



## System.Ini Entries



**Caution!**

[About Initialization Files](#)

[Editing the .INI Source Files](#)

[\[boot\] Section](#)

[\[keyboard\] Section](#)

[\[standard\] Section](#)

[Format of .INI Files](#)

[Win 3.1 .INI File Changes](#)

[\[boot.description\]](#)

[\[mci\] Section](#)

[\[386enh\] Section, A - L](#)

[Changing Entries in .INI Files](#)

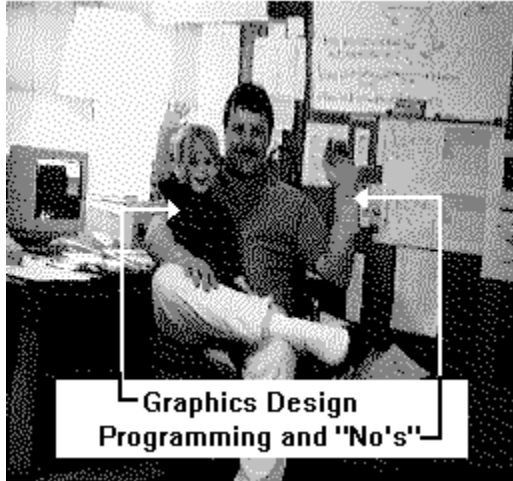
[System.Ini Overview](#)

[\[drivers\] Section](#)

[\[NonWindowsApp\] Section](#)

[\[386enh\] Section, M - X](#)





Graphics Design  
Programming and "No's"

## About



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OK

## **[386enh] Section, M - X**

The **[386enh]** section contains information specific to running Windows in 386 enhanced mode, including information used for virtual-memory page swapping.

For entries in this section that specify virtual devices, the value can appear in two ways: either the filename of a specific virtual device driver (with path if necessary), or as an asterisk (\*) followed immediately by the device name to refer to a virtual device built into the WIN386.EXE file.

This section can contain the following entries:

### **MapPhysAddress=range**

This entry specifies the address range (in megabytes) in which the memory manager will preallocate physical page-table entries and linear address space. Set a value for this entry if you are using an MS-DOS device driver that needs this contiguous memory (such as an older version of RAMDrive that uses extended memory). The default is none. To change this entry, you must edit SYSTEM.INI.

### **MaxBPs=number**

This entry specifies the maximum number of break points (a method for transferring control to Windows 386 enhanced mode) that can be used by the VMM. You may need to increase this value if you are using a third-party virtual device driver that requires more break points than the default value. The default is **200**. To change this entry, you must edit SYSTEM.INI.

### **MaxCOMPort=number**

This entry specifies the maximum number of COM ports supported in 386 enhanced mode. Change this value if you have more than four COM ports in your system. The default is **4**. To change this entry, you must edit SYSTEM.INI.

### **MaxDMAPGAddress=address**

This entry specifies the maximum physical page address that can be used for DMA. This entry works only with hard drives that support DMA. The default is **0FFFh** for non-EISA computers; **0FFFFh** for EISA computers. To change this entry, you must edit SYSTEM.INI.

### **MaxPagingFileSize=kilobytes**

This entry specifies the maximum size for a temporary swap file. The default is 50 percent of the available disk space. To change this entry, choose the 386 Enhanced icon in Control Panel, then choose Virtual Memory to set a value.

### **MaxPhysPage=hexadecimal-page-number**

This entry specifies the maximum physical page number that the VMM can manage as a useable page, allowing pages to be added at a physical address beyond what the VMM recognized during initialization. If the value specified is less than what the VMM determines, the VMM will ignore several physical pages that it would usually use, preventing the use of memory. This is useful if you are using a hardware device that cannot recognize all of the physical memory in your computer (for example, ISA DMA network cards cannot access physical memory above 16 MB). The default is determined by Windows based on the highest physical page number detected by the VMM during initialization. To change this entry, you must edit SYSTEM.INI.

### **MCADMA=Boolean**

This entry specifies whether Windows should use the Micro Channel (MCA) extensions to DMA. This entry

only applies to MCA computers. Set this entry to **Off** if you are using an MCA computer but the DMA extensions are not implemented. The default is **On** for most MCA computers; **Off** for all other computers. To change this entry, you must edit SYSTEM.INI.

#### **MessageBackColor**=*vga-color-attribute*

This entry specifies the background color of message screens, such as the screen that appears when you press Ctrl+Alt+Del. The default is **1** (for blue). To change this entry, you must edit SYSTEM.INI.

#### **MessageTextColor**=*vga-color-attribute*

This entry specifies the color used to display text in message screens, such as the screen that appears when you press Ctrl+Alt+Del. The default is **F** (for white). To change this entry, you must edit SYSTEM.INI.

#### **MinTimeSlice**=*milliseconds*

This entry specifies the minimum time a virtual machine will be allowed to run before other virtual machines can take over. A smaller value (such as 10 milliseconds) will make multitasking appear smoother, but will diminish the overall system performance. The default is **20**. To change this entry, choose the 386 Enhanced icon from Control Panel.

#### **MinUnlockMem**=*kilobytes*

This entry specifies the amount of memory that must remain unlocked and available for use when resuming a virtual machine if more than one virtual machine is running. The default is **40**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

#### **MinUserDiskSpace**=*kilobytes*

This entry tells Windows how much disk space to leave free when creating a temporary swap file. Use this entry if your systems paging drive has less available space than Windows can use for paging. This entry has no effect if a permanent swap file exists. The default is **500**. To change this entry, you must edit SYSTEM.INI.

#### **Mouse**=*filename* | *\*devicename*

This entry specifies the virtual device that handles the mouse hardware in 386 enhanced mode. This entry is a synonym for **Device**=. The default is none. Setup assigns an appropriate value based on your system configuration. To change this entry, choose the Windows Setup icon in the Main Group window.

#### **MouseSoftInit**=*Boolean*

This entry specifies whether Windows should convert INT 33h function 0 hard initialization calls to function 33 soft initialization calls, which do not reset the mouse hardware. Set this entry to **On** if you want to use a mouse with a non-Windows application started in a window. Set this entry to **Off** if the cursor and screen information appear distorted when you are using the mouse with an application. If you set this entry to **Off**, you will not be able to use the mouse with a non-Windows application started in a window. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **NetAsynchFallback**=*Boolean*

This entry, if set to **On**, tells Windows to attempt to save a failing NetBIOS request. When an application issues an asynchronous NetBIOS request, Windows will attempt to allocate space in its global network buffer to receive the data. If there is insufficient space in the global buffer, Windows will usually fail the NetBIOS request. If this entry is **On**, Windows will attempt to save such a request by allocating a buffer in local memory and preventing any other virtual machines from running until the data is received and the

timeout period specified by **NetAsynchTimeout=** expires. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **NetAsynchTimeout=***seconds*

This entry specifies the timeout period when Windows needs to enter a critical section to service an asynchronous NetBIOS request. This value is used only when **NetAsynchFallback=** is set. This value can include a decimal, such as 0.5. The default is **5.0**. To change this entry, you must edit SYSTEM.INI.

#### **NetDMASize=***kilobytes*

This entry specifies the DMA buffer size for NetBIOS transport software if a network has been installed. In this case, the buffer size is the larger value between this value and the value of **DMABufferSize=**. The default is **32** on Micro Channel machines, and **0** on nonMicro Channel machines. To change this entry, you must edit SYSTEM.INI.

#### **NetHeapSize=***number*

This entry specifies the size, in 4K increments, of the data-transfer buffers that Windows 386 enhanced mode allocates in conventional memory for transferring data over a network. All values are rounded up to the nearest 4K. The default is **12**. To change this entry, you must edit SYSTEM.INI.

#### **Network=***filename* | *\*devicename*

This entry specifies the type of network used with Windows 386 enhanced mode. This entry is a synonym for **Device=**. The default is none. Setup assigns an appropriate value based on your system configuration. To change this entry, choose the Windows Setup icon from the Main Group window.

#### **NMIReboot=***Boolean*

This entry, if set to **On**, causes a reboot to occur when a nonmaskable interrupt is received. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **NoEMMDriver=***Boolean*

This entry, if set to **On**, prevents Windows 386 enhanced mode from installing the expanded memory driver. This differs from setting **EMMSize=0**, which prevents UMBs from being allocated, but does not prevent the EMS driver from being loaded. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **NoWaitNetIO=***On* | *Off*

This entry specifies whether to convert synchronous NetBIOS commands to asynchronous commands. When this entry is **On**, synchronous NetBIOS commands are converted. This can improve overall system performance when running several applications. The default is **On**. To change this value, you must edit SYSTEM.INI.

#### **OverlappedIO=***Boolean*

This entry, if **On**, allows several virtual machines to make read and write requests to a disk before the first request has been completed. If this entry is **Off**, virtual machines cannot issue a request to read or write to a disk until any previous read and write requests have been completed. The default is **Off** if **InDOSPolling=on**; otherwise, **On**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

### **PageBuffers=number**

This entry specifies the number of 4K page buffers used to store asynchronous read and write pages. This setting is used only if you are using 32-Bit Disk Access and a permanent swap file. You can specify a value between **0** and **32**. Increasing this value can improve Windows performance. The default is **4**. To change this entry, you must edit SYSTEM.INI.

### **PageOverCommit=megabytes**

This entry specifies the multiplier that determines the amount of linear address space the VMM will create for the system, which is computed by rounding up the amount of available physical memory to the nearest 4 MB and then multiplying that value by the value specified for **PageOverCommit=**. Increasing this value increases the amount of available linear address space, causing the size of data structures to increase. This also increases paging activity proportionately and can slow down the system. You can specify a value between **1** and **20**. The default is **4**. To change this entry, you must edit SYSTEM.INI.

### **Paging=Boolean**

This entry sets demand paging (virtual memory). Set this entry to **Off** only if you need the disk space that would be used for a temporary swap file. The default is **On**. To change this entry, you must edit SYSTEM.INI.

### **PagingDrive=drive-letter**

This entry specifies the disk drive where Windows 386 enhanced mode will allocate a temporary swap file. This entry is ignored if you have a permanent swap file. If you don't have a permanent swap file and no drive is specified or the specified drive does not exist, Windows attempts to put the temporary swap file on the drive containing the SYSTEM.INI file. If the specified drive is full, paging will be turned off. The default is none. To change this entry, you must edit SYSTEM.INI.

### **PagingFile=path-and-filename**

This entry specifies the path and filename for the temporary swap file that is created when you start Windows in 386 enhanced mode. This file is deleted when you quit Windows. This setting overrides the **PagingDrive=** setting. The default is **WINDOWS\WIN386.SWP**. To change this entry, you must edit SYSTEM.INI.

### **PerformBackfill=Boolean**

This entry specifies whether to allocate a full 640K of memory to a computer that has less than 640K of base conventional memory. Setting this entry overrides the automatic checking done by Windows. The default is **On** (Windows automatically checks to see if it needs to fill in memory based on how MS-DOS is occupying memory.) To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry, because Windows can automatically detect whether to perform a backfill.)

### **PermSwapDOSDrive=drive-letter**

This entry specifies the disk drive where Windows in 386 enhanced mode will create a permanent swap file. This setting is ignored if you are using a temporary swap file. The default is none. To change this entry, choose the 386 Enhanced icon from Control Panel.

### **PermSwapSizeK=kilobytes**

This entry specifies the desired size of a permanent swap file. The default is none. To change this entry, choose the 386 Enhanced icon from Control Panel.

### **PerVMFILES=number**

This entry specifies the number of private file handles Windows should allocate to each virtual machine. Increase this value if an application does not have enough file handles to run. The total number of file handles, including the global handles specified in the **files=** statement in CONFIG.SYS, cannot exceed 255. If it does exceed 255, this value will be rounded down. Set this value to **0** to prevent the allocation of any private file handles. The default is **10**; if the MS-DOS Share utility is installed, this setting in SYSTEM.INI is ignored. To change this entry, you must edit SYSTEM.INI.

### **PSPIncrement=number**

This entry specifies the amount of additional memory, in 16-byte increments, that Windows should reserve in each successive virtual machine when **UniqueDosPSP=on**. The value that will work best for your machine might vary depending on the memory configuration and the applications you are running. Valid values are **2** through **64**. The default is **2**. See **UniqueDosPSP=** for more information. To change this entry, you must edit SYSTEM.INI.

### **ReflectDosInt2A=Boolean**

This entry indicates whether Windows should consume or reflect MS-DOS INT 2A signals. If the value is **Off**, Windows will consume these signals and therefore run more efficiently. Set this entry to **On** if you are running memory-resident software that relies on detecting INT 2A messages. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **ReservedHighArea=paragraph-range**

This entry specifies a range of memory that Windows will not scan to find unused address space. This also turns off the RAM and ROM search code for the range. This scanning can interfere with some adapters that use the same memory area. The range (two paragraph values separated by a hyphen) must be between **A000** and **FFFF**. The starting value is rounded down and the ending value is rounded up to a multiple of 4K. For example, you could set **ReservedHighArea=E100-E3FF** to prevent Windows from scanning the first 12K of memory starting at E100. You can specify more than one range by including more than one **ReservedHighArea=** entry. The default is none. To change this entry, you must edit SYSTEM.INI.

### **ReservePageFrame=Boolean**

This entry tells Windows whether to give preference to EMS page frame space or conventional memory when it has to use one of them to allocate MS-DOS transfer buffers. This choice is necessary when Windows cannot find space between 640K and 1 MB other than EMS page frame space. If set to **On**, this entry will preserve EMS page frame space at the expense of conventional memory. If you are not going to run non-Windows applications that use expanded memory, set this entry to **Off** to give non-Windows applications more conventional memory. The default is **On**. To change this entry, you must edit SYSTEM.INI.

### **ReserveVideoROM=Boolean**

This entry, if **On**, tells Windows that video ROM exists in pages C6 and C7. If the text font appears scrambled when you start non-Windows applications, set this entry to **On**. The default is **Off**. To change this entry, you must edit SYSTEM.INI. (You should not need to change this entry, because the default value causes Windows to detect video ROM correctly.)

### **ROMScanThreshold=number**

This entry specifies a parameter used to determine whether an area of memory in the adapter area (usually between C000-EFFF) is ROM when the area has no ROM header or incorrect header information.



The number for this entry specifies how many transitions (value changes) must occur within the memory area to determine whether it is ROM. If the number of transitions is greater than the value for this entry, Windows recognizes the memory as ROM. If the number of transitions is less than the value, Windows recognizes the memory as usable memory. Specifying **0** causes Windows to recognize the memory area as ROM and then reserve it as unusable. The default is **20**. (You should never need to change this entry.)

#### **ScrollFrequency=number**

This entry specifies the number of lines you can scroll in a non-Windows application that is running in Windows before its display is updated. The default is **2**. You should never need to change this setting.

#### **SGrabLPT=port-number**

This entry routes all printer interrupts on the specified port to the system virtual machine rather than to the current virtual machine. The default is none. To change this entry, you must edit SYSTEM.INI.

#### **SyncTime=Boolean**

This entry, if **On**, causes Windows to periodically synchronize its time with the computers CMOS clock. If this entry is **Off**, Windows usually maintains the correct time, unless **TrapTimerPorts=off** when you are running applications that can cause the system time to run faster or slower than the actual time. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **SystemROMBreakPoint=Boolean**

This entry specifies whether Windows should use ROM address space between F000:0000 and 1 MB for a break point. Windows 386 enhanced mode usually searches this space to find a special instruction that is used as a system break point. If this address space contains something other than permanently available ROM, set this entry to **Off**. The default is **On** if Windows is started in real mode of the 80386/486 CPU. **Off** if Windows is started in virtual mode of the 80386/486 CPU. Most 386 memory managers, such as QEMM and 386MAX, require this value to be set to **Off**. If a 386 memory manager is running, Windows is started in virtual mode. Otherwise, Windows is started in real mode. To change this entry, you must edit SYSTEM.INI.

#### **SysVMEMSLimit=number | kilobytes**

This entry specifies how many kilobytes of expanded memory Windows should be permitted to use. Setting this value to **0** prevents Windows from gaining access to any expanded memory. Setting it to **-1** gives Windows all the available expanded memory that it requests. The default is **2048**. To change this entry, you must edit SYSTEM.INI.

#### **SysVMEMSLocked=Boolean**

This entry indicates whether to swap to the hard disk the expanded memory being used by non-Windows applications. Locking expanded memory can improve the performance of a non-Windows application that uses it, but locking it slows down the rest of the system. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **SysVMEMSRequired=kilobytes**

This entry specifies how much expanded memory must be free to start Windows. Leave this value at **0** if no non-Windows application running under Windows will require expanded memory. The default is **0**. To change this entry, you must edit SYSTEM.INI.

#### **SysVMV86Locked=Boolean**

This entry, if set to **On**, causes the virtual-mode memory being used in the system virtual machine to remain locked in memory rather than being swappable out to disk. Because Windows handles this process, there is no known reason to set this entry. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **SysVMXMSLimit**=*number* | *kilobytes*

This entry specifies the maximum amount of memory the extended memory driver will allocate to MS-DOS device drivers and memory-resident software in the system virtual machine. Set the value to **-1** to give an application all the available extended memory that it requests. The default is **2048**. To change this entry, you must edit SYSTEM.INI.

#### **SysVMXMSRequired**=*kilobytes*

This entry specifies how many kilobytes of extended memory must be reserved by the XMS driver to start Windows. Leave this value at **0** if there are no XMS users in the system virtual machine. The default is **0**. To change this entry, you must edit SYSTEM.INI.

#### **TimerCriticalSection**=*milliseconds*

This entry instructs Windows to go into a critical section around all timer interrupt code, and specifies a timeout period. Specifying a positive value will ensure that only one virtual machine at a time receives timer interrupts. Some networks and other global memory-resident software may fail unless this entry is used. However, using this entry will slow down performance and can make the system sluggish or seem to stop for short periods of time. The default is **0**. To change this entry, you must edit SYSTEM.INI.

#### **TokenRingSearch**=*Boolean*

This entry, if **On**, tells Windows whether to search for a token ring network adapter on machines with IBM PC/AT architecture. Set this entry to **Off** if you are not using a token ring card and the search interferes with another device. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **TranslateScans**=*Boolean*

This entry, if **On**, indicates whether Windows will translate a keyboard's scan codes to make them compatible with standard IBM scan codes. This entry is necessary only for keyboards that generate nonstandard scan codes. This entry is used only for the Switcher Screen and full-screen message boxes. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **TrapTimerPorts**=*Boolean*

If this entry is set to **Off**, Windows allows applications to read from and write to the system timer ports. In this case, Windows can usually detect when an application has changed the timer interrupt interval and then make any adjustments to the time. However, some applications may prevent Windows from keeping accurate time. If your system's time appears to be running fast or slow, set this entry to **On**, so that Windows will deny access to the timer ports. This ensures that the system time will be accurate, but may cause applications that frequently access the timer ports to run slowly. If you do not want to set this entry to **On**, set **SyncTime=On**, which causes Windows to restore the correct time periodically regardless of whether applications access the timer ports. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **UniqueDOS PSP**=*Boolean*

This entry, if set to **On**, tells Windows to start every application at a unique address (PSP). Each time Windows creates a new virtual machine to start a new application, Windows reserves a unique amount of memory (*i* bytes) below the application. For example, the first application would be loaded at address M,

the second at address  $M+i$ , the third at  $M+2i$ , and so forth. The amount of memory ( $i$ ) is determined by **PSPIncrement=**. These entries ensure that applications in different virtual machines all start at different addresses. Some networks use applications load addresses to identify the different processes using the network. On such networks, setting this entry to **Off** might cause one application to fail when you exit another, because the network interprets them as the same application. However, setting this entry will leave slightly less memory for non-Windows applications. The default is **On** if you are running a network based on Microsoft Network (MS-Net) or LAN Manager; **Off** for all other networks. See Chapter 12, Networks and Windows 3.1, to find out if your network is based on MS-Net or LAN Manager. To change this entry, you must edit SYSTEM.INI.

#### **UseableHighArea=***paragraph-range*

This entry specifies the range of memory that Windows will scan for unused address space regardless of what may be there. **UseableHighArea=** takes precedence over **ReservedHighArea=** if you specify ranges that overlap. The range (two values separated by a hyphen) must be between **A000** and **FFFF**. The starting value is rounded down and the ending value is rounded up to a multiple of 4K. For example, you could set **UseableHighArea=E100-E3FF** to ensure that Windows scans the first 12K of memory starting at E100.

You may specify more than one range by including more than one entry for **UseableHighArea=**. The default is none. To change this entry, you must edit SYSTEM.INI.

#### **UseInstFile=***Boolean*

This entry specifies whether Windows should look in the INSTANCE.386 file for information it can use to determine whether data structures within MS-DOS need to be local. Two other methods give Windows this information: internal tables within the device, and an INT 2Fh call documented in the OEM Adaptation Kit. Both methods are preferable to using this setting; this entry is provided only for compatibility with Windows/386 version 2.x. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **UseROMFont=***Boolean*

This entry, if **On**, causes Windows to use the soft font stored in video ROM for displaying messages that appear when non-Windows applications are running in a full screen and for displaying the text that appears when switching away from a non-Windows application. Set this entry to **Off** if the font used to display messages is different from the font used in the application, or if random dots and shapes appear on your screen. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **VGAMonoText=***Boolean*

This entry tells Windows to ignore the video memory address space in VGA displays, usually used for monochrome adapters. When this entry is **Off**, Windows can use the B000h through B7FF range in upper memory if no hardware device is using these addresses and other applications do not use the monochrome display mode of the VGA adapter. This entry applies only to VGA displays. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **VideoBackgroundMsg=***Boolean*

This entry, if **On**, causes Windows to display a message when a background application is suspended, or if its display cannot be updated properly because video memory is low. Setting this entry to **Off** turns off the warning message. This entry affects all non-Windows applications currently running. The default is **On**. To change this entry, you must edit SYSTEM.INI.

#### **VideoSuspendDisable=***Boolean*

This entry specifies whether to suspend an application running in the background if its display becomes corrupted. If this entry is **On**, the application will continue running. If it is **Off**, applications will be

suspended, and a warning message will appear if the **VideoBackgroundMsg=On**. This entry applies only to VGA displays. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **VirtualHDIrq=Boolean**

This entry allows Windows 386 enhanced mode to terminate interrupts from the hard disk controller, bypassing the ROM routine that handles these interrupts. Some hard drives might require that this entry be set to **Off** for interrupts to be processed correctly. If this entry is set to **Off**, the ROM routine handles the interrupts, which slows the systems performance. The default is **On** for AT-compatible computers; **Off** for other computers. To change this entry, you must edit SYSTEM.INI.

#### **WindowKBRequired=kilobytes**

This entry specifies how much conventional memory must be free to start Windows. The default is **256**. To change this entry, you must edit SYSTEM.INI.

#### **WindowMemSize=number | kilobytes**

This entry limits the amount of conventional memory Windows can use for itself. The default value indicates that Windows can use as much conventional memory as it needs. Try entering a positive value less than 640 if there is not enough memory to run Windows in 386 enhanced mode. The default is **-1**. To change this entry, you must edit SYSTEM.INI.

#### **WindowUpdateTime=milliseconds**

This entry specifies the time Windows takes between updates of the display for a non-Windows application running in a window. The default is **50**. To change this entry, you must edit SYSTEM.INI.

#### **WinExclusive=Boolean**

This entry, if **On**, indicates whether Windows always gets all of the computers processing time whenever a Windows application is in the foreground. If this entry is **On** and a Windows application is in the foreground, no non-Windows application will run. The default is **Off**. To change this entry, choose the 386 Enhanced icon from Control Panel.

#### **WinTimeSlice=number,number**

This entry contains two numbers. The first number specifies the relative processing time (based on **MinTimeSlice=**) given to all Windows applications running in the foreground relative to the time allocated to all non-Windows applications running in the background. The second number specifies the relative processing time given to all Windows applications running in the background when a non-Windows application is running in the foreground. The range of numbers that can be entered is **1** through **10000**. The important value is the ratio of these values to the corresponding settings in the PIFs of the active non-Windows applications. The default is **100,50**. To change this entry, choose the 386 Enhanced icon from Control Panel.

#### **WOAFont=font filename**

This entry specifies which font files are loaded into memory when running non-Windows applications. These fonts are also available to Windows applications as long as a non-Windows application is running. If you want to make these fonts always available to Windows applications, add them to your system with the Fonts option in Control Panel. The default is **DOSAPP.FON**. To change this entry, exit Windows and run Setup from MS-DOS, then change the Codepage or Display setting.

### **XlatBufferSize**=*kilobytes*

This entry specifies the size of the low-memory buffer used to map MS-DOS calls from protected mode to virtual 386 enhanced mode. Specifying a higher value can improve the performance of protected-mode Windows applications that read or write information in a large number of bytes (for example, some database applications). However, this may decrease the amount of memory available for running non-Windows applications and may cause problems on networks that use named pipes. These networks may require a value of **4**. The value you specify is rounded to the next 4K increment. For example, if you set this value to **5**, Windows rounds it up to **8**. The default is **8**. To change this entry, you must edit SYSTEM.INI.

### **XMSUMBInitCalls**=*Boolean*

This entry specifies whether Windows should call the extended memory drivers UMB management routines. The default is usually **On**, but may be **Off** depending on the extended memory manager you are using. You should never need to change this entry.

[Part 1 - \[A - L\]](#)

[Top of This Topic](#)

[Top of Help File](#)

## [386enh] Section, A - L

The [386enh] section contains information specific to running Windows in 386 enhanced mode, including information used for virtual-memory page swapping.

For entries in this section that specify virtual devices, the value can appear in two ways: either the filename of a specific virtual device driver (with path if necessary), or as an asterisk (\*) followed immediately by the device name to refer to a virtual device built into the WIN386.EXE file.

This section can contain the following entries:

### **32BitDiskAccess**=*Boolean*

This entry turns 32-bit disk access on or off. The default is **Off** if your hard disk is capable of supporting 32-bit disk access. Otherwise, this setting is not present in SYSTEM.INI. To change this entry, choose the 386 Enhanced icon in Control Panel. If this setting is not present in SYSTEM.INI, the 32-Bit Disk Access check box will not appear in Control Panel Virtual Memory dialog box.

### **A20EnableCount**=*number*

This entry specifies the initial A20 enable count, which identifies the A20 handler that HIMEM.SYS uses to access extended memory. (For more information about the A20 enable count, see the documentation for your extended memory manager.) The default is the value computed by the Win386 loader. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

### **AllEMSLocked**=*Boolean*

This entry, if **On**, locks the contents of expanded memory used by all Windows and non-Windows applications into memory (instead of swapping it to disk) and overrides PIF settings for EMS Memory Locked. Set this value to **On** if you are using a disk cache program that uses expanded memory. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **AllVMsExclusive**=*Boolean*

This entry, when **On**, forces all applications to run in exclusive full-screen mode, overriding all other settings in the application PIFs. Setting **AllVMsExclusive=on** might help avoid UAEs when you are running network or memory-resident software that is not compatible with Windows. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **AllXMSLocked**=*Boolean*

This entry, if **On**, locks the contents of the extended memory used by all Windows and non-Windows applications into memory (instead of swapping it to disk), and overrides PIF settings for XMS Memory Locked. The default is **Off**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry).

### **AltKeyDelay**=*seconds*

This entry specifies how much time Windows waits to process a keyboard interrupt after it processes an ALT interrupt. Some applications expect a slower processing rate than Windows 386 enhanced mode usually uses. Increase this value if such an application has trouble handling the ALT key. The default is **.005**. To change this entry, you must edit SYSTEM.INI.

### **AltPasteDelay**=*seconds*

This entry specifies how much time Windows waits before pasting any characters after the ALT key has been pasted. Some applications may require more time for recognition of the ALT keystroke. The default is **.025**. To change this entry, you must edit SYSTEM.INI.

### **AutoRestoreScreen=Boolean**

This entry specifies whether the display for non-Windows applications should be restored by Windows or by the applications themselves when they become active. If this entry is **On**, Windows saves the display information for a non-Windows application in memory when you switch away from the application. When you switch back to the application, Windows restores the screen. If this entry is **Off**, the application must restore its own display by repainting the screen. This requires less memory, but can slow down performance since Windows can usually restore the screen faster. This entry only applies to VGA displays and affects only applications that notify Windows that they can update their screens automatically when Windows sends a display update call. The default is **On**. To change this entry, you must edit SYSTEM.INI.

### **BkGndNotifyAtPFault=Boolean**

This entry specifies when a notification should be sent to a non-Windows application or to Windows to prevent the application from attempting to access the display (which might corrupt the display of a different application). This notification can be sent while switching to a different application or when attempting to access the actual display. If this entry is **Off**, Windows sends a notification when switching between applications. Set this entry to **Off** if you are using a display that has special hardware (for example, 8514 and TIGA). If you are using a VGA display, setting this entry to **On** should work in most cases. The default is **On** for VGA displays; **Off** for 8514 displays. To change this entry, you must edit SYSTEM.INI.

### **CGA40WOA.FON=filename**

This entry specifies the filename of the fixed-pitch display font used for non-Windows applications with a display of 40 columns and 25 or fewer lines. The default is none. To change this entry, exit Windows and run Setup from MS-DOS, then change the Codepage or Display setting.

### **CGA80WOA.FON=filename**

This entry specifies the filename of the fixed-pitch display font used for non-Windows applications with a display of 80 columns and 25 or fewer lines. The default is none (blank). To change this entry, exit Windows and run Setup from MS-DOS, then change the Codepage or Display setting.

### **CGANoSnow=Boolean**

This entry, when **On**, causes Windows to do special handling to avoid snow appearing on an IBM CGA display device. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **COM1AutoAssign=number | seconds**

### **COM2AutoAssign=number | seconds**

### **COM3AutoAssign=number | seconds**

### **COM4AutoAssign=number | seconds**

These entries indicate the contention detection values for each connected communications port. These values are used by Windows to determine how to arbitrate requests for the use of a device by more than one application, at least one of which is a non-Windows application. If the value is **-1**, Windows will display a warning message that asks you which application should be given control of the port. If the value is **0**, any application can use the device at any time. If the value is a positive integer less than 1000, this value represents the number of seconds after an application stops using the device before another application can use the same device. The default is **2**. To change this entry, choose the 386 Enhanced icon from Control Panel.

### **COM1Base=address**

### **COM2Base=address**

### **COM3Base=address**

#### **COM4Base=address**

These entries specify the base (first) port for the serial port adapter you are using for both standard mode and 386 enhanced mode. Check your hardware documentation for the appropriate value. The defaults are **COM3Base=3E8h**, and the port address values in the BIOS data area for COM1, COM2, and COM4. To change this entry, choose the Ports icon in Control Panel, and click the Advanced button for the selected COM port.

#### **COMBoostTime=milliseconds**

This entry specifies the time to allow a virtual machine to process a COM interrupt. If a communications application is losing keyboard characters on the display, you can try increasing this value. The default is **2**. To change this entry, you must edit SYSTEM.INI.

**COM1Buffer=number**  
**COM2Buffer=number**  
**COM3Buffer=number**  
**COM4Buffer=number**

These entries specify the number of characters that the device will buffer on the corresponding communications port. Before changing one of these entries, make sure the corresponding **COMxProtocol=** entry has the proper value. Buffering may slow down communications on a port, but might be necessary to prevent some communications applications from losing characters at high baud rates. The size of the buffer required will depend on the speed of the machine and the applications needs. The default is **128**. Before increasing this value, see **COMxProtocol=**. To change this entry, you must edit SYSTEM.INI.

#### **COMdrv30=Boolean**

This entry, if **On**, indicates that the Virtual COM Driver (VCD) will use its own copy of the serial communications drivers interrupt handler. This will improve performance of COM ports. Set this entry to **On** if you are using a Windows 3.0 serial communications driver. Set this entry to **Off** if you are using the standard Windows 3.1 serial communications driver. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

**COM1FIFO=Boolean**  
**COM2FIFO=Boolean**  
**COM3FIFO=Boolean**  
**COM4FIFO=Boolean**

These entries specify whether the FIFO buffer of a COM ports 16550 Universal Asynchronous Receiver Transmitter (UART) should be enabled (**On**) or disabled (**Off**). If a serial port does not have a 16550 UART, this setting is ignored. These values are used by Windows for both standard and enhanced modes. The default is **On**.

**COM1Irq=number**  
**COM2Irq=number**  
**COM3Irq=number**  
**COM4Irq=number**

These entries specify which interrupt line is used by the device on the specified serial port. Check your hardware documentation for the correct value. If there is a hardware conflict between ports, set a value of **1** to disable input for that COM port. The defaults for ISA and EISA machines are **COM1Irq=4**, **COM2Irq=3**, **COM3Irq=4**, and **COM4Irq=3**; for MCA machines, the defaults are **COM1Irq=4**, **COM2Irq=3**, **COM3Irq=3**, and **COM4Irq=3**. To change this entry, choose the Ports icon in Control Panel and click the Advanced button.



### **COMIrqSharing=Boolean**

This entry specifies whether COM interrupt lines will be sharable between multiple serial ports or with other devices. Set this switch if your machine uses the same interrupt for COM3 or COM4 as it does for COM1 or COM2. The default is **On** for Micro Channel and EISA machines; **Off** for all other machines. To change this entry, you must edit SYSTEM.INI.

**COM1Protocol=XOFF** | *blank*

**COM2Protocol=XOFF** | *blank*

**COM3Protocol=XOFF** | *blank*

**COM4Protocol=XOFF** | *blank*

These entries specify whether Windows 386 enhanced mode should stop simulating characters in a virtual machine after the virtual machine sends an *XOFF* character. Set the value for a port to **XOFF** if a communications application using that port is losing characters while doing text transfers at high baud rates. Windows will resume simulating characters when the virtual machine sends another character after the *XOFF* character.

Leave this entry blank if the application does binary data transfers; setting this switch might suspend binary transmissions. The default is no entry, which is the same as any entry other than **XOFF**. Windows will not check for *XOFF* characters if this entry is blank or set to anything other than **XOFF**. If the application continues to lose characters after this entry is set, try increasing the related **COMxBuffer=** value. To change this entry, you must edit SYSTEM.INI.

### **Device=filename** | *\*devicename*

This entry specifies which virtual devices are being used with Windows 386 enhanced mode. This value can appear in two ways: either the name of a specific virtual device file (with path if necessary), or an asterisk (\*) followed immediately by the device name to refer to a virtual device built into the WIN386.EXE file. Synonyms for **Device=** are **Display=**, **Ebios=**, **Keyboard=**, **Network=**, and **Mouse=**. Filenames usually include the .386 extension. Multiple device lines are required to run Windows 386 enhanced mode. The default is none. Setup assigns appropriate values based on your system configuration. To change this entry, you must edit SYSTEM.INI.

If Setup detects protected mode block devices for Western Digital-compatible controllers, it adds the entries **device=\*int13** and **device=\*wdctrl** to **[386enh]**. A block device is a virtual device used in 386 enhanced mode to talk directly to disk drive controllers, bypassing MSDOS and BIOS. To remove block device support, delete these entries in SYSTEM.INI. You do not need to delete files from your hard disk, as these devices are appended to WIN386.EXE.

### **Display=filename** | *\*devicename*

This entry specifies the display device being used with Windows 386 enhanced mode. This entry is a synonym for **Device=**. The default is none. Setup assigns an appropriate value based on your system configuration. To change this entry, choose the Windows Setup icon from the Main Group window.

### **DMABufferIn1MB=Boolean**

This entry, if set to **On**, indicates that the direct memory access (DMA) buffer memory should be in the first 1 MB of memory (above 640K, if possible) to be compatible with 8-bit bus master cards. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **DMABufferSize=kilobytes**

This entry specifies the amount of memory to be reserved for the DMA buffer. This memory will be allocated above 640K, if possible. Windows 386 enhanced mode will default to a DMA buffer size that will handle disk access. The default is **16**. To change this entry, you must edit SYSTEM.INI.

### **DOSPromptExitInstruc=Boolean**

This entry, if **On**, causes a message box to appear when you start the MS-DOS Prompt, displaying instructions on how to exit and switch away from the MS-DOS Prompt. Set this entry to **Off** if you do not want to see the message. The default is **On**. To change this entry, you must edit SYSTEM.INI.

### **DualDisplay=Boolean**

Usually, when Windows is running in 386 enhanced mode, the memory between B000:0000 and B7FF:000F will be used by the general system unless a secondary display is detected. If this entry is **On**, this memory will be left unused and available for display adapters, or if you do not have a monochrome display card installed and want EMM386.EXE to include this address space as an upper memory block (UMB). If this entry is **Off**, the address range will be available on EGA systems but not under VGA systems, because the VGA display device supports monochrome modes, which use this address space. To change this entry, you must edit SYSTEM.INI.

### **EBIOS=filename | \*devicename**

This entry specifies the extended BIOS device being used with Windows 386 enhanced mode. This entry is a synonym for **Device=**. The default is the value that Setup assigns, based on your system configuration. To change this entry, you must edit SYSTEM.INI.

### **EGA40WOA.FON=filename**

This entry specifies the filename of the fixed-pitch display font used for non-Windows applications with a display of 40 columns and more than 25 lines. The default is none. To change this entry, exit Windows and run Setup from MS-DOS, then change the Codepage or Display setting.

### **EGA80WOA.FON=filename**

This entry specifies the filename of the fixed-pitch display font used for non-Windows applications with a display of 80 columns and more than 25 lines. The default is none. To change this entry, exit Windows and run Setup from MS-DOS, then change the Codepage or Display setting.

### **EISADMA=Boolean | channel,size**

This entry specifies the mode of operation of an extended DMA channel for Extended Industry Standard Architecture (EISA) machines only. This entry's value can take one of two forms. If you set this entry to **Off**, Windows treats the machine as non-EISA, avoiding all EISA-related logic. Set this value to **Off** if you cannot run Windows 386 enhanced mode on an EISA machine. If you are using an EISA machine, you can specify the default transfer size for one or more DMA channels. The channels can operate in these modes: 8-bit (**8**), 16-bit specified in words (**16w**), 16-bit specified in bytes (**16b**), or 32-bit (**32**). If you are not using an EISA machine, Windows ignores this entry. The default is **0,8; 1,8; 2,8; 3,8; 5,16w; 6,16w; 7,16w**. Each pair goes with its own **EISADMA=** entry. To change this entry, you must edit SYSTEM.INI.

### **EMMExclude=paragraph-range**

This entry specifies a range of memory that Windows will not scan to find unused address space. This has the side effect of turning off the RAM and ROM search code for the range. The range (two paragraph values separated by a hyphen) must be between A000 and EFFF. This scanning can interfere with some adapters that use the same memory area. The starting value is rounded down and the ending value is rounded up to a multiple of 16K. For example, you could set **EMMExclude=C800-CFFF** to prevent Windows from scanning the addresses C800:0000 through CFFF:000F (the block that some VGA cards

use to enhance performance). You can specify more than one range by including more than one **EMMExclude=** entry. The default is none. To change this entry, you must edit SYSTEM.INI.

#### **EMMInclude=***paragraph-range*

This entry specifies a range of memory that Windows will scan for unused address space regardless of what may be there. **EMMInclude=** takes precedence over **EMMExclude=** if you specify ranges that overlap. The range (two values separated by a hyphen) must be between A000 and EFFF. The starting value is rounded down and the ending value is rounded up to a multiple of 16K. For example, you could set **EMMInclude=C800-CFFF** to ensure that Windows scans the addresses C800:0000 through CFFF:000F. You can specify more than one range by including more than one **EMMInclude=** entry. The default is none. To change this entry, you must edit SYSTEM.INI.

#### **EMMPageFrame=***paragraph*

This entry specifies the starting paragraph where the 64K page frame will begin when Windows cannot find a suitable page frame, allowing an EMS page frame in an area containing some unused RAM or ROM. For example, you could set **EMMPageFrame=C400** to start the page frame at C400:0000. The default is none. To change this entry, you must edit SYSTEM.INI.

#### **EMMSize=***kilobytes*

This entry specifies the total amount of memory to be made available for mapping as expanded memory. The default allocates the maximum possible amount of system memory as expanded memory. Specify a value for this entry if you run an application that allocates all of the available expanded memory. This will be apparent if, when you run the application, you can never create any new virtual machine. If this value is **0**, then no expanded memory will be allocated. This entry does not prevent the EMS driver from being loaded; use **NoEMMDriver=on** to turn off EMS. The default is **65,536**. To change this entry, you must edit SYSTEM.INI.

#### **FileSysChange=***Boolean*

This entry indicates whether File Manager automatically receives messages anytime a non-Windows application creates, renames, or deletes a file. When this entry is **Off**, a virtual machine can be run exclusively even when it modifies files. Setting this entry to **On** can slow down system performance significantly. The default is **On** for 386 enhanced mode; **Off** in standard mode. To change this entry, you must edit SYSTEM.INI.

#### **Global=***device-name*

This entry defines MS-DOS devices loaded in CONFIG.SYS that need to be global to the system. The default is that all devices loaded in CONFIG.SYS are global to the system. But certain virtual devices might specify that an MS-DOS device be local (for example, MS\$MOUSE). Use this entry to override that local specification. The *device-name* value must exactly match the case of the device name in CONFIG.SYS, or this entry will not work. Most device names are in all capital letters, so this value must usually be in all caps. To change this entry, you must edit SYSTEM.INI.

#### **HardDiskDMABuffer=***kilobytes*

This entry specifies the amount of memory used for the Direct Memory Access (DMA) buffer. If you are using Smartdrive and double buffering is turned on, this amount is determined automatically. You may need to change this value if you are using a hard disk that supports DMA and are not using Smartdrive, or if you do not have double buffering turned on. The default is **0** for AT architecture computers; **64** for Micro Channel computers or computers that use DMA channel 3 (unless you use Smartdrive with double buffering, in which case the default is **0**). To change this entry, you must edit SYSTEM.INI.

### **IdleVMWakeUpTime=seconds**

This entry causes timer interrupts to periodically wake up idle virtual machines after the specified number of seconds has elapsed. If a virtual machine does not use timer interrupts (INT 8 or INT 1Ch), Windows will not usually force timer interrupts into a virtual machine unless it is active. This entry forces the timer interrupts to occur. The value for this entry is rounded down to the lowest power of 2 (for example, 1, 2, 4, 8, 16, 32, 64). The default is **8**. To change this entry, you must edit SYSTEM.INI.

### **IgnoreInstalledEMM=Boolean**

This entry, if set to **On**, allows Windows to start in 386 enhanced mode even when there is an unknown expanded memory manager (EMM) running. Starting Windows with an unknown EMM running can cause the system to fail if memory-resident software was using expanded memory before Windows started. Set this entry only if no such software is installed or you are sure it will not be active when you run Windows. This entry applies only to EMMs servicing physical EMS hardware; Windows will not disable unrecognized 80386 expanded memory emulators. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **InDOSPolling=Boolean**

This entry, if set to **On**, prevents Windows from running other applications when memory-resident software has the **InDOS** flag set. Setting this entry to **On** is necessary if the memory-resident software needs to be in a critical section to do operations off an INT 21 hook. Setting this entry to **On** will slow down system performance slightly. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **INT28Critical=Boolean**

This entry specifies whether a critical section is needed to handle INT 28h interrupts used by memory-resident software. Some network virtual devices do internal task switching on INT 28h interrupts. These interrupts might hang some network software, indicating the need to add an **INT28hCritical=** entry. If you are not using such software, setting this entry to **Off** might improve Windows task switching. The default is **On**. To change this entry, you must edit SYSTEM.INI.

### **IRQ9Global=Boolean**

This entry, if set to **On**, converts IRQ 9 masks to global. Set this entry to **On** if your system hangs when it reads from a floppy drive, or to make sure the system reads the floppy drive before starting Windows. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

### **Keyboard=filename | \*devicename**

This entry specifies the keyboard driver for Windows 386 enhanced mode. This entry is a synonym for **Device=**. The default is none. Setup assigns an appropriate value based on your system configuration. To change this entry, choose the Windows Setup icon from the Main Group window.

### **KeyBoostTime=seconds**

This entry specifies how much time an application gets to run with increased priority when it receives a keystroke. Use this entry to increase the response to keystrokes when several background applications are running. The default is **.001**. To change this entry, you must edit SYSTEM.INI.

### **KeyBufferDelay=seconds**

This entry specifies the time to delay pasting keyboard input after the keyboard buffer is full. Some

applications might require more than .2 seconds. The default is **.2**. To change this entry, you must edit SYSTEM.INI.

#### **KeyIdleDelay=seconds**

This entry specifies how long Windows ignores idle calls after simulating a keystroke into a virtual machine. You can set this value to **0** to speed up keyboard input, but some applications might respond sluggishly if you do. The default is **.5**. To change this entry, you must edit SYSTEM.INI.

#### **KeyPasteCRSkipCount=number**

This entry specifies the number of times that a read-status Int 16 call should return a status of empty for the keyboard buffer after pasting a carriage return and before pasting another character. When Windows pastes data from the Clipboard to a non-Windows application, it must first paste the data to the BIOS keyboard buffer before pasting it into the application. This setting is used to slow down fast pasting from the Clipboard to the keyboard buffer so that the application can handle all incoming characters from the buffer. If you seem to lose characters, or if the screen does not update often enough while pasting information from the Clipboard, increase this value. This setting is related to **KeyPasteSkipCount=**. The default is **10**. To change this entry, you must edit SYSTEM.INI.

#### **KeyPasteDelay=seconds**

This entry specifies how long to wait before pasting any characters after a key has been pasted. Some applications might require more time than .003 seconds for recognition of a keystroke. The default is **.003**. To change this entry, you must edit SYSTEM.INI.

#### **KeyPasteSkipCount=number**

This entry specifies the number of times that a read-status Int 16 call should return a status of empty for the keyboard buffer before pasting another character. When Windows pastes data from the Clipboard to a non-Windows application, it must first paste the data to the BIOS keyboard buffer before pasting it into the application. This setting is used to slow down fast pasting from the Clipboard to the keyboard buffer so that the application can handle all incoming characters from the buffer. If you seem to lose characters, or if the screen does not update often enough while pasting information from the Clipboard, increase this value. The default is **2**. This setting is related to **KeyPasteCRSkipCount=**. To change this entry, you must edit SYSTEM.INI.

#### **KeyPasteTimeout=seconds**

This entry specifies how much time to allow an application to make the necessary BIOS calls for reading keyboard input before Windows will change from the fast paste (INT 16h) to the slow paste (INT 9h) mechanism. The default is **1**. To change this entry, you must edit SYSTEM.INI.

#### **KybdPasswd=Boolean**

This entry specifies whether the Virtual Keyboard Device (VKD) should support PS/2 8042 commands that implement password security. This entry only applies to 8042 keyboard controllers that are compatible with the PS/2 computer. The default is **On** for IBM PS/2 computers; **Off** for all other computers. To change this entry, you must edit SYSTEM.INI.

#### **KybdReboot=Boolean**

If this entry is **On**, Windows will attempt to reboot the computer using a keyboard controller command. On some computers this method is unreliable. If your computer hangs while rebooting, then set this entry to **Off**, in which case Windows will quit and display a prompt to press CTRL+ALT+DEL a second time if you attempt to reboot from the keyboard while Windows is running. The default is **On**. To change this entry,

you must edit SYSTEM.INI.

#### **Local=***device-name*

This entry defines MS-DOS device drivers that need to be local to each virtual machine. The *device-name* value must exactly match the case of the device name, or this entry will not work. Most device names are in all capital letters, so this value must usually be in all caps. If a device driver is local, a separate copy of it will exist in each virtual machine, and each will keep different state information. Most device drivers will not function properly when this entry is used. An exception is CON, the MS-DOS console device, which should be local to avoid filling a buffer with input from multiple virtual machines. The default is none; but in a standard SYSTEM.INI file, Setup will set **Local=CON**. To change this entry, you must edit SYSTEM.INI.

#### **LocalLoadHigh=***Boolean*

This entry determines how the upper memory blocks (UMBs) are used when Windows is running on MS-DOS version 5.0. If this entry is **Off**, Windows uses all of the upper memory area, leaving no extra UMBs available for virtual machines. If this entry is **On**, then Windows does not use all of the upper memory area, so the UMBs are available locally to each virtual machine. The default is **Off**. To change this entry, you must edit SYSTEM.INI.

#### **LocalReboot=***On | Off*

This entry specifies whether you can press CTRL+ALT+DEL to quit applications that cause an unrecoverable error in 386 enhanced mode, without restarting Windows. If this setting is **On**, you can quit the application. If this setting is **Off**, pressing CTRL+ALT+DEL will restart your entire system (as it usually does). To change this entry, you must edit SYSTEM.INI.

#### **LPT1AutoAssign=***seconds*

#### **LPT2AutoAssign=***seconds*

#### **LPT3AutoAssign=***seconds*

#### **LPT4AutoAssign=***seconds*

These entries apply to Windows version 3.0 only. If you have upgraded to Windows 3.1, these settings may still appear in your SYSTEM.INI file, but will have no effect. The default is **60**.

#### **LRULowRateMult=***number*

This entry specifies the value used to determine the Least Recently Used (LRU) low paging rate sweep frequency, which is computed by multiplying the value for **LRUSweepFreq=** by the value specified for **LRULowRateMult=**. Values between **1** and **65535** can be used. The default is **10**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

#### **LRURateChngTime=***milliseconds*

This entry specifies the length of time that the Virtual Memory Manager (VMM) stays at high rate with no paging before switching to low rate, and the length of time the VMM stays at low rate with no paging before turning the LRU sweep off. The default is **10,000**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

#### **LRUSweepFreq=***milliseconds*

This entry specifies the time between LRU sweep passes. This is also the high paging rate sweep frequency. The default is **250**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

### **LRUSweepLen**=*length-in-pages*

This entry specifies the length in pages of the region swept on each pass. Windows computes this value by dividing the value of **LRUSweepReset** by the value of **LRUSweepFreq**. The value must be at least **1**. The default is **1024**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

### **LRUSweepLowWater**=*number*

This entry specifies when the LRU sweeper should be turned on. When the number of free pages drops below this value, the sweeper is turned on. The default is **24**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

### **LRUSweepReset**=*milliseconds*

This entry specifies the time desired for an ACC bit reset divided by 4 MB of pages. Therefore, the time to reset all ACC bits is *number of pages in system+1023/1024*, where 1024 pages = 4 MB. The minimum value is **100**. The default is **500**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

### **MapPhysAddress**=*range*

This entry specifies the address range (in megabytes) in which the memory manager will preallocate physical page-table entries and linear address space. Set a value for this entry if you are using an MS-DOS device driver that needs this contiguous memory (such as an older version of RAMDrive that uses extended memory). The default is none. To change this entry, you must edit SYSTEM.INI.

### **MaxBPs**=*number*

This entry specifies the maximum number of break points (a method for transferring control to Windows 386 enhanced mode) that can be used by the VMM. You may need to increase this value if you are using a third-party virtual device driver that requires more break points than the default value. The default is **200**. To change this entry, you must edit SYSTEM.INI.

### **MaxCOMPort**=*number*

This entry specifies the maximum number of COM ports supported in 386 enhanced mode. Change this value if you have more than four COM ports in your system. The default is **4**. To change this entry, you must edit SYSTEM.INI.

### **MaxDMAPGAddress**=*address*

This entry specifies the maximum physical page address that can be used for DMA. This entry works only with hard drives that support DMA. The default is **0FFFh** for non-EISA computers; **0FFFFFFh** for EISA computers. To change this entry, you must edit SYSTEM.INI.

### **MaxPagingFileSize**=*kilobytes*

This entry specifies the maximum size for a temporary swap file. The default is 50 percent of the available disk space. To change this entry, choose the 386 Enhanced icon in Control Panel, then choose Virtual Memory to set a value.

### **MaxPhysPage**=*hexadecimal-page-number*

This entry specifies the maximum physical page number that the VMM can manage as a useable page, allowing pages to be added at a physical address beyond what the VMM recognized during initialization. If

the value specified is less than what the VMM determines, the VMM will ignore several physical pages that it would usually use, preventing the use of memory. This is useful if you are using a hardware device that cannot recognize all of the physical memory in your computer (for example, ISA DMA network cards cannot access physical memory above 16 MB). The default is determined by Windows based on the highest physical page number detected by the VMM during initialization. To change this entry, you must edit SYSTEM.INI.

#### **MCADMA=Boolean**

This entry specifies whether Windows should use the Micro Channel (MCA) extensions to DMA. This entry only applies to MCA computers. Set this entry to **Off** if you are using an MCA computer but the DMA extensions are not implemented. The default is **On** for most MCA computers; **Off** for all other computers. To change this entry, you must edit SYSTEM.INI.

#### **MessageBackColor=vga-color-attribute**

This entry specifies the background color of message screens, such as the screen that appears when you press Ctrl+Alt+Del. The default is **1** (for blue). To change this entry, you must edit SYSTEM.INI.

#### **MessageTextColor=vga-color-attribute**

This entry specifies the color used to display text in message screens, such as the screen that appears when you press Ctrl+Alt+Del. The default is **F** (for white). To change this entry, you must edit SYSTEM.INI.

#### **MinTimeSlice=milliseconds**

This entry specifies the minimum time a virtual machine will be allowed to run before other virtual machines can take over. A smaller value (such as 10 milliseconds) will make multitasking appear smoother, but will diminish the overall system performance. The default is **20**. To change this entry, choose the 386 Enhanced icon from Control Panel.

#### **MinUnlockMem=kilobytes**

This entry specifies the amount of memory that must remain unlocked and available for use when resuming a virtual machine if more than one virtual machine is running. The default is **40**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

#### **MinUserDiskSpace=kilobytes**

This entry tells Windows how much disk space to leave free when creating a temporary swap file. Use this entry if your systems paging drive has less available space than Windows can use for paging. This entry has no effect if a permanent swap file exists. The default is **500**. To change this entry, you must edit SYSTEM.INI.

#### **Mouse=filename | \*devicename**

This entry specifies the virtual device that handles the mouse hardware in 386 enhanced mode. This entry is a synonym for **Device=**. The default is none. Setup assigns an appropriate value based on your system configuration. To change this entry, choose the Windows Setup icon in the Main Group window.

#### **MouseSoftInit=Boolean**

This entry specifies whether Windows should convert INT 33h function 0 hard initialization calls to function 33 soft initialization calls, which do not reset the mouse hardware. Set this entry to **On** if you want to use a mouse with a non-Windows application started in a window. Set this entry to **Off** if the cursor and screen information appear distorted when you are using the mouse with an application. If you set this



entry to **Off**, you will not be able to use the mouse with a non-Windows application started in a window. The default is **On**. To change this entry, you must edit SYSTEM.INI.

[Part 2 - \(M - X\)](#)

[Top of This Topic](#)

[Top of Help File](#)



## [standard] Section

The **[standard]** section contains entries that are specific to running Windows in standard mode. This section can contain the following entries:

### **FasterModeSwitch=0 | 1**

This entry, if set to **1**, causes Windows standard mode to use a faster method of switching from protected to real mode on many 80286-based computers. When this entry is **1**, Windows responds more quickly to hardware interrupts, allowing better throughput for interrupt-intensive applications, such as communications applications. Also, you should set this entry to **1** if you are using a Zenith Z-248 system and are losing characters while typing, or if you are using an Olivetti M-250-E and lose control of the mouse. The default is **0**. To change this entry, you must edit SYSTEM.INI.

**Note** The value for **FasterModeSwitch=** has no effect on 80386-based computers. Some early IBM-AT and compatible computers do not have the BIOS support necessary to use this setting. Setting this entry to **1** on these computers may cause them to hang when starting Windows.

---

### **Int28Filter=number**

This entry specifies the percentage of INT 28h interrupts, generated when the system is idle, that are visible to software loaded before Windows. Windows will reflect every *n*th interrupt, where *n* is the value of this entry. For example, a value of **1** reflects every INT 28h interrupt, a value of **2** reflects every second INT 28h interrupt, a value of **3** reflects every third INT 28h interrupt, and so on. Increasing this value might improve Windows performance, but may interfere with some memory-resident software such as a network.

Set this value to **0** to prevent INT 28h interrupts. But setting this value too low adds to system overhead that might interfere with communications applications. The default is **10**. To change this entry, you must edit SYSTEM.INI.

### **MouseSyncTime=milliseconds**

This entry specifies the number of milliseconds that can elapse between mouse data bytes before Windows running in standard mode assumes that a mouse data packet is complete. This setting only affects Windows standard mode on computers with an IBM PS/2 mouse interface. The default is **500**. To change this value, you must edit SYSTEM.INI.

### **NetHeapSize=kilobytes**

This entry specifies the size of the data-transfer buffers that Windows standard mode allocates in conventional memory for transferring data over a network. If an application is not running correctly, your network may require a larger buffer than the default. Increasing this value will decrease the amount of memory available to applications. If no network software is running, this entry is ignored and no memory is allocated. The default is **8**. To change this entry, you must edit SYSTEM.INI.

### **PadCodeSegments=0 | 1**

Setting the value of this entry to **1** causes Windows Kernel to pad code segments with 16 bytes.

This prevents the last instruction in the segment from being too close to the segment limit for 80286 C2 stepping. Set this value to **1** only for this 80286 stepping. Unfortunately, there is no easy way of telling what stepping a 80286 chip is. Try setting this value to **1** if your 80286 system hangs in standard mode. The default is **0**. To change this entry, you must edit SYSTEM.INI.

**Stacks=number**

This entry specifies the number of interrupt reflector stacks used by the standard mode MS-DOS Extender (DOSX) to map an MS-DOS or BIOS API from real mode to protected mode. If you receive a Standard Mode: Stack Overflow message, try increasing this number. You can specify a number between **8** and **64**. The default is **12**. To change this entry, you must edit SYSTEM.INI.

**StackSize=kilobytes**

This entry specifies the size of the interrupt reflector stacks used by the standard mode MS-DOS Extender. The default is **384**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this entry.)

[Top of This Topic](#)

[Top of Help File](#)



## [NonWindowsApp] Section

The [NonWindowsApp] section contains entries that affect the performance of non-Windows applications. This section can contain the following entries:

### CommandEnvSize=*bytes*

This entry specifies the size of the COMMAND.COM environment. Since running batch files with the extension .BAT starts COMMAND.COM, this setting also applies to batch files. The value for this setting must be either **0** or between **160** and **32768**. A value of **0** disables this setting. If the value is not valid, it will be rounded up to **160** or down to **32768**. If the value is less than the current size of the actual environment, this setting will be disabled, as if it were set to **0**. If you specified the environment size in a PIF for COMMAND.COM, the PIF setting overrides this setting. The default is **0** with MS-DOS versions earlier than 3.2. Otherwise, the value is the **le:** parameter in the **shell=** line in CONFIG.SYS. To change this value, you must edit SYSTEM.INI.

### DisablePositionSave=*Boolean*

When this entry is **0**, the position and font used in a non-Windows application is saved in the DOSAPP.INI file when you quit the application. If this entry is **1**, any settings that weren't saved previously in DOSAPP.INI will not be saved. If this entry is **1**, the setting can be overridden for each non-Windows application by selecting the Save Settings On Exit checkbox in the Fonts dialog box. The default is **0**. To change this entry, you must edit SYSTEM.INI.

### FontChangeEnable=*Boolean*

This entry, if **1**, provides the ability to change the fonts when running non-Windows applications in a window on systems that use version 3.0 of the grabbers (usually in version 3.0 display drivers). Windows version 3.1 of the video grabbers (used in version 3.1 display drivers) include built-in support for changing fonts when running non-Windows applications in a window. If you are using a 3.0 grabber that has not been updated to include the ability to change fonts and you want to use this feature, set this value to **1**. However, when this entry is **1**, your screen may lose characters and the cursor may change size and position slightly. The default is **1** on systems that use Windows 3.1 grabbers, and **0** on systems that use Windows 3.0 grabbers. To change this entry, you must edit SYSTEM.INI.

### GlobalHeapSize=*kilobytes*

This entry specifies the size of a buffer in conventional memory that Windows allocates when running in standard mode. This buffer can be used to share information among all non-Windows applications that are started from Windows. This setting has no effect when Windows is running in 386 enhanced mode. The default is **0**. To change this entry, you must edit SYSTEM.INI. (You should never need to change this setting.)

### LocalTSRs=*list-of-TSR-applications*

This entry specifies which terminate-and-stay-resident (TSR) programs work properly if they are copied to each instance of a virtual machine. When you start Windows, it detects any TSR programs that are currently running. If the TSR is on the **LocalTSRs=** list, Windows will place a copy of the TSR in each virtual machine you run. Many TSRs will not run properly if they are added to this list. Make sure your TSR is fully compatible with Windows and can be copied to a virtual machine before adding it to the list. The default is **dosedit, pced, ced**. To change this value, you must edit SYSTEM.INI.

### **MouseInDosBox=Boolean**

This entry specifies whether the mouse is supported when running a non-Windows application in a window. Mouse support for non-Windows applications running in a window is available automatically if you are using a Windows 3.1 version of the grabbers. If you are using a Windows 3.0 version of the grabbers and you want mouse support, enable this setting. If you do not want mouse support, disable this setting. The default is **1** if an MS-DOS mouse driver is loaded that has the extension .COM or .SYS and that supports using a mouse with a non-Windows application. Otherwise, the default is **0**. To change this entry, you must edit SYSTEM.INI.

### **NetAsynchSwitching=0 | 1**

This entry indicates whether you can switch away from an application running in Windows standard mode after it has made an asynchronous network BIOS call. The default value of **0** specifies that such task switching is not possible. Switching away from some applications that make these calls might cause the system to fail. Once Windows detects an asynchronous NetBIOS call, it will not allow switching away from the application even if no more of these calls are made. Set this value to **1** if you are sure the applications you use will not receive network messages while you are switched away from them. To change this entry, you must edit SYSTEM.INI.

### **ScreenLines=number**

This entry specifies the number of lines displayed on the screen when a non-Windows application runs. An application that specifies a different screen mode can override this entry. The default is **25**. To change this entry, you must edit SYSTEM.INI.

### **SwapDisk=drive:directory**

This entry provides the name of the disk drive and directory to which Windows standard mode swaps non-Windows applications. The default is the directory pointed to by the TEMP environment variable; if there is no TEMP variable, then the default is the boot directory of your first hard disk (usually C:). If your system does not have a hard disk, the default is the root directory on the first floppy drive (usually A:). To change this entry, you must edit SYSTEM.INI.

[Top of This Topic](#)

[Top of Help File](#)



## [mci] Section



Example entries are in **red text** and probably do not reflect the correct settings for your system.

The **[mci]** section contains a list of the drivers that use the Media Control Interface (MCI) to play media files. These drivers are installed automatically when you run Setup. To change these values, choose the Drivers icon in Control Panel.

[mci]

WaveAudio=mciwave.dr**v**

Sequencer=mciseq.dr**v**

CDAudio=mcicda.dr**v**

Animation1=mciaap.dr**v**

[Top of Help File](#)



## [drivers] Section



Example entries are in **red text** and probably do not reflect the correct settings for your system.

This section contains a list of aliases (or names) assigned to installable driver files. The **[drivers]** section can contain this entry:

*alias=driver filename[parameters]*                      **midmapper=midimap.driv**

This entry assigns an alias name to an installable driver and specifies any parameters used by the driver. This entry is associated with the **drivers=** entry in the **[boot]** section of SYSTEM.INI. If the driver includes parameters, you must assign an alias to it and then specify the driver by alias name in the **[boot]** section. You can define multiple aliases by specifying multiple alias lines in this entry. The default is none. Most Setup programs for Windows applications add these settings to SYSTEM.INI when installing drivers, so you shouldn't need to change the values. To change this entry, choose the Drivers icon in Control Panel or use the installation program provided by the manufacturer.

[Top of Help File](#)



## [keyboard] Section

The [keyboard] section provides information about the keyboard.

**Important** All entries in this section are required. If you modify or delete one of these entries, Windows will not operate properly. There are no built-in default values for these entries; Setup assigns values based on the system configuration.

---

The [keyboard] section can contain the following entries:

**keyboard.dll=filename**

This entry specifies the name of a dynamic-link library that defines the layout for non-U.S. keyboards and keyboards not compatible with IBM-compatible systems. This entry is required for all keyboards except these U.S. keyboards: IBM XT, PC/AT, or enhanced; AT&T type 301 or 302; and Olivetti 83-key. To change this entry, choose the Windows Setup icon from the Main Group window or the International icon from Control Panel.

**oemansi.bin=filename**

This entry specifies the name of a file that defines OEM/ANSI code-page translation tables for systems not using code page 437 (the U.S. OEM character set). To change this entry, exit Windows and run Setup from MS-DOS. This setting also changes when you change the Codepage or Display settings.

**subtype=number**

This entry distinguishes, for some drivers, special features for keyboards that otherwise have identical layouts. This value can also be used by other drivers. To change the **subtype=** entry, choose the Windows Setup icon from the Main Group window. See the **type=** entry for information about type values. These values are defined for **subtype=**.

<b>Type value</b>	<b>Subtype value</b>	<b>Meaning</b>
1	2	Olivetti M24 83-key or AT&T 6300 type 301 83-key.
1	4	AT&T type 302 sometimes used on the 6300 Plus.
2	1	Olivetti 102-key ICO used on M24 systems.

**type=number**

This entry specifies the keyboard type. It can be any one of these values.

<b>Value</b>	<b>Meaning</b>
1	IBM PC or XT compatible (83 keys)
2	Olivetti 102-key ICO
3	IBM AT compatible (84 or 86 keys)
4	IBM compatible, enhanced (101 or 102 keys)

If this entry is blank or missing, the driver selects a default type. For IBM-compatible keyboards (using the KEYBOARD.DRV driver), the default type is determined by the BIOS. To change this entry, choose the Windows Setup icon from the Main Group window.

[Top of This Topic](#)

[Top of Help File](#)





### **[boot.description] Section**

The **[boot.description]** section is a list of strings used to describe the devices you can change when you run Setup. There is no reason to change these entries. If you do change values, you cannot use Windows Setup to update drivers to newer versions.



## [boot] Section

The **[boot]** section contains a list of the drivers and Windows modules that Windows uses to configure itself each time you start it.

**Important** All entries in this section are required. If you modify or delete one of these entries, Windows might not start or operate properly. Setup assigns all values based on your system configuration; there are no built-in values for these entries.

---

The **[boot]** section can contain the following entries:



Example entries are in **red text** and do not necessarily reflect the correct settings for your system.

**286grabber=filename**    **286grabber=VGACOLOR.2GR**

This entry specifies the filename of the grabber, which is the device driver that makes a non-Windows application visible when you run Windows in standard mode. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window and change the Display setting. If you are installing a device driver that is not included with Windows, exit Windows and run Setup from MS-DOS.

**386grabber=filename**    **386grabber=AVGA.3GR**

This entry specifies the filename of the grabber, which is the device driver that makes a non-Windows application visible when you run Windows in 386 enhanced mode. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window and change the Display setting. If you are installing a device driver that is not included with Windows, exit Windows and run Setup from MS-DOS.

**CachedFileHandles=number**    **CachedFileHandles=10**

This entry specifies the number of the most recently-used executable files (.EXE) and dynamic-link library files (.DLL) that can remain open. Windows keeps these files open so that they can be accessed quickly, ensuring optimal performance. However, some networks have a limit on the number of files that can be open on a server at a time. If you have problems running Windows from a network server, use a lower number for this value. Valid numbers are **2** through **12**. The default is **12**. To change this entry, you must edit SYSTEM.INI.

**comm.driv=filename**    **mouse.driv=mouse.driv**

This entry specifies the filename of the serial communications driver you are using. The default is none (blank). To change this entry, you must edit SYSTEM.INI.

**display.driv=filename**    **display.driv=256\_1024.DRV**

This entry specifies the filename of the display driver you are using. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window. If you are installing a device driver that is not included with Windows, exit Windows and run Setup from MS-DOS.

**drivers=filename | aliasname**    **drivers=mmsystem.dll**

This entry specifies the filenames or aliases of the installable drivers that load when Windows is started. An installable driver is a dynamic-link library that Windows treats like a device driver. If the drivers you want to use include parameters, you must specify them by alias name as defined in the **[drivers]** section of SYSTEM.INI, where you can list several filenames or aliases. The default is none (blank). Most Setup programs for Windows applications add these settings to the SYSTEM.INI file when installing drivers, so you shouldn't need to change the values. To change this entry, you must edit SYSTEM.INI.

**fixedfon.fon=filename**    **fixedfon.fon=vgafix.fon**

This entry specifies the filename of the fixed system font used by Windows version 2.x applications. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window. This entry also changes when you change the Display setting in Setup.

**fonts.fon=filename**    **fonts.fon=vgasys.fon**

This entry specifies the filename of the proportionately spaced system font used by Windows 3.1. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window. This entry also changes when you change the Display setting in Setup.

**keyboard.drv=filename**    **keyboard.drv=keyboard.drv**

This entry specifies the filename of the keyboard driver you are using. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window and change the setting for the Keyboard option.

**language.dll=library-name**    **language.dll=**

This entry specifies the name of the dynamic-link library that supplies language-specific functions. If no language library is specified, Windows uses the built-in U.S. English library. The default is none (blank). To change this entry, choose the International icon from Control Panel and change the setting for the Language option.

**mouse.drv=filename**    **mouse.drv=mouse.drv**

This entry specifies the filename of the mouse driver you are using. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window and change the setting for the Mouse option.

**network.drv=filename**    **network.drv=netware.drv**

This entry specifies the filename of the network driver you are using. The default is none (blank). To change this entry, choose the Windows Setup icon from the Main Group window and change the setting for the Network option.

**oemfonts.fon=filename**    **oemfonts.fon=vga OEM.fon**

This entry supplies the name of the font file for the OEM character set, which is associated with the Display setting. The default is none (blank). To change this entry, exit Windows and run Setup from MS-DOS. This entry also changes when you change the Codepage or Display setting in Setup.

**shell=filename**

**shell=progman.exe**

This entry specifies the Windows shell program that runs when you start Windows. Unless you change this entry, Program Manager will run when you start Windows. The default is none (blank). Setup initializes this value as **progman.exe**. To change this entry, you must edit SYSTEM.INI.

**sound.driv=filename**

**sound.driv=mmsound.driv**

This entry specifies the filename of the system sound driver you are using. The default is none (blank). To change this entry, you must edit SYSTEM.INI.

**system.driv=filename**

**system.driv=system.driv**

This entry specifies the filename of the system hardware driver you are using. The default is none (blank). To change this entry, exit Windows and run Setup from MS-DOS, then choose a new System setting.

**TaskMan.Exe=filename** **taskman.driv=taskman.driv**

This entry specifies the task-switching application that appears when you press CTRL+ESC. The default is **taskman.exe**. To change this entry, you must edit SYSTEM.INI.

[Top of This Topic](#)

[Top of Help File](#)



## SYSTEM.INI Overview

When you install Windows, Setup creates the SYSTEM.INI file, which contains global system information that Windows uses when it starts. The following sections can appear in SYSTEM.INI.

<b>Section</b>	<b>Purpose</b>
<b>[boot]</b>	Lists drivers and Windows modules.
<b>[boot.description]</b>	Lists the names of devices you can change using Windows Setup.
<b>[drivers]</b>	Contains a list of aliases (or names) assigned to installable driver files.
<b>[keyboard]</b>	Contains information about the keyboard.
<b>[mci]</b>	Lists Media Control Interface (MCI) drivers.
<b>[NonWindowsApp]</b>	Contains information used by non-Windows applications.
<b>[standard]</b>	Contains information used by Windows in standard mode.
<b>[386enh]</b>	Contains information used by Windows in 386 enhanced mode.

### Setup Assigns Values to Each Entry

Setup assigns a value to each entry in the **[boot]** and **[keyboard]** sections, and to the **Device=** entry and its synonyms in the **[386enh]** section. These entries must appear in SYSTEM.INI for Windows to function properly. These entries do not have built-in values, but have specific values that Setup assigns when you install Windows.

### Most Entries Not Mandatory

Many of the other entries described in this chapter are rarely needed and will not appear in the SYSTEM.INI file unless you add them yourself. Most of these entries have built-in values that are present whether the entry appears in SYSTEM.INI. You might need to change one or more of these values to improve the performance of Windows or of a specific application.

### Methods for Changing Values in System.Ini

The possible methods for changing values are noted for each entry in this chapter. You cannot change most SYSTEM.INI entries through Control Panel, but you can change many settings by running Setup. Other values in SYSTEM.INI can be changed only by opening the file and editing it with a text editor such as Notepad.



Any changes you make to the SYSTEM.INI file do not take effect until you restart Windows.

**Important** Always back up the SYSTEM.INI file before you open it. Use extreme care when making changes with a text editor, because you can disable your system if you edit the file incorrectly. If the entry can be changed without editing SYSTEM.INI, use that recommended method.

[Top of This Topic](#)

[Top of Help File](#)



## Windows 3.1 .INI File Changes

If you update to Windows, Setup automatically updates the .INI files with the following changes. Setup leaves all other sections and entries in your existing WIN.INI and SYSTEM.INI unchanged when you upgrade to Windows 3.1.

### For the WIN.INI file:

In the **[Windows]** section, Setup adds three new entries:

```
KeyboardDelay=  
ScreenSaverTimeout=  
DosPrint=
```

If the following entries are present in the 3.0 version of WIN.INI, Setup does not change them. If they are not present, Setup adds them:

```
device=  
documents=  
programs=com exe bat pif
```

In the **[extensions]** section, Setup adds **bmp=prush.exe ^.bmp**, and also adds **pcx=pbrush.exe ^.pcx** and **rec=recorder.exe ^.rec** if they are not already in WIN.INI:

In the **[intl]** section, Setup changes **sLanguage=English (American)** to **sLanguage=enu**.

In the **[ports]** section, Setup adds **LPT1.DOS** and **LPT2.DOS**. If they are not already present in WIN.INI, Setup adds these three entries:

```
file:=  
com3:=9600,n,8,1,x  
com4:=9600,n,8,1,x
```

Setup adds **[fontSubstitutes]** and **[TrueType]** to support TrueType fonts. The default **[fontSubstitutes]** entries are:

```
Helv=MS Sans Serif  
Tms Rmn=MS Serif  
Times=Times New Roman  
Helvetica=Arial
```

Setup adds the **[mci extensions]** section, with these entries to support multimedia:

```
wav=waveaudio  
mid=sequenccer  
rmi=sequencer
```

Setup adds the **[sound]** section, with these entries to support multimedia:

```
SystemDefault=ding.wav, Default Beep  
SystemExclamation=chord.wav, Exclamation  
SystemStart=tada.wav, Windows Start  
SystemExit=chimes.wav, Windows Exit  
SystemHand=chord.wav, Critical Stop  
SystemQuestion=chord.wav, Question  
SystemAsterisk=chord.wav, Asterisk
```

Setup adds the **[embedding]** section, with these entries to support Object Linking and Embedding:

```
SoundRec=Sound,Sound,SoundRec.exe,picture
```

Package=Package,Package,packager.exe,picture  
PBrush=Paintbrush Picture,Paintbrush Picture,pbrush.exe,picture

#### For the SYSTEM.INI file:

In the **[386enh]** section, Setup adds **device=** entries if it encounters Western Digital-compatible protected mode block devices in your system.

One new section, **[drivers]**, contains a list of aliases for installable drivers, and another new section, **[mci]**, lists the Media Control Interface drivers.



Many other changes in communications and enhanced mode capabilities for Windows 3.1 have created new entries in the **[386enh]** section.

[Top of This Topic](#)

[Top of Help File](#)



## Editing the .INI Source Files

If you copy the Windows files to a network server using the **setup /a** option (to install a shared copy of Windows), Setup uses WIN.SRC, SYSTEM.SRC, and CONTROL.SRC to build WIN.INI, SYSTEM. INI, and CONTROL.INI when a user installs Windows on a workstation with the **setup /n** option. To create custom initialization files for multiple installations, you can change the .SRC files.

To edit the .SRC files, first save a backup copy of the original file, then make editing changes in the file, following the guidelines in this chapter. Save the file with an .SRC filename extension in the WINDOWS directory on the network server. And, of course, test the new .INI file on a single system before installing Windows on multiple systems.

[Top of Help File](#)





## Changing Entries in .INI Files

Windows creates the initialization files during installation and assigns default values. Some entries are added or changed when you install or configure a Windows application. You can edit these entries to change the appearance or performance of Windows. There are several ways to change entries in the .INI files:

Use Control Panel, Program Manager, or File Manager to change many entries with menu commands and dialog box options.

Run Windows Setup again to change system settings, the keyboard or mouse configuration, or network options, and to add or remove printers and fonts.

Use a text editor such as Notepad to edit the file directly.

Choose a command such as Printer Setup from the File menu in Print Manager, and specify new options.

The entries in this chapter show which entries in WIN.INI and SYSTEM.INI you can change with Control Panel or Setup to avoid editing the .INI file directly, where it is easy to make editing mistakes. For the entries you cannot change with Control Panel or Setup, you must edit the .INI file with a text editor.

**Important** Always back up the .INI file before you open it, and use care when making changes. Incorrect changes can lead to unexpected results when you run Windows. Also, some editors can damage characters with ANSI values of greater than 127. We recommend that you use Control Panel or Setup whenever possible to make changes. If you must edit the file, use a text editor such as Notepad, System Editor, or Edit (the MS-DOS 5.0 text editor).

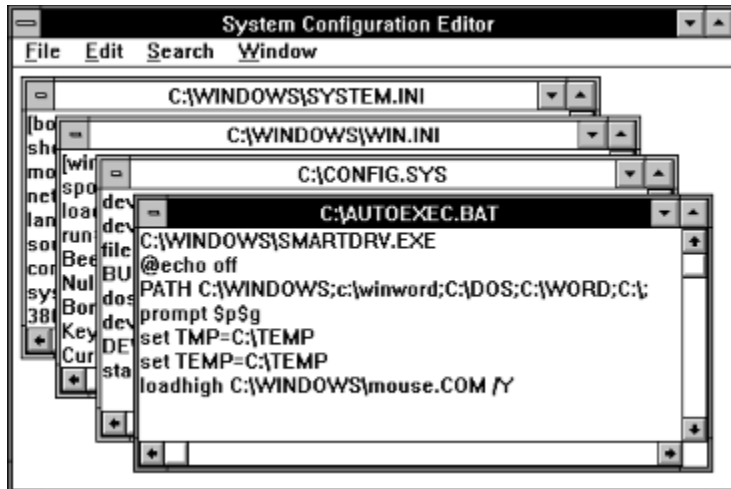
### To change .INI file entries with a text editor:

1. **Important** Create a backup copy of the .INI file you want to edit.
2. Open the .INI file with a text editor such as Notepad.
3. Edit the specific entries and save the file.
4. Restart Windows so the changes will take effect.

You can use the System Editor utility in Windows to edit SYSTEM.INI, WIN.INI, CONFIG.SYS, and AUTOEXEC.BAT at the same time. The System Editor is installed in your WINDOWS directory by Windows Setup.

### To edit system files with System Editor:

1. **Important** Create a backup copy of the .INI file you want to edit.
2. Choose Run from the File Menu in Program Manager. Type **sysedit** and press Enter.
3. Click the window in System Editor that contains the file you want to edit.



4. Edit the file, using the same text editing techniques as in Notepad.
5. Save the file, and choose Exit from the File menu to close System Editor.
6. Restart Windows so that the changes you made can take effect. If you edit CONFIG.SYS or AUTOEXEC.BAT, you must reboot your system for the changes to take effect.

[Top of This Topic](#)

[Top of Help File](#)



## Format of .INI Files

Windows initialization files are broken into logical groups called sections. Each section has this format:

**[*section*]**

*keyname*=*value*

---

<b>Item</b>	<b>Meaning</b>
<b>[<i>section</i>]</b>	The name of a section. The enclosing brackets ( <b>[ ]</b> ) are required, and the left bracket must be in the leftmost column on the screen.
<i>keyname</i>	The name of an entry, which can consist of any combination of letters and digits. For many entries, the <i>keyname</i> must be followed immediately by an equal sign (=).
<i>value</i>	An integer, a string, or a quoted string, depending on the entry.

---

For many entries, the *value* is shown as *Boolean*. To enable an entry that requires a Boolean value, you can enter **True**, **Yes**, **On**, or **1**. To disable such an entry, you can enter **False**, **No**, **Off**, or **0**. Case doesn't matter.

To include comments in .INI files, begin each line of comment with a semicolon (;).

The order of the sections in an .INI file is not important. Some Windows applications may add or insert other sections. The entries in each section are listed alphabetically in this chapter, but they do not appear in this order in the .INI files. So to change an entry, you must search for it within the section.

In this chapter, the items that appear in bold are actual words included in the entry. Values that must be substituted in the entry are shown in italics. When the value can be one of several choices, the choices are separated with a pipe character ( | ). For example: **Beep**=*Yes* | *No*

---

Any entry listed here that does not appear in your .INI file has the default value. Default values are shown for all the entries in this chapter.

[Top of This Topic](#)

[Top of Help File](#)



## About the Initialization Files

The Windows initialization files contain information that defines your Windows environment. Microsoft Windows and the Windows applications use the information in these files to configure themselves according to your needs and preferences.

The standard Windows initialization files are CONTROL.INI, PROGMAN.INI, SYSTEM.INI, WIN.INI, and WINFILE.INI. Other Windows applications may also add .INI files in the WINDOWS directory.

<b>.INI File</b>	<b>File contents</b>
WIN.INI	Entries that you can set to alter the Windows environment according to your preferences.
SYSTEM.INI	Entries that you can set to customize Windows to meet your systems hardware needs.
CONTROL.INI	Entries that describe the color schemes and patterns used in Windows, and the settings for printers and installable drivers.
PROGMAN.INI	Entries that define content of program groups.
WINFILE.INI	Entries that define the appearance and behavior of items in File Manager.
<i>application</i> .INI	Entries created and maintained by a specific Windows application. The file is created when the application is installed.

**Important** Errors made by editing initialization files can lead to undesirable results when you run Windows. Before changing any entry, make a backup copy of the file. Read Changing Entries in .INI Files later in this chapter for guidelines.

[Top of This Topic](#)

[Top of Help File](#)



## To Copy Graphics



### To copy Graphics Screens...

1. Go to the topic who's bitmap you want to capture.
2. Position the graphic on your monitor with the scroll bar.
3. Press the ***Print Scrn*** key. The graphic is now in the clipboard.
4. Press the **R**un, **P**aint **B**rush... menu item to launch pbrush.exe.
5. In Paint Brush, press edit / paste and position the graphic.
6. Edit the graphic as desired and save to a .BMP file.
7. The graphic is now ready to print or to be inserted in programs that accept device independent bitmaps.



**WinGuide** electronically displays portions of the Microsoft Windows Resource Kit Hardcopy Documentation in WinHelp format, strictly to make it easier on support professionals to use. Current topics include:

System.Ini Entries	Win.Ini Entries	Progman.Ini Entries
Control.Ini Entries	Winfile.Ini Entries	Application.Ini Entries
Troubleshooting Flowcharts	Installation/Setup Guide	Configuration Tips
Non-Windows Apps	PIF's & PIF Editor	Fonts
Printing	Compound Docs	Networks
Troubleshooting Windows		

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[Top of Help File](#)



