

# Tutorial

**How to install MS-DOS on 86Box for gaming!  
(with a menu system)**

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# Links for the files

**86Box:** <https://86box.net/> (Click download stable – At the bottom of the page take the Windows-64 version)

**86Box roms:** <https://github.com/86Box/roms> (Click code and then Download ZIP)

**86Box Manager:** <https://github.com/86Box/86BoxManager/releases>

**MS-DOS 6.22:** <https://winworldpc.com/product/ms-dos/622> (Click on Microsoft MS-DOS 6.22 Plus Enhanced Tools (3.5-1.44mb))

**MS CD Extensions (MSCDEX):** <https://winworldpc.com/product/ms-cd-extensions-msc/125>

**CuteMouse:** <https://cutemouse.sourceforge.net/> (Download version 2.1 for the wheel button handled by the BIOS)

**Sound Blaster Pro 2:** <https://winworldpc.com/product/sound-blaster-drivers/sound-blaster-pro> (Click on Sound Blaster Pro 2 Drivers (8-6-1992) (3.5-1.44mb))

**Direct Access 5.1.9:** <https://www.napostriouf.com/DA519NAP.zip>

**Warcraft: Orcs & Humans (demo):** <https://dosgames.com/game/warcraft-orcs-humans/>

# Installation of 86Box

## (and its components)

- 1- Decompress the file 86Box-Windows-64-(version).zip to a new folder named 86Box on a SSD drive (to avoid latency problems later)
- 2- Open the file roms-master.zip and slide the folder roms-master inside the folder you just created for 86Box.
- 3- Rename the folder roms-master to roms. (Which will give you access to all the bios and more)
- 4- Open the file 86BoxManager(version).zip and slide the file 86Manager.exe inside the same folder of 86Box.
- 5- Run the file 86Manager.
- 6- If you don't get any prompt to set the locations of 86Box, go to Settings.
- 7- Set the 86Box path with the folder you just created. And set the VM path by creating a VM path inside the 86Box folder. Then click OK.
- 8- Click ADD and set a name (I suggest something like MS-DOS 6.22 to make it easy to find).
- 9- Check the box Configure this virtual now. (If you already clicked OK, just select MS-DOS 6.22 and click Configure)
- 10- Machine tab
  - Machine type: i486 (Socket 3)
  - Machine: [SiS 471] ASUS VL/I-486SV2G (GX4)
  - CPU type: Intel i486DX2
  - Speed: 66
  - Memory: 16 MB
- 11- Display tab
  - Video: [VLB] S3 Trio64 (Diamond Stealth64 DRAM) (for AAA games, but for indie games it's preferable to use [ISA] Tseng Labs ET4000AX)
- 12- Input devices tab
  - Mouse: Standard PS/2 Mouse (click configure and set it to Wheel)
  - Joystick: 2-axis, 4-button joystick
  - Click Joystick 1. Then chose your controller/gamepad, then set X with X, Y with Y, Button 1 with Button 1, Button 2 with Button 2, Button 3 with Button 3 and Button 4 with Button 4. Then click Ok!
- 13- Sound tab
  - Sound card: [ISA] Sound Blaster Pro v2
- 14- Storage controllers tab
  - HD Controller: [VLB] IDE Controller
- 15- Hard disks tab
  - Click new. Then click specify, name it boot drive and click save. Cylinders: 2080, Heads: 16, Sectors: 63 (it should give you a 1023 mb drive)
- 16- Floppy tab
  - Click on the first 5.25" 360k; Type: 3.5" 1.44M
  - Click on the second 5.25" 360k; Type: None
  - In the CD-ROM drives: section click the first Disabled. Bus: ATAPI; Channel; 0:1 ; Speed: 72x.
  - Click OK.

# Setting up MS-DOS 6.22

## (and its drivers)

- 1- Click on MS-DOS 6.22 and click Start
- 2- Press DEL to enter the BIOS
- 3- Go to IDE HDD AUTO DETECTION
- 4- Press 2 then press enter.
- 5- Press ESC (6 times)
- 6- Go to BIOS Features Setup
- 7- Go to Boot Sequence and press “-” on the numpad (that will make A drive having the priority during when rebooting)
- 8- Press ESC and go to SAVE & EXIT SETUP. And type Y and press ENTER. (It’ll then reboot, you’ll be in 33 mhz instead of 66 mhz because of the turbo not loaded)
- 9- Click on the blue button on the right of the pause button (you’ll be back in 66 mhz)
- 10- Open your folder where you downloaded all the files and extract the files Microsoft MS-DOS 6.22, cutemouse21b4, Sound Blaster Pro 2 Drivers (8-6-1992) (3.5-1.44mb) and Microsoft MS-DOS CD-ROM in different folders.
- 11- Inside 86Box window click on the little diskette on the bottom left and select existing image and then DISK1.img inside the MS-DOS 6.22 folder and then press enter.
- 12- Press ENTER three times (it will then reboot)
- 13- Set the country and keyboard layout to your preference. Keep in mind the Keyboard layout standards changed a lot depending the area you live in since the release of MS-DOS 6.22, which is why in this tutorial I’ll keep United States; making it easier to find the keys.
- 14- Press enter until it start to install the MS-DOS.
- 15- When prompted for the next diskette click on the diskette icon on the bottom left, eject and then choose DISK2.img same principle for the third diskettes.
- 16- Once installation completed, eject the diskette and then press ENTER twice. (It’ll then reboot, you’ll be in 33 mhz instead of 66 mhz because of the turbo not loaded, but that’s ok for now)
- 17- Click the diskette icon on the bottom left, go to the MS-DOS CD-ROM folder and then click on disk1.img. Click OK
- 18- Type A: then press enter! And then type Install. Press Enter!
- 19- When a window with a path for the CDROM appear just press enter and wait the end of the installation. And press enter again!
- 20- Eject the diskette and then insert the one inside the Sound Blaster Pro 2 drivers.
- 21- Type inst-hd c: Press enter!
- 22- Press enter twice! (Let it install)
- 23- After the installation press Enter on each prompt until it ask if you want to reboot!
- 24- Eject the diskette and then press Y and press enter again! (It’ll reboot while loading your CD-ROM and sound card drivers.)
- 25- Click on the CD on the bottom left of the window and then click folder. Then select the folder bin inside the cutemouse folder.
- 26- Type md ctmouse. Then type xcopy d: [c:\ctmouse](#) and then press enter.
- 27- Type edit autoexec.bat and then press enter.
- 28- Go to the bottom of the document (last line) and type c:\ctmouse\ctmouse.exe
- 29- Press ALT and F simultaneously and save.

- 30- Press ALT and F simultaneously again and go to exit.
- 31- Eject the CD by pressing the CD icon on the bottom left and press eject.
- 32- Click on the blue button on the right of the pause button and wait for the reboot to complete.
- 33- Type memmaker and press enter
- 34- Press ENTER then press SPACEBAR and then ENTER, then ENTER
- 35- Then ENTER (three times).
- 36- It will then reboot, when prompted press ENTER again for another reboot.
- 37- Press enter twice!

# Installation of the menu system

**(to simplify it for everybody)**

- 1- Open the folder where you downloaded all the files. Then extract in a folder DA519Nap!
- 2- Inside 86Box window click on the little diskette on the bottom left and select existing image and then DirectAccess5.1.9NapNRetrogamingVersion.86f inside the DA519Nap folder.
- 3- Type md DA519Nap and press enter.
- 4- Type xcopy a: c:\DA519NAP /e and press enter.
- 5- Type edit autoexec.bat and press enter
- 6- Go to the bottom of the document (last line) and type cd DA519NAP then press enter then type main.bat
- 7- Press ALT and F simultaneously and save.
- 8- Press ALT and F simultaneously again and go to exit.
- 9- Type edit menu.bat and press enter
- 10- Type cd DA519NAP then press enter then type main.bat
- 11- Press ALT and F simultaneously and save.
- 12- Press ALT and F simultaneously again and go to exit.
- 13- Eject the diskette and then click on the blue button on the right of the pause button. (It should boot in the menu system)

# Let's test some software

**(to be sure everything is ok!)**

- 1- Open the folder where you downloaded all the files. Then extract in a folder DOSBOX\_WARCRAFT!
- 2- Let's try the demo version of AAA game, Warcraft! Click the CD on the bottom left, eject any CD and then click again the CD on the bottom left and click folder. Choose the DOSBOX\_WARCRAFT.
- 3- Press F10 to exit the menu system
- 4- Type md warcraft and then press enter
- 5- Type xcopy d: c:\warcraft /e and then press enter
- 6- Click on the blue button on the right of the pause button and wait for the reboot to complete. (You should be back on the menu system)
- 7- Press right arrow key and then press F2 and then press enter.
- 8- Use your mouse cursor and select Create/Modify Main Menu
- 9- On the line A type Games and then press Esc. Yes to the question.
- 10- Use your mouse cursor and select Create/Modify Sub-Menus
- 11- Use your mouse cursor and double click on Games
- 12- On the line A type Warcraft (demo) and then press F9
- 13- On the line A type Run the game and on the line B type Setup.
- 14- Select the line A and press F7
- 15- Select the warcraft folder and the choose on the right WAR EXE by double clicking on it.
- 16- Select the line B and press F7
- 17- Select the warcraft folder and the choose on the right SETUP EXE by double clicking on it.
- 18- Then press Esc. Yes to the question.
- 19- Press Esc until you're back to the main menu.
- 20- Double click on Games then Warcraft then Setup
- 21- Go to digitized sound card and press enter and then select Sound Blaster Pro and press enter.
- 22- 220, then press enter, IRQ 7 then press enter, DMA channel 1 then press enter.
- 23- Go to music sound card and press enter and the select Sound Blaster Pro II and press enter.
- 24- 220, then press enter, IRQ 7 then press enter, DMA channel 1 then press enter.
- 25- Go to save settings and exit! (You have now configured the audio for the game)
- 26- Let's try the game! Double click on Games then Warcraft then Run the game
- 27- Congrats! You can now play games!

# F.A.Q.

## (Or might potentially be asked!)

Question: Why did you made this tutorial?

Answer: Short answer to complete my series of tutorial (previous one were Windows 98 and Windows 3.11). Long answer, I feel that people are currently stagnating with emulator from 10 years ago, which were awesome for the epoch, but now technology advanced so much that we can now properly emulate a true PC with a great latency precision and proper hardware audio sound font. Too few people take advantage of it, because they think it look complicated, while actually it's not very much more complicated than using Dosbox... I know that some tutorial people who talk about their life in the middle of their tutorial make it look like harder due to the confusion because the subject they are talking about merge with the actual tutorial. They also tend to skip parts that for them are obvious, but not necessarily for somebody whose just starting. It's important to show every little details, that's what a tutorial is about, to teach to help people to LEARN, not to clout about how good you are on the back of beginners.

Question: Why you don't speak during the video going alongside this tutorial?

Answer: Because of the thematic of the channel. The idea is to show the product as they are. Giving an authentic experience to those who watch the videos! Which is also why, I try to minimize the director cut. And also, many people understand more easily while watching than hearing a voice over. I personally often cut the audio when somebody's voice annoy me. So the visual must speak for itself.

Question: Why did you use Sound Blaster Pro 2 instead of the classic Sound Blaster 16 or a more modern Sound Blaster?

Answer: Because I prefer the midi sound font of the Sound Blaster Pro 2. Sound Blaster 16 and more modern card tend to have exaggerated sound. By example, if you listen a midi music with some cymbal like shown in the video alongside this tutorial, in Sound Blaster 16 you will almost only hear the cymbal the rest gonna be buried, while in Sound Blaster Pro 2 it's more equilibrated. It doesn't sound like the real instrument, but globally and musically it still give a better result in most of the case. Except, of course, if a midi files was made having the Sound Blaster 16 in mind. But, that's rarely the case as the Sound Blaster 16 (and more recent) are more WAV and MP3. So less, focused on the midi than the Sound Blaster Pro 2 era.

Question: Why did you use a 486 DX/2 66 mhz instead of a more modern CPU in the emulation?

Answer: Because, I wanted to present a gaming PC that represent the golden age era of the MS-DOS gaming. That being said some games from older era you might want to use a 386 25 mhz. And for the most modern (only for some specifics AAA games) you might be willing to use a Pentium 150 mhz computer. But for like 80% of the game (to not say more) 486 DX/2 66 mhz is right on the spot.

Question: Why do you suggest the S3 Trio64 for AAA games and the Tseng Labs ET4000AX for indie games?

Answer: First, because many video cards in 86Box have for some reason trouble to output 16:10 resolution in games, which represent like 90% of the games, but these two output them perfectly. Well, AAA games after 1995 tend to be in 4:3 resolutions, but they still being a minority. Second reason is because the S3 Trio64 is the only video card in that run well the 16:10 that can push the limit of 486 cpu, which means, you'll get the best performance. But as we are talking about MS-DOS era, having



the best performance it's not always what you want as some games will just run too fast. When it happens you should use the Tseng Labs ET4000AX. The Tseng Labs card don't try to overpush they are all calibrated by resolution. So the higher resolution you use the higher performance. So game in low resolution won't be have excessive performance, so they normally run at normal speed.

Question: I don't have any keypad, so I can't press "-" like you do in the bios like you did in the tutorial! Do you have any advice on how to press it?

Answer: The first method is to temporary software rebind one of key on keyboard. Or the second method is using a virtual keyboard software that have a keypad on it, like the On-Screen Keyboard that comes with Windows 10 and 11. Here's how to use it: <https://www.makeuseof.com/tag/get-numeric-keypad-windows/>

Question: HELP! My cursor is stuck on the screen I can't read the rest of your tutorial!

Answer: Don't panic, just press F8 and F12 simultaneously and your cursor gonna be unstuck from 86Box window!

Question: How to Fullscreen?

Answer: Press simultaneously CTRL ALT and PAGE UP. (do it twice to avoid keyboard problems) To return in window mode, CTRL ALT and PAGE DOWN simultaneously!

Question: Why during the emulation sometimes the 486 DX/2 66 mhz, lost its turbo to become 33 mhz?

Answer: Because when a soft reset happen, it just don't have the physical button pressed, so no signal is sent to add the turbo. Yes, I know that many big tech YouTubers are shamelessly spreading that the turbo button was actually to slow down the PC. Despite that the purpose of why this button does exist, that statement is true, it's not however how it worked in the bios. The name turbo is not just marketing, it's actually a multiplier. So, if there is nothing to control the multiplier, then you won't be in turbo mode, so you'll be at 33 mhz. Which is why in the emulation you must do a hard reset to get it detected by the bios.

Question: For some reasons, I have problems controlling the mouse, what I'm doing wrong?

Answer: Simple answer the DPI of your mouse is proly set too high. By example, I personally use a Keychron M3 Mini mouse. If my mouse is set higher than 800 dpi, many pixel gonna get ignored, which make the mouse hell to control. So normally in-between 400 and 800 dpi (depending the basic polling rate of your mouse), you should be ok. But keep mind this is here MS-DOS, so most of the time the resolution you'll be in is 320x200 (16:9) or 320x240 (4:3). So, even 800 dpi is borderline high. However, if you are in a game that is 800x600, then you'll be more than perfectly fine using it a 800 dpi.

Question: My emulation is never at 100% why?

Answer: Well, unless you have a very old computer or a ton of software in the background, the 486 emulation should be actually pretty much light to emulate. So maybe, be sure that you run in administrator mode and add priority process to 86Box. And, of course, if you're capturing with OBS within the same pc the emulation is made, be sure that OBS use your video card encoder such nvenc or h264 or AMD AV1, to avoid a fight in-between 86Box and OBS for exclusivity of the first processor thread.

Question: Is the emulation perfect?

Answer: Sadly no! Still little things to correct. But, my experience with 86Box is presently is by FAR and VERY FAR, the best one I got for a MS-DOS. Yes, even better than DOSBox (and its much superior fork Dosbox-X) as much for drivers management than for the timing and the stability. However, the CD-ROM audio sometimes glitch, but it's only in very rare occasion. Most of the other problems you might encounter is usually because of the settings to config in config.sys or missing files in your game folder. Keep in mind that Dosbox is a all-in-one package emulator, while 86Box properly emulate a full computer with REAL bios, which is extremely helpful to run software properly as only what you need is acting in the background.

Question: Any reason why you didn't installed online functionality like you did in the Windows 98SE tutorial?

Answer: Yes, because the only good thing we could use from it in a gaming perspective would be connect to telnet BBS to play door games. But, I think, the door games systems should be in a totally different tutorial. Which, I will maybe eventually do.

Question: If I install MS-DOS 6.22 in another language, will your tutorial still be valid?

Answer: Absolutely! My first language is French Quebecer, so I grown up using a French Windows a french MS-DOS 6.22; all the steps are the exact sames. And as we are talking about MS-DOS games and software, they all using proprietary in-software system, so even if you have a different language you'll still be able to use game in different language than the MS-DOS system itself.

Question: Can I use your installation to try to use non-gaming software?

Answer: Yes absolutely! If you're an ANSI artist, I actually recommend you to use AcidDraw. And for the musical artist, well many DOS music artist on YouTube are actually using either PCem or 86Box. How to export your project outside 86Box without network? Find a software with a diskette in .IMG make a copy of it and rename it the way you want and the format that diskette inside the MS-DOS and copy everything in it. If it's too big, there are several software for DOS on the web to split your files in several diskettes. Then with the .IMG you can use it in any software that accept diskette (it will however not work on software that only accept CD such Daemon Tools because of the file format). You can use it in Dosbox-X and then you copy everything in folder which will then appear on your main computer!

Question: If I have some more question not answered here, where I could ask it to you?

Answer: On the video associated to this tutorial there's a comment section! Ask it there, I'm on YouTube every day. And don't worry, I might look rude due to what I said about other tutorials. But I'm not a rude person, far from that. I'm just worried that we might lose some good talents with unique lost old obscurity if they can't properly use a MS-DOS that run great. You know, when you show something that nobody know you try to show it in his best perspective.