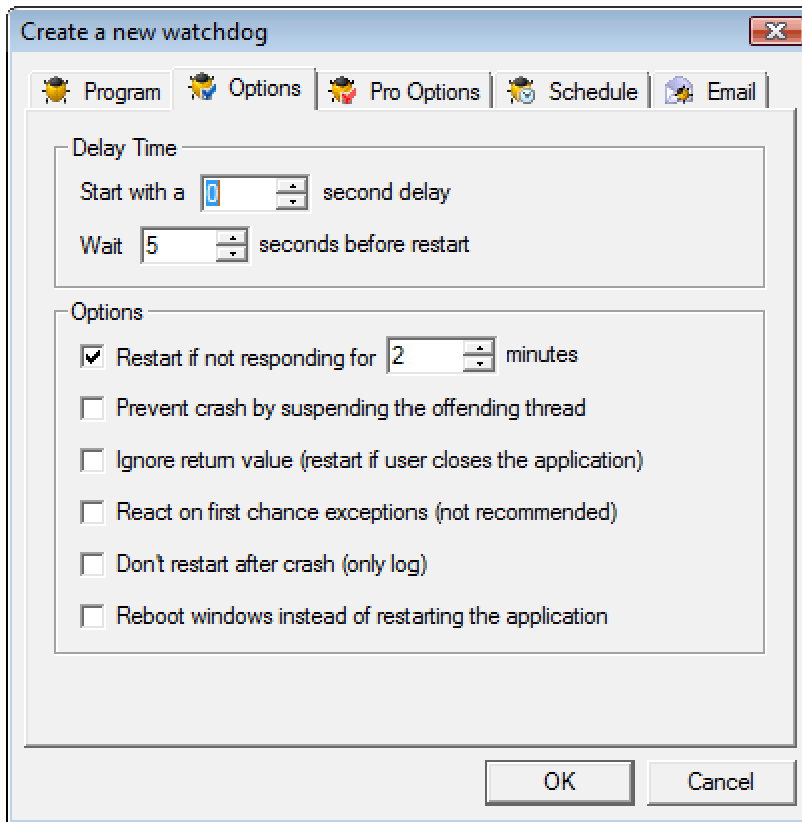
3.3 Insert new items

To create a new watchdog, select 'Create a new watchdog' from the File menu (or the popup menu). A dialog box will appear. Insert the process you want to monitor with the full path name, or select browse to look for the file. You can select programs on your haddisk or on your local network. Also, you can add any command line options you wish by putting them in the separate box after the program.

By default, the 'Watch this application automatically if it's running' option is enabled. This means that when you run the selected application from anywhere, the Watchdog program will always try to check it for errors. If you disable this option, the watchdog program will only check your application if you start it from within the Watchdog – O – Matic application manually. You can also select a process priority and CPU affinity. This should only be used if you are certain of this as it can result in strange behaviour.

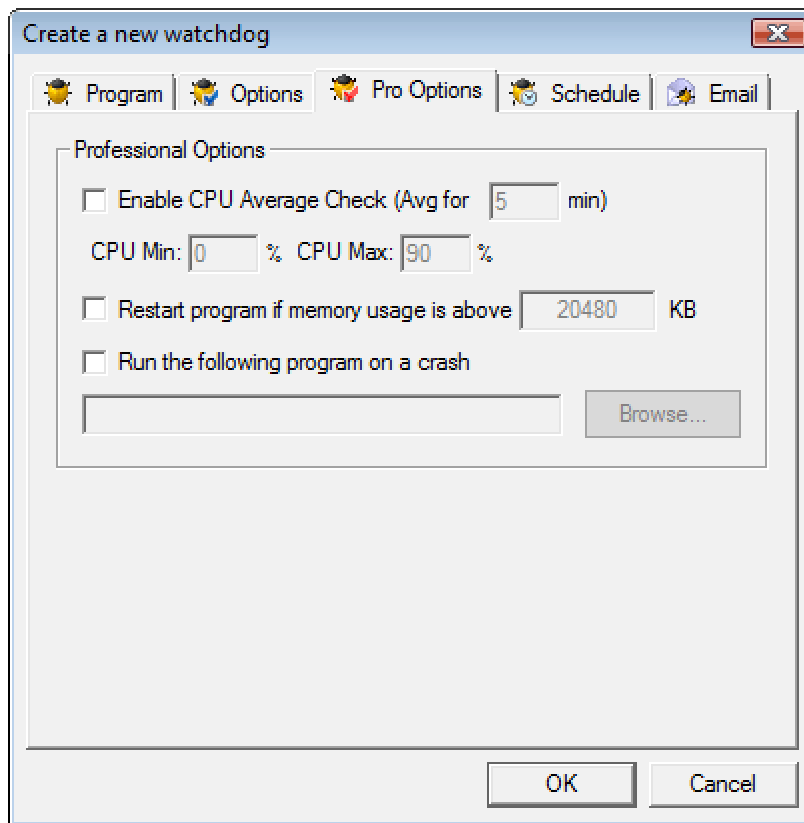


If all of this looks ok, you can select the 'Options' tab. Here, you can select how the Watchdog - O - Matic program will react. Normally, the default settings will be ok, but you can change them at wish.



- 'Start with a x second delay' will wait x seconds before the program will be started. Can be useful if you want to delay the startup of certain programs
- 'Wait x s before restart' is by default enabled at 5 seconds. This gives the crashed application an opportunity to clean things up when closing down before a new instance of the program is started. This value can be increased for programs that need a lot of cleaning-up. Disabling or decreasing this option will make the restart faster.
- 'Restart if not responding for x minutes'. If selected, the Watchdog – O – Matic application will check the target if it is still responding. If the target application hangs for x minutes, it will be handled as a crash and restarted. This option is by default enabled at 2 minutes.
- 'Prevent crash by suspending the offending thread'. Enable this option if you want to keep the crashing application running by disabling the crashing code. Note that this is generally not advisable. Default is disabled.
- The 'Ignore return value' will handle all program exits as suspicious behaviour and restart the application. This means that the application will restart if a user closes it.
- 'React on first chance exceptions' will make the Watchdog - O - Matic application very sensitive when monitoring this process. It will restart the process on first chance exceptions. You can test this setting on Olav. The test program will be restarted when pressing the first button. Enabling this option is generally never needed.
- 'Don't react after crash (only log)' will not restart a crashed program. A crashed program will stop running.

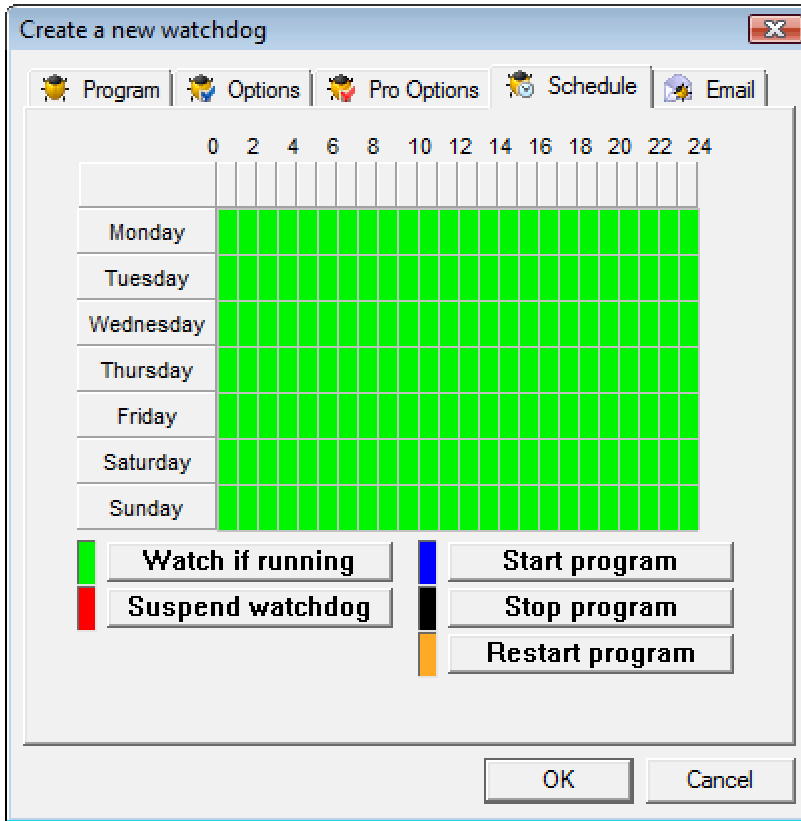
- 'Reboot windows instead of restarting the application': if this option is checked, each time the watchdog would restart the application, it will reboot windows instead. This enabled you to restart windows if a crash occurred.



The 'pro options' tab will enable you to set more advanced options.

- 'Enable CPU average check' will check the CPU usage of the application. It will calculate the average for x minutes. If this value is between CPU min and CPU max, no action is taken. If the average is below minimum or above maximum, the program will be restarted.
- 'Restart target if memory usage is above x KB' will check the memory usage of your application. If your program uses more than x KB, it will be restarted.
- 'Run the following program on a crash' enables you to run any program you want after a crash is detected, before the program is restarted.

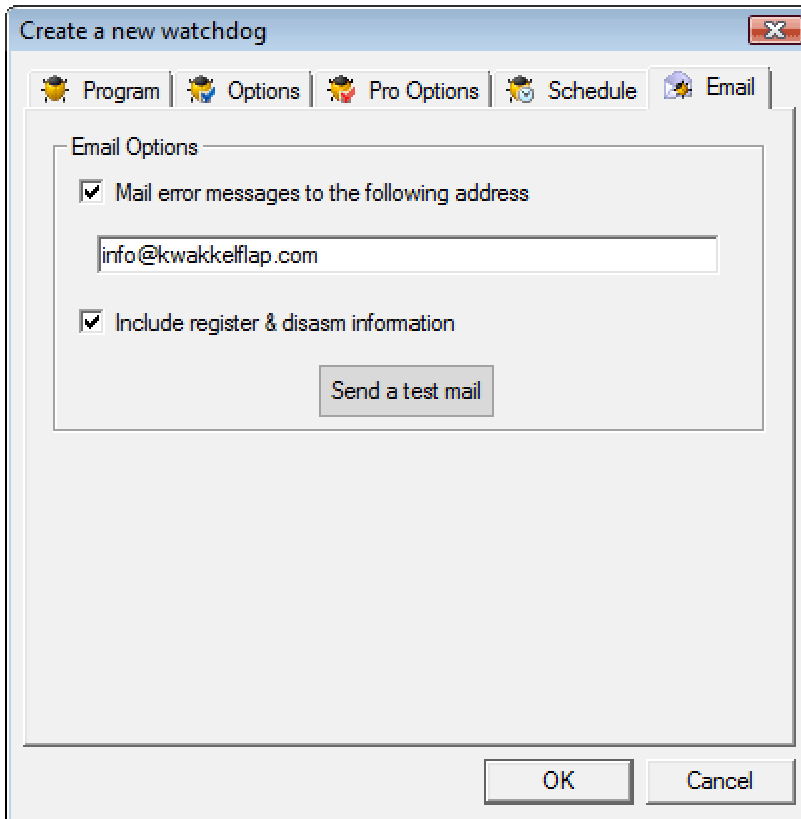
The schedule tab has all scheduling options.



Here, you can select when you want to watch the program if it is running, and when to ignore the program (continuous events). You can also start, stop and restart your program at a certain time (triggered event). Simply select a certain time, then select the action you want at that time.

Keep the "Watch if running" state to ignore the scheduling.

The email tab allows you to configure the email settings. Select the 'Mail error messages to the following address' if you want Watchdog - O - Matic to send an email if a program crashed. This mail includes some crash information (why the program crashed, at what time, ...). The address you see is the 'Default To' you've configured in the general configuration. When 'Include register & disasm info' is selected, some extensive debug info is also mailed to you. You can send a test mail by pressing the 'Send a test mail' button. (note that you still need to configure your mail options. This is explained a bit further in the manual.)



Here, you can see a sample email message (with register & disasm info) :

```
Watchdog - O - Matic Professional 5.00
App: Crash.exe (pid: 1636) First:1 Second:1 Hangs:0 CPU:0 Mem:0
Access Violation. The instruction at 0x6C3B8A9D referenced memory at
0x00000020. The memory could not be read.
The offending thread has been suspended.

Call Stack
SymInit: Symbol-SearchPath: '.;C:\WINNT', symOptions: 530, UserName:
'Administrator'
OS-Version: 5.0.2195 (Service Pack 4)
C:\Program Files\Kwakkelflap\Watchdog\Crash.exe:Crash.exe (00400000),
size: 57344 (result: 0), SymType: '-nosymbols-', PDB: 'C:\Program
Files\Kwakkelflap\Watchdog\Crash.exe', fileVersion: 1.0.0.2
C:\WINNT\system32\ntdll.dll:ntdll.dll (77F80000), size: 507904 (result:
0), SymType: '-exported-', PDB: 'C:\WINNT\system32\ntdll.dll',
fileVersion: 5.0.2195.7006
```

```

C:\WINNT\system32\MFC42.DLL:MFC42.DLL (6C370000), size: 1028096 (result:
0), SymType: '-exported-', PDB: 'C:\WINNT\system32\MFC42.DLL',
fileVersion: 6.0.9586.0
C:\WINNT\system32\VERSION.dll:VERSION.dll (77820000), size: 28672
(result: 0), SymType: '-exported-', PDB:
'C:\WINNT\system32\VERSION.dll', fileVersion: 5.0.2195.6623
C:\WINNT\system32\SHELL32.dll:SHELL32.dll (7CF30000), size: 2379776
(result: 0), SymType: '-exported-', PDB:
'C:\WINNT\system32\SHELL32.dll', fileVersion: 5.0.3900.7071
C:\WINNT\system32\SHLWAPI.dll:SHLWAPI.dll (70A70000), size: 417792
(result: 0), SymType: '-exported-', PDB:
'C:\WINNT\system32\SHLWAPI.dll', fileVersion: 6.0.2800.1740
C:\WINNT\system32\MSVCR71.dll:MSVCR71.dll (7C340000), size: 352256
(result: 0), SymType: '-exported-', PDB:
'C:\WINNT\system32\MSVCR71.dll', fileVersion: 7.10.3052.4
C:\Program Files\Browser MOUSE\MOUDL32A.DLL:MOUDL32A.DLL (008F0000),
size: 61440 (result: 0), SymType: '-exported-', PDB: 'C:\Program
Files\Browser MOUSE\MOUDL32A.DLL', fileVersion: 3.0.2.0
6C3B8A9D (MFC42): (filename not available): Ordinal2463
780085BC (MSVCRT): (filename not available): endthreadex
7C57B388 (KERNEL32): (filename not available): lstrcmpiW

```

State Dump

```

EAX:00B1FC50  EBX:000000C4  ECX:00000000  EDX:0040569C  ESI:00000000
EDI:0012F934  EBP:00B1FF7C  ESP:00B1FF04  EIP:6C3B8A9D  FLG:00000246
CS:001B  DS:0023  SS:0023  ES:0023  FS:0038  GS:0000

```

```

6c3b8a9d 8b7e20      mov     edi,[esi+0x20]
6c3b8aa0 85ff             test    edi,edi
6c3b8aa2 7419             jz      +0x24 (6c3b8abd)
6c3b8aa4 6a00             push    0x0
6c3b8aa6 e802ffff         call    (6c3b89ad)
6c3b8aab 85c0             test    eax,eax
6c3b8aad 740a             jz      +0x20 (6c3b8ab9)
6c3b8aaf ff7620           push    dword ptr [esi+0x20]
6c3b8ab2 8bc8             mov     ecx,eax
6c3b8ab4 e8c0c8ffff       call    (6c3b5379)
6c3b8ab9 83662000         and     dword ptr [esi+0x20],0x0
6c3b8abd 83663c00         and     dword ptr [esi+0x3c],0x0
6c3b8ac1 8bc7             mov     eax,edi
6c3b8ac3 5f              pop     edi
6c3b8ac4 5e              pop     esi
6c3b8ac5 c3              ret
6c3b8ac6 c3              ret
6c3b8ac7 55              push    ebp
6c3b8ac8 8bec             mov     ebp,esp
6c3b8aca 817d0c60030000  cmp     dword ptr [ebp+0xc],0x360

```

System info:

Computer name: xxxxxxxxxx

MD5 Checksum: D32F0A575B4FBFD0A3370ED104FB7B38

If all these settings are as you wish, press ok. The new watchdog will be created. You can start the program from the Watchdog application if it's not running already.

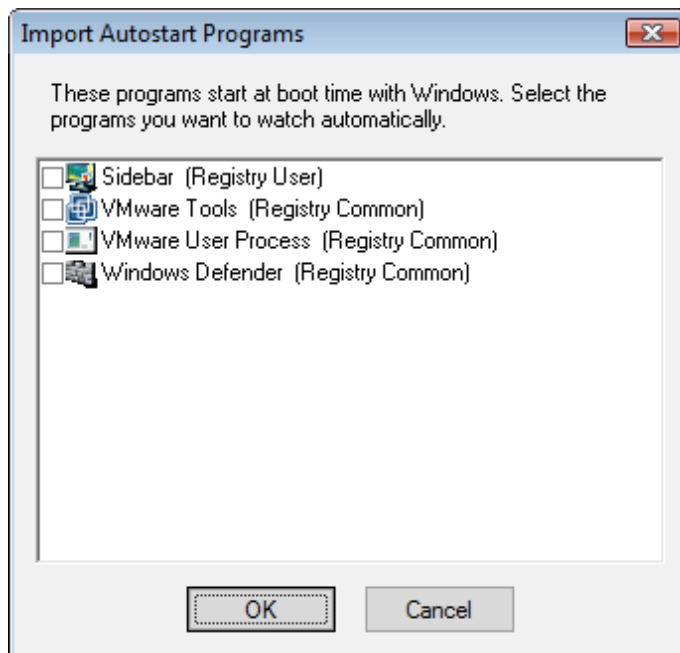
3.4 Monitor programs that are already running

If you've tested the Watchdog - O - Matic program with the test application as we've explained above, then you have already tested this function. Select 'Watch an active program' from the menu. A dialog box will appear. Select the process you want to monitor in the drop down box. All options are similar as the ones explained above.

These items are not saved. They are temporary watchdog items and will exist as long as the program is running.

3.5 Insert autorun items

Now that we've had our first encounter with the Watchdog - O - Matic application, we will add some autorun items to Watchdog - O - Matic. Select the "Import Autostart Programs" from the File menu. A dialog box will appear with all the applications that are started automatically when Windows starts. You might want to check most of these applications, cause these are the ones that run in the background all the time (for instance your mail program).



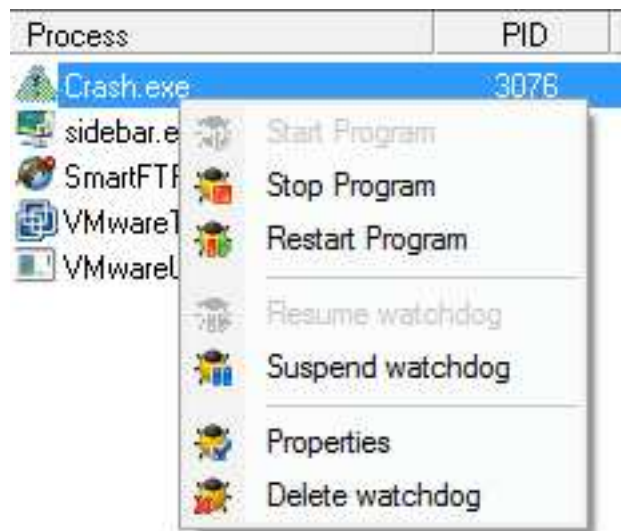
Select all the applications you want to monitor with the Watchdog - O - Matic program. Watchdog – O – Matic will automatically create new items for each of the autostart programs you selected. These programs will be watched automatically.

3.6 Adjusting settings

To adjust the watchdog settings of a certain process, double click the item or choose properties after right clicking the item. You will be able to adjust all the settings of the watchdog.

3.7 Start/Stop monitoring applications

If you want the Watchdog - O - Matic application to stop monitoring an application, select the application in the list. Right click on it and select 'Suspend watching'. All new events are no longer processed. This means the target can crash at will. Applications that are not monitored have a greyed icon. If you want to continue the monitoring process, select 'Resume watching' from the same menu. You can also start, stop and restart your application. Note that your application will disappear on a stop if you used the 'Watch a running program' option.

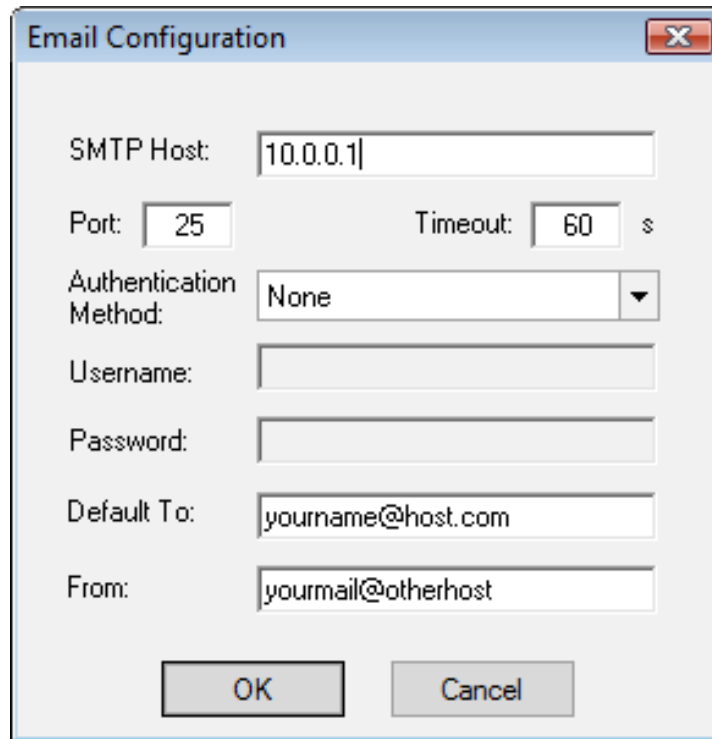


3.8 Deleting items

To delete an item in the list (and thus stop monitoring the target application), select the item and press the delete key, or use the 'Delete watchdog' button. Note that the target application will be closed if it was running.

3.9 General configuration: Email settings

Change the email configuration if you want Watchdog - O - Matic to send emails when a monitored program crash occurs. Select Options/Email Configuration to display the configuration dialog. Fill in the SMTP Host and port and all other settings as needed. If you're not sure how to configure these items, ask your network administrator or look at the settings of your email client and copy them.



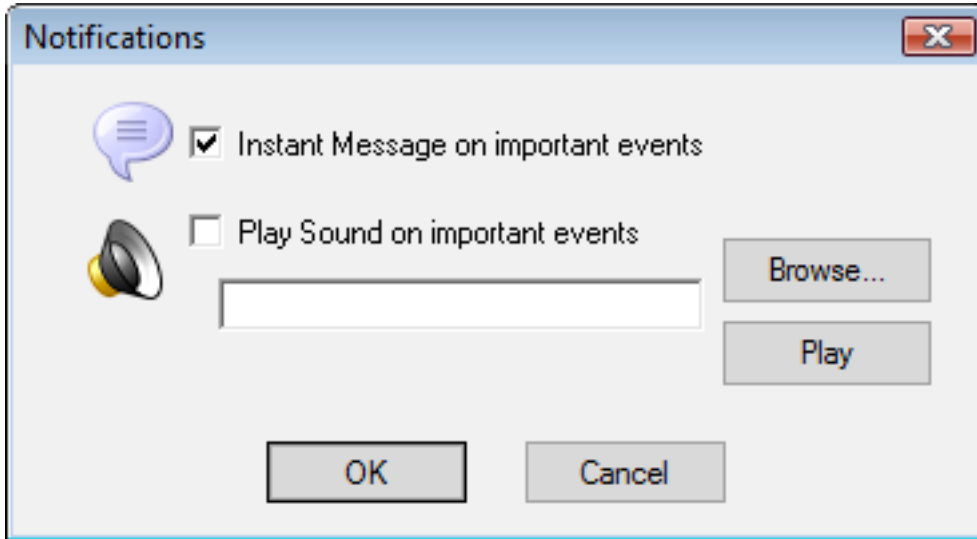
The image shows a Windows-style dialog box titled "Email Configuration". It contains several input fields for configuring email settings. The fields are: SMTP Host (text box with "10.0.0.1"), Port (spin box with "25"), Timeout (spin box with "60" and a seconds icon), Authentication Method (dropdown menu with "None"), Username (text box), Password (text box), Default To (text box with "yourname@host.com"), and From (text box with "yourmail@otherhost"). At the bottom are "OK" and "Cancel" buttons.

SMTP Host:	10.0.0.1		
Port:	25	Timeout:	60 s
Authentication Method:	None ▼		
Username:			
Password:			
Default To:	yourname@host.com		
From:	yourmail@otherhost		

OK Cancel

3.10 Notifications

Apart from email, you can also get other notifications. You can enable these by going to Options/Notifications.



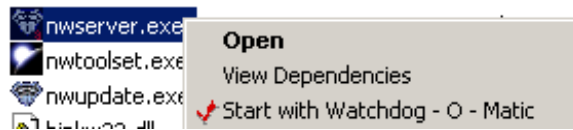
The first notification is an MSN Messenger style message box that will be displayed if an application crashes. The second option will play a selected sound if needed. Select your wave file by browsing for it. You can always try the sound by pressing Play.

3.11 Adjusting default values

With this option, it is possible to adjust the default values. These are the values used when you select to watch a new application / create a new item. Every time you choose to watch a process, these values will be used by default. Of course, you can always adjust the values per process you watch.

3.12 Shell integration: starting applications from explorer

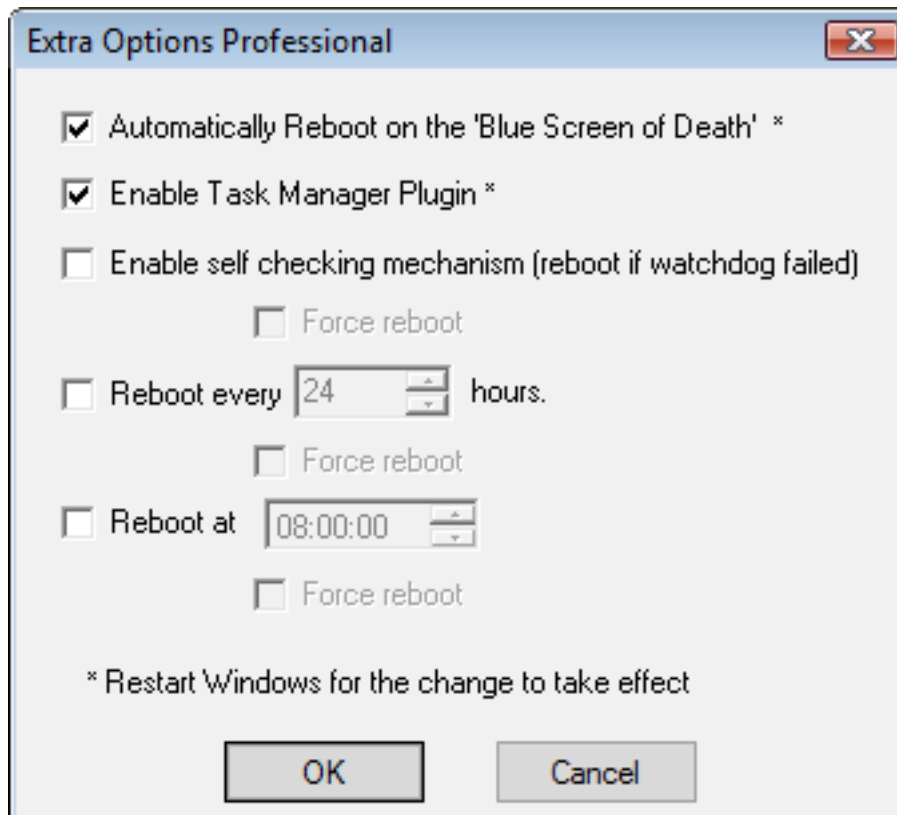
With our shell integration system, you can start any application from explorer, or your start menu. In explorer, select the application you want to start, and right click on the item. You'll see a new item in this menu.



If you select “Start with Watchdog – O - Matic”, our crash handling application will start the selected program and check it with the default parameters. You can see the new program in the regular Watchdog – O – Matic view, and you can change the check parameters. The same option is available for items in the start menu. Note that this menu option is only available when selecting an application that can be started.

3.13 Extra options professional edition

The professional edition of this software has some extra functions. Aside from a safer check mechanism we have also added extra options. You can see them by selecting the Options -> Extra Options Professional menu. You will see the following dialog.



The first option will reboot the system if a critical windows error occurred (also known as Blue Screen of Death or BSOD). So the watchdog will even react on system faults it normally can't see. The second option allows you to enable/disable the task manager plugin.

The third option will start a self-checking mechanism. This means that the Watchdog – O – Matic application will check itself. If a problem occurs that would halt the watchdog functions (e.g. a crash, or hang) the computer will be rebooted. Even if the watchdog fails, your software will be back running in no time.

The fourth option will reboot the computer every x hours. We included this option so you would be able to start from a fresh windows boot every x hours. Even if watched programs have memory leaks, or something else happens that clutters up windows, our watchdog is able to start fresh. These functions have an extra force option. You should enable these force options if you fear your machine will not reboot because of other hanging programs.

You probably don't want users to log in every time the watchdog has rebooted your system due to a system failure or application crash. To solve this, you can use a program that will automatically log on to the windows system. These programs are widely available on the net, and most of them are free. You can also do the following procedures:

For NT:

<http://support.microsoft.com/support/kb/articles/Q97/5/97.ASP>

For 2000 / XP:

<http://support.microsoft.com/support/kb/articles/Q310/5/84.ASP>

3.14 Updating the software

If you want to update your version of Watchdog – O – Matic, simply select Update in the about box. A connection to the internet will be made, and we will perform a version check. If you have an older version, an update will be downloaded. Note that updating to a new version will close Watchdog – O – Matic, and all the applications you are watching. Our application will also inform you if no update is needed.

System requirements:

P75 or higher

Windows 95/98/Me/NT 4/2000/XP/2003 server/Vista

Internet Explorer 5.0 or better

8 MB free memory

VGA 256 colours

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