

# Quick Start- *BING* {*BootIT-NG*} - Partitioning Software

by Steve Gruchawka (user, no affiliation with *terabyteunlimited*), revised Jan 28, 2006

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This file may be distributed free of charge provided it is not changed in any way. I have no connection with *terabyteunlimited* and provide no support for this document but offer it to you as an aid to quickly get up and running with the *BootIt-NG* software in a Windows environment. Please do email me with suggestions that may improve this Quick Start in future revisions. In the subject of your email include the word "BING" so it does not get mistakenly tossed as junk mail. gruch\_s@hotmail.com

*BING* is available from <http://www.terabyteunlimited.com/bootitng.html>

## Overview

This is an overview of how to use *BING* and get it up and running as quickly as possible in a Windows environment.

*BING* is entirely self-contained (requires no operating system to install and run). *Bing* performs these three functions:

Partitioning [can create over 200 primary partitions, if needed]

Boot Manager [can boot from any bootable partition or volume on up to eight hard drives]

Imaging [can backup/restore your entire operating system, all applications and data]

I went through a steep, time consuming learning curve with this program. But once I figured it out - it was very simple to use. I prepared these notes so you can avoid the difficulty I went through and you can learn how to use this great program quickly and easily.

In my humble opinion, *BootIT-NG* {*BING*} is the best partitioning software available - **period!** I can't praise it enough. It is fantastic - nothing else even comes close. As you may know, the MBR {Master Boot Record} only supports four primary partitions. *BING*, however, creates an extended-MBR {EMBR} and automatically shuffles the needed partition information into the MBR allowing up to 200+ primary partitions - each accessible automatically from a custom boot menu. In addition, *BING* can create images of your partitions for easy backup/restore. Best of all, in my experience, it works flawlessly - provided you understand how to use it.

Imaging can also be done with Terabyte Unlimited's Image for DOS (IFD), and Image for Windows (IFW). These offer the advantage of backup/restore to a network drive, not just a local drive as with *BING*. If you do not need to image/restore over a network drive, *BING* provides excellent imaging capability and is all you need. A detailed feature comparison chart for *BING*, *Image for DOS* (IFD), and *Image for Windows* (IFW) can be found at: <http://www.terabyteunlimited.com/prodgrid.html>

Heffy's excellent short video tutorials on imaging/restoring with *BING*, IFD and IFW can be found at: <http://www.terabyteunlimited.com/support.html>

## Quick Summary of Creating and Modifying Partitions

- Burn the software to a CD and install the software to your hard drive from the burned CD. On reboot, provide the software registration number on the hard drive.
- Click the *Maintenance* button on the *Boot Menu* [Figure 1] to enter the Main Screen for the software [Figure 2].
- To create, modify or delete partitions:

Main Screen [Figure 2] > *Partition Work* [Figure 3]

[See examples: Figures 4-8]

- To add partitions to the *Boot Menu*:

Main Screen [Figure 2] > *Boot Edit* [Figure 9] > *Add* [Figure 10] > *HD* then *Boot* [drop down menus] then *Identify* [item name that will appear in Figure 1] then *Icon* selection

See Examples [Figures 12-14, 22]

That is all there is to it. The four bullets above describe the whole process. What follows is an elaboration of the above with specifics, suggestions and cautions.

For quick screen shot descriptions, see Lee Chappelle 's excellent Help File at:

<http://members.shaw.ca/bootitng/>

## If You Need More Details Beyond This Quick Start PDF

To keep this Quick Start brief, I made assumptions of basic computer knowledge on your part (like how to burn a CD, MBR, imaging, etc.). I prefer to use just one operating system per partition and my description will only discuss that. If you need more details or want to install multiple operating systems on each partition, see the excellent manual, FAQs, Knowledge Base and tutorials available at:

<http://www.terabyteunlimited.com/support.html>

## Preparation

- If you already have an OS installed on your computer that you are happy with, use your preferred disk imaging software [*BING*, *Image for DOS*, *Image for Windows*, *Acronis*, *Altiris*, *Ghost*, etc] to create a backup image. If you do this, make sure you know how to use your software so you can restore later. I find the easiest way to do this is to create the image over a network to another computer. You can, however, create the image on another hard drive or partition in your computer if you only have one computer. You can also burn the image to DVD/CD. There is no greater time saver than to have a good image to use to quickly restore your computer after it dies or gets hopelessly corrupt from a virus, spyware, etc. Make a DVD backup of your image in the event the one on the hard drive gets destroyed.
- Buy the *BootIt-NG* software from Terabyte and burn a CD to contain the software as follows:
  - Extract the contents of *BootItNG.zip* on a Windows computer (see manual if not on Windows).
  - Double-click *BootItNG.exe* and follow the prompts. This will create an ISO image called *BootItNG.iso*
  - Burn this ISO image to a CD - this will be your bootable *BING* CD.
  - Create a notepad text file called *REG.txt* and copy and paste the two line registration strings into this file. Copy it onto a floppy disk - it will be used in the next section.

## Install *BING*

- Assuming an empty hard drive, boot to the *BING* CD you created and install it in a small FAT [6/6h: FAT-16] or [223/DFh: BootIt EMBRM] partition on your computer {uses only 8 mb}. This can all be done automatically with *BING* by selecting this option. If your hard drive is not

empty, you will need to have at least 8 mb free, or reduce the size of the current partition to create at least 8 mb of free space in its own partition. For details on how to do this, see the tutorial "*Installation Step 2*" at <http://www.terabyteunlimited.com/examples.html>

- You will be asked if you want to enable more than four partitions. Usually you will say, "Yes." However, if you say yes, you must remember that from this point onwards, you can NOT use any partitioning software other than *BING*, because only *BING* will recognize the EMBR. {Why would you want to use anything else anyway!}
- Reboot and when the boot menu appears [Figure 1], click the "*Maintenance*" button. Then insert the floppy made above with the registration strings, and on the *BING* desktop [Figure 2] click the "*Register*" button, then click the "*Import*" button. [If the file is not found then be sure you didn't create the file as reg.txt.txt by mistake.] Click the OK button and *BING* is installed.

## Partitioning

- **Hard Drives**
  - Unless you are installing outrageous numbers of operating systems, or your hard drives are unusually small, what works best is to have **all operating systems on one hard drive** [each in their own partition] and have **all your other hard drives for your data** [backup disk images, projects, documents, photos, videos, clipart, etc].
  - I have tried several ways of doing this over the years and this works best.
  - **Install your programs to the 'c' drive of each OS.** Then when you image this partition, it is complete and functional. If, instead, you install your programs to another hard drive or partition, it gets really confusing to try and match up which OS and which Program partitions go together. Since installation of programs adds files to the Windows directory, there is no advantage to installing the programs to a separate partition or drive - it just creates more work for you to synchronize both partitions and your imaged backups.
  - Having your data on separate hard drives makes it easier for you when your OS becomes corrupt. Just, restore your OS partition - you now have a fresh OS with your programs and your data remains untouched. This also works with viruses. If a new virus destroys your OS, it usually leaves your data drives intact. Restore your OS from your backup image and you are good to go.
  - This also makes it easier if your data grows and you need to replace your data hard drive with a large drive, or if you want to transfer your data drive from one computer to another.
  - You can have two hard drives for data - one as a daily back up. Then if one of your data hard drives crashes, you have not lost your recent data. Your older, more stable data should be backed up to DVD. [Assuming you are a home user without an expensive tape backup system, or online backup vendors.]
  - If you place operating systems on more than one hard drive, each hard drive needs to have a copy of *BING* installed. That is, each hard drive that boots an OS, needs a copy of *BING*. If you have all your operating systems on one hard drive, you only need *BING* on this one drive. If you have data-only hard drives, these do not need a copy of *BING*.
  - **Adding a hard drive- Caution.** If you have *BING* and partitions already installed and then later add an additional hard drive, be careful which cable you hook it to. If your operating systems are installed on HDO, do not have the new hard drive become HDO or

your partitions will no longer work. HDO will typically be the 'Master' hard drive on the Primary IDE controller. If you install the hard drive in the wrong place, when you boot, it will say, "Unable to find BootIt in EMBRM Partition." If this happens, do not worry, just shut off the computer and put the hard drive the correct cable.

- **Boot Menu and Main Screen:**

- Upon booting up, when the *Boot Menu* [Figure 1] appears on the screen, select 'Maintenance' - this will take you to the *Main Screen BING desktop* [Figure 2].

- **Global settings:**

- On the Desktop, click the *Settings* [Figure 15] button.
- The defaults are usually adequate but you may want to enter a *Password*. [Then this password will be required to enter the *Main Screen* through the *Maintenance* button.]
- Set the *Timeout* to something like 6 seconds for the length of time the Boot menu stays on the screen before it automatically goes to the default partition.

- **Create, modify or delete a partition:**

- On the Desktop, click the *Partition Work* [Figure 3] button.
- To create a partition, select 'Free Space' in the Partition section, then click the *Create* [Figure 16] button.
- Select the appropriate File Type from the drop down menu [Figure 17].
- Enter a name for this partition and the size you desire for this partition.
- Click *OK* and the partition is created.

[As a side note, in the *Partition Work* window, there is a *View MBR* [Figure 18] button. Clicking this will show you what is currently in the MBR. However, this is dynamic and changes every time you make a new selection in the *Boot Menu* [Figure 1]. There is no need to manually alter or change anything in the MBR - it is all done automatically thru the Boot Menu. Whatever you have configured in the 'Boot Edit- Add' [Figure 10] window is what is automatically entered into the MBR.]

- **Add partition to the Boot Menu:**

- On the Desktop, click the *Boot Edit* [Figure 9] button.
- To add this partition to the Boot Menu, click *Add* [Figure 10].  
[The screen that appears is how you want the MBR to be configured when this menu item is selected.]
- From the drop down menus in the *Boot Details* section, select the hard drive number, then the partition you want for this menu item - it will then automatically be placed in Position '0' [partition 1] under the appropriate hard drive listing in the *MBR Details* section. [Alternatively, you can select a position under *MBR Details* like *HDO* Position '0' then click the *Fill* button and select a partition [Figure 11]. However, the first method is easier and quicker.]
- Normally, for Windows operating systems, you only want one OS partition in position '0' [partition 1] per menu entry. For Linux, you want at least the root drive and swap drive listed [otherwise Linux will create a new swap drive and corrupt your hard drive partitioning.] See examples [Figures 12-14, 22].
- If you have more than one hard drive, you may or may not want the additional hard drives visible under that menu choice. If you want hard drives other than the boot drive visible when your OS boots, select the MBR entry for each additional data drive you want visible as in Figure 22, [or alternatively, the individual partition you want visible]. Again, you do this in the *Boot Details* section with the *HD* and *Boot* drop down

menus. To summarize, for each Boot Menu item [Figure 1], only what shows up on the *Boot Edit* screen [Figures 12-14, 22] will be visible when this OS boots.

- Name the *Boot Edit* menu item under *Identity*.
- Click the *Icon* button and select an icon for this partition, if desired.
- Click *OK* on the *Boot Edit* screen. [You can re-open this screen at any time to edit it.]
- **Get the partition into the MBR then install or restore your operating system:**
  - On the Desktop, click the *Resume* button and select the partition to boot to and click the *Boot* button [Figure 1].

Since at this point there is no operating system installed, it will tell you so. However, by clicking *Boot* what you have done is enter the information from this choice into the MBR and set up this partition to be the one the installation will act on.

- Next, click *Maintenance* and get back to the Main Screen [Figure 2].
- Insert your operating system installation disk (if fresh installation) or imaging software disk (if restoring a previously saved image) and press the *Reboot* button on the *BING* Main Screen. [Except for MS-DOS - see "Limitations" section on how to install DOS.]
- Now carry out the installation. The installation will take place specifically to this selected partition.

Note, if you have, say, 10 partitions, this is the procedure you used to be sure you are installing to the correct partition. If restoring an image using imaging software, make sure you do NOT change the partition size with the imaging software or you will corrupt your drive. Only use *BING* to change partition sizes.

- If a fresh install, the installation may hide the boot menu. If the boot menu does not surface after installing your OS, reinsert the *BING* CD and select, "restore boot menu" - this will instantly correct the situation.
- **Backups:**
  - Install as many partitions and operating systems as you wish and have room for on your hard drives, by repeating the above procedure.
  - Back up your *BING* information to a floppy - twice (two floppies recommended - better safe than sorry - it is very quick). You do this by selecting *Maintenance* from the Boot menu [Figure 1], then on the Main Screen [Figure 2] clicking the *Backup* [Figure 19] button, then insert a floppy in the drive, and select the checkboxes for *Backup*, *HD number* and *BootItNG*. This will backup your *BING* and partitioning information so it can be restored if the *BING* partition becomes corrupt.
  - When your images are as you want them, back them up with your imaging software and save the images to DVD media.

{If a new virus, etc. hits that your faithful anti-virus, anti-spyware software didn't stop, you can easily recover from your burned disk images}

## Everyday Usage

- Once you have your computer setup with *BING* as above, when you boot your computer, the Boot Menu [Figure 1] will appear with all the operating systems you have installed and configured on this menu. Simply click the one you want and press the *Boot* button.

- The last operating system to boot will be the default boot partition that will be booted after the *Timeout* period set in the Settings window. This partition will remain the default boot partition until you manually select a different partition. Selecting a different partition, will now make this different partition the new default boot partition.
- You can add, delete, resize partitions anytime you wish by clicking the *Maintenance* button when the *Boot Menu* [Figure 1] appears and on the *Main Screen* [Figure 2] clicking the *Partition Work* [Figure 3] button. For example, to resize, click the *Resize* [Figures 20-21] button.

## Limitations and suggestions you should be aware of

These limitations are those of the BIOS and OS, not *BING*.

- **MS-DOS** - If you want to install MS-DOS, the partition must be smaller than 2 gb (FAT-16) and the partition must be fully contained within the first 8 gb of the hard drive or DOS it will not boot.
- **MS-DOS** - When installing, make sure you first see the *BING Boot Menu* [Figure 1] and select MS-DOS **BEFORE** you place the first installation floppy in the drive. Next you will see a **black** screen that says, "This partition does not contain an OS...Press any key to run the BIOS bootstrap loader..." When you see this screen, insert the first MS-DOS floppy into the drive and press enter.

**Cautionary Note:** If you **boot** from the MS-DOS floppy and install, it will destroy all your partitions and software on your hard drive. Be sure to follow the above procedure which gives you the black screen indicated.

- **F-Disk** will not work on drives larger than 64 gb, for a fix, see <http://support.microsoft.com/default.aspx?scid=kb;en-us;263044>. However, after *BING* is installed, if you select YES for more than four partitions, you can no longer use F-Disk, or any other partitioning software as explained in "Install *BING*" above. With *BING*, you do not need F-Disk or any other partitioning software. *BING* is much better.
- **Win 9X, Win ME** - Keep hard drives smaller than 128 gb for these operating systems or the drive will be corrupted if it attempts to access space above 128 gb.  

[Note: a driver may available from the manufacturer of the IDE controller that supports hard drives larger than 128GB for Win 9X and Win ME]
- **Win 2000** - Must use sp3 or greater for drives larger that 128 gb, or risk corruption.
- **Win XP** - Must use sp1 or greater for drives larger that 128 gb, or risk corruption.
- **Linux** - needs a minimum of 2 partitions - a Linux native partition [83h/131] and a Linux swap partition [82h/130]. Make sure to include both partitions in the Partitions-Edit screen. If you omit one, Linux will create it and corrupt your drive. When installing Linux, it is crucial that you install *LILO* or *GRUB* to the native partition. Do not install *LILO* or *GRUB* to the MBR. Each version of Linux will offer you a customization or expert option to allow you to choose to install *LILO* or *GRUB* into the native partition. It is also crucial that you do not allow Linux to create its own partitions - instead use the ones you creating with *BING*.
- **Linux resizing** - If you want to resize a Linux partition after installation, make sure your follow these instructions: <http://www.terabyteunlimited.com/kb/article.php?id=132>
- **Imaging Linux** - BootIt-NG, IFD, and IFW will create a backup Linux image and be able to restore that image successfully. BootIt-NG can create this image on a local hard drive, USB drive, Firewire drive or burn to a DVD/CD. IFD and IFW can additionally create/restore

images to network drives. Other 3rd party imaging software packages that I have tried [not from Terabyte], did not do well with Linux. The others created a supposedly "good" image and restored a "good" image but the image would not boot. So for Linux images, I strongly suggest you use Terabyte's products.

- **Which Partition** - I find it most convenient to setup my partitions so every partition is "Partition 1" on the Boot Edit screen [Line '0' see Figure 10] - except for my Linux swap partition - which is "Partition 2" [Line '1' see Figure 13]
- **Boot.ini** - If you restore an operating system on a partition number [1 thru 4] different from what it was created on, it will not boot until you modify the *boot.ini* file to reflect the correct partition number. The best utility I have found for editing the *boot.ini* file is *EditBINI* available free from Terabyte at: <http://www.terabyteunlimited.com/utilities.html>
- **Domains** - If your computer is on a Windows Domain and you create several sequential images from the same OS, and you want some of these images in their own partitions, you will need to rename each "computer" to give each of these images a distinct computer name; otherwise you will not be able to log on. For example, XPv [XP-virgin], XPb [XP with basic utilities] and XPa [XP with applications]. Images at these various stages are useful for troubleshooting installations that do not work properly. You all know the drill. Your computer works fine, then you install several new apps and a few weeks down the road the computer no longer works correctly. With images in various stages, you can backtrack to a previous image and troubleshoot which application is causing the problem with a less a time and trouble than you would otherwise.
- **Dynamic drives** are not compatible with any OS or partitioning software [like *BING*] other than Windows 2000 or XP. Once a drive has become a dynamic drive you should not use anything other than Windows 2000 or XP to create partitions on it. This means you can not use *BING* on Dynamic drives. To use *BING*, setup your hard drives as *Basic* [not *Dynamic*] drives.
- **RAM** - Make sure the RAM in your computer is good. If it is flaky but "works," your software and data will degrade and become corrupt over time. The best utility for checking RAM is the freeware *memtest86* from <http://www.memtest86.com> Run the test overnight on your computer to check for RAM errors. If you find errors, replace the RAM under warranty citing your tests with *memtest86*. I have replaced thousands of dollars of RAM at no charge based on testing with *memtest86*. This utility is respected by the RAM industry.
- **BIOS** - If your BIOS is old [pre-1994-98] it can have limitations. Upgrade your BIOS or replace your motherboard with a more recent vintage. BIOS limitations can involve boot partitions needing to be within the first 1025 cylinders for some operating systems, hard drives limited to 8 gb, and mouse issues.
- If you have problems not addressed here, see: <http://www.terabyteunlimited.com/kb.html>

## Cool Features

The entire program is cool, but here is a useful item:

- **Screen capture** - When in the *BING* program, you can place a floppy in the drive and hit F12 to create a screen capture of the current screen.

## Printing

There are two sets of Figures. The first [large] set is for screen viewing. The second [small] set is for printing to conserve paper and ink. **Print pages 1-7 and pages 30-33.**

Figure 1- BOOT MENU

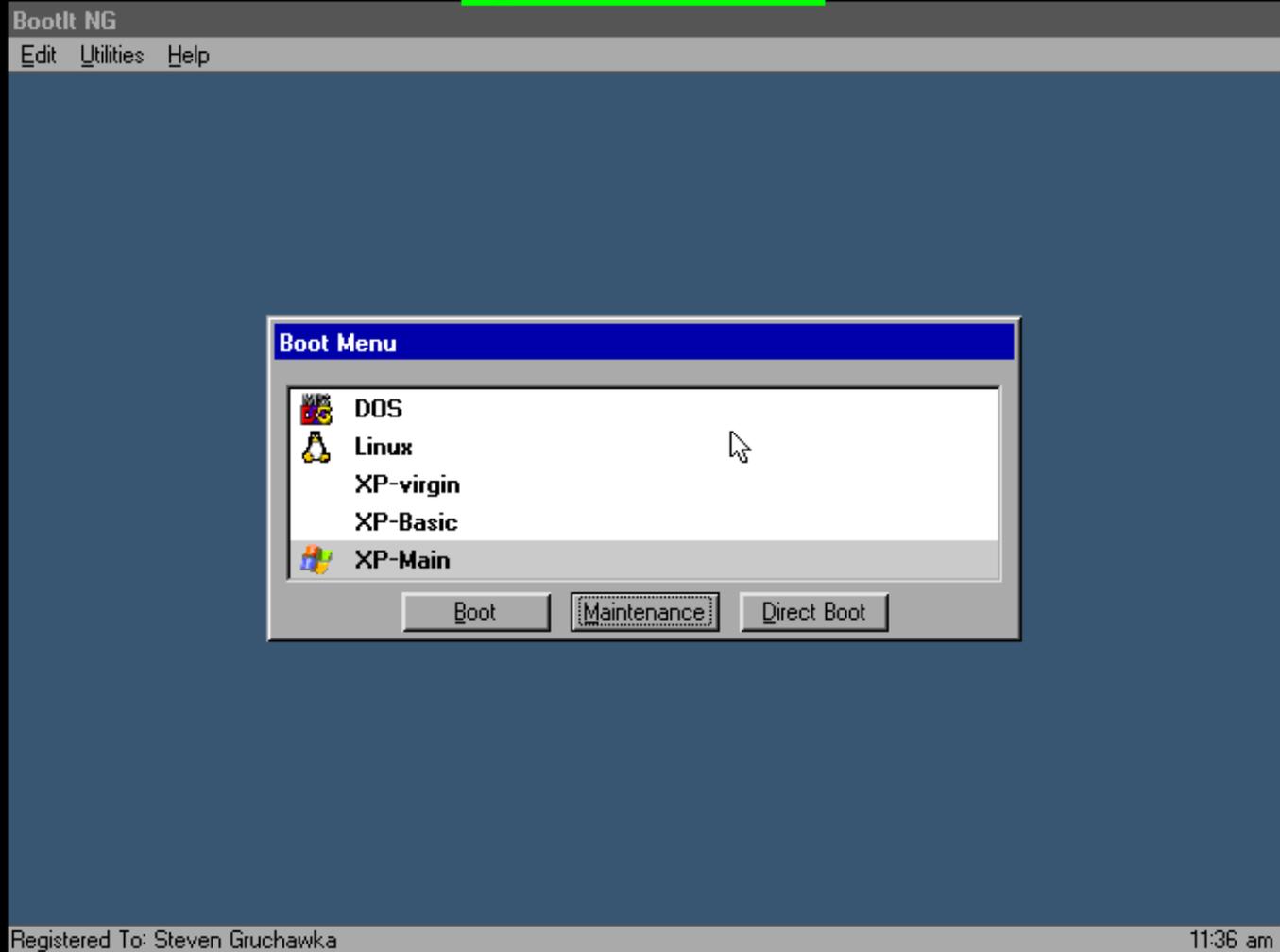


Figure 2- MAIN SCREEN [Maintenance]

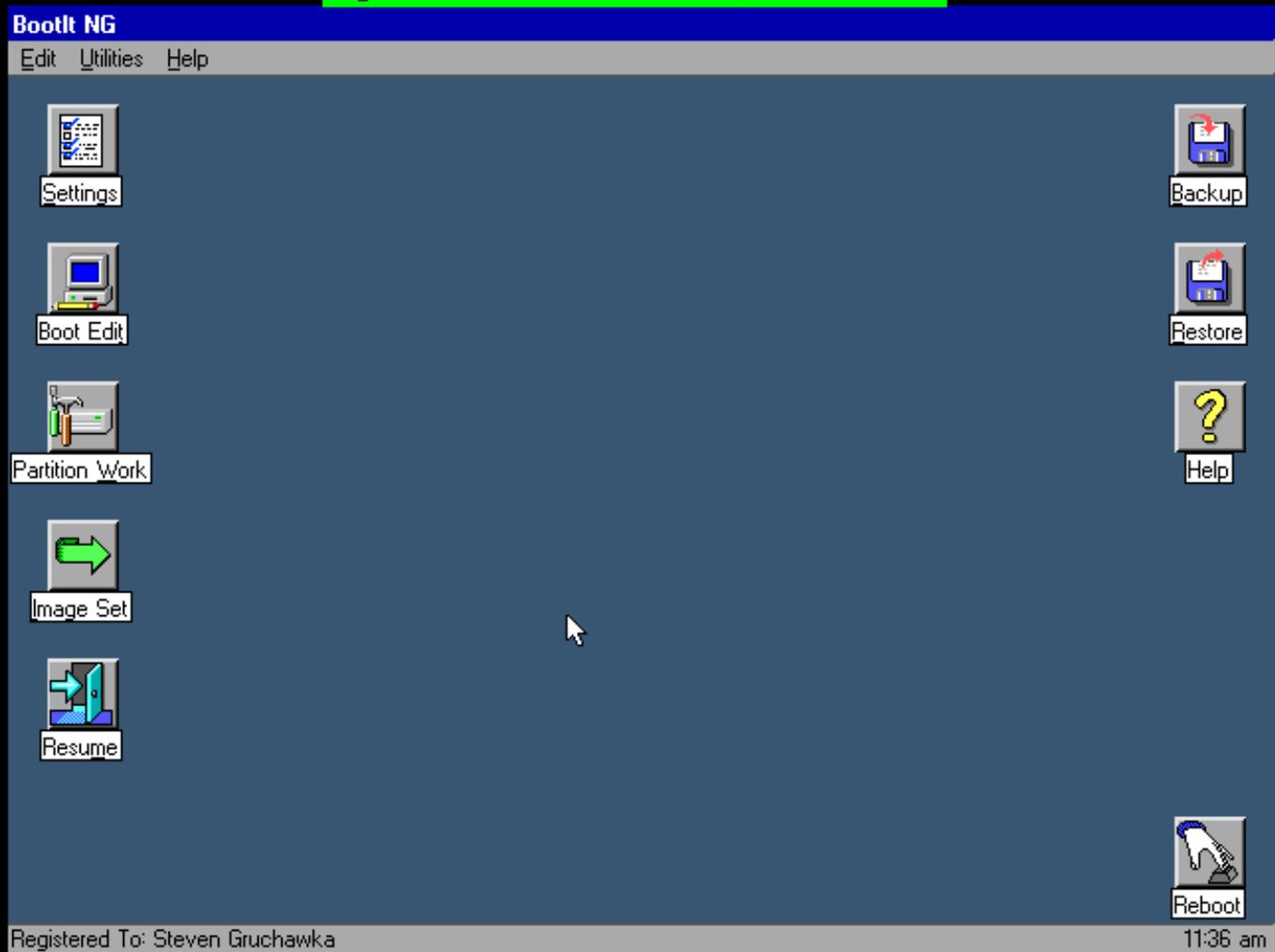


Figure 3- Main- Partition Work

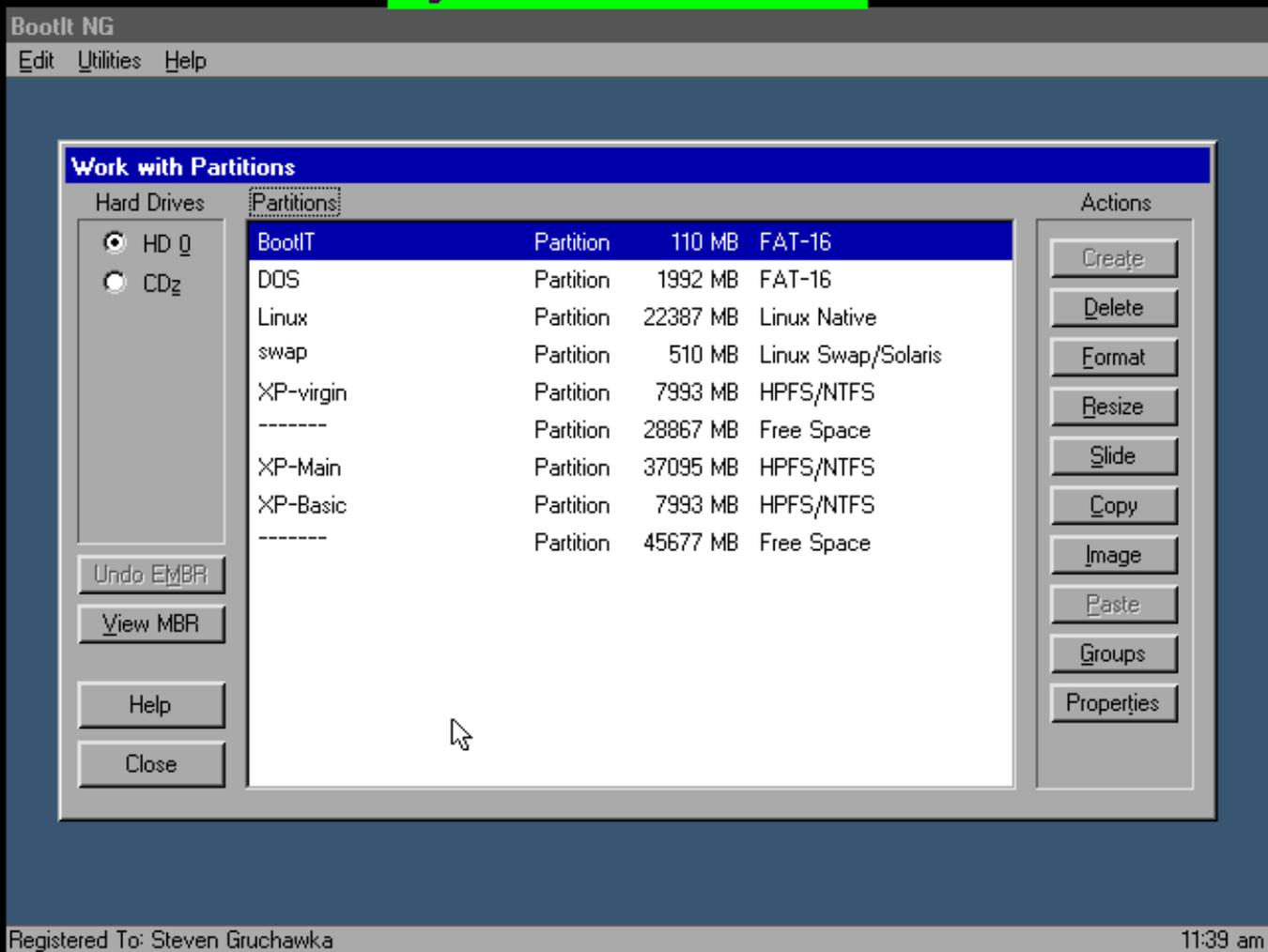


Figure 4- Main- Partition Work- Properties- BING

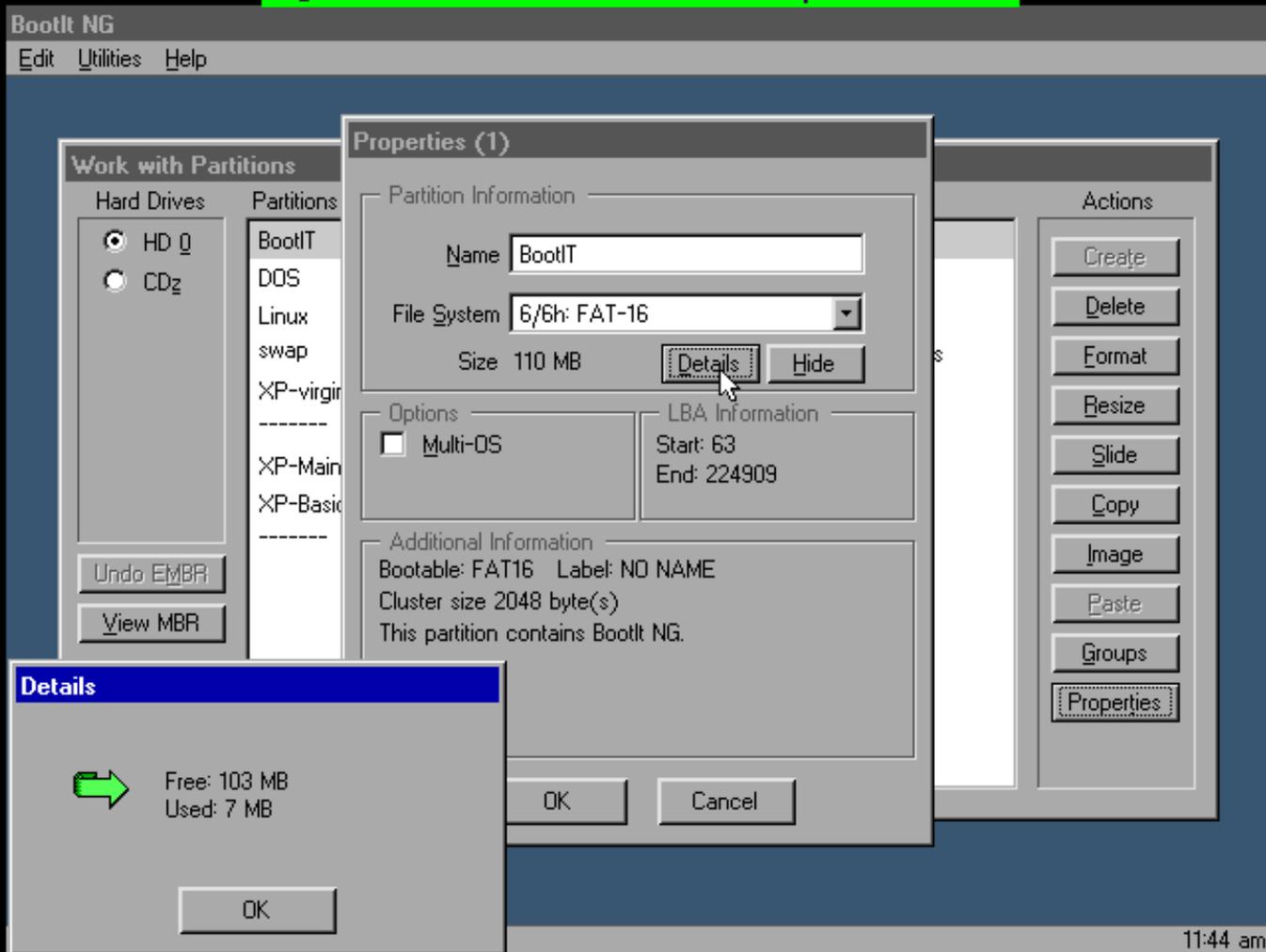


Figure 5- Main- Partition Work- Properties- DOS

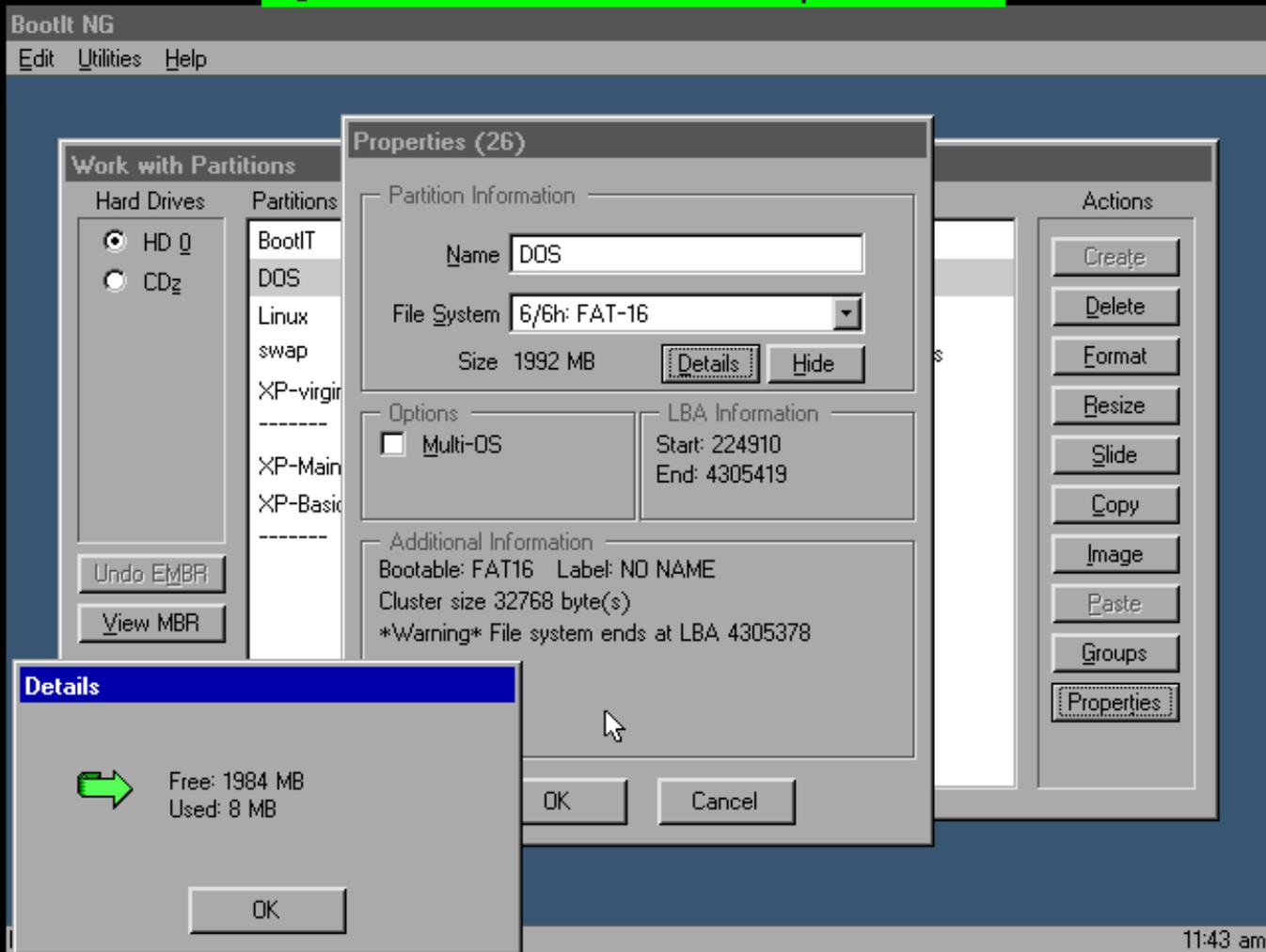


Figure 6- Main- Partition Work- Properties- Linux Root

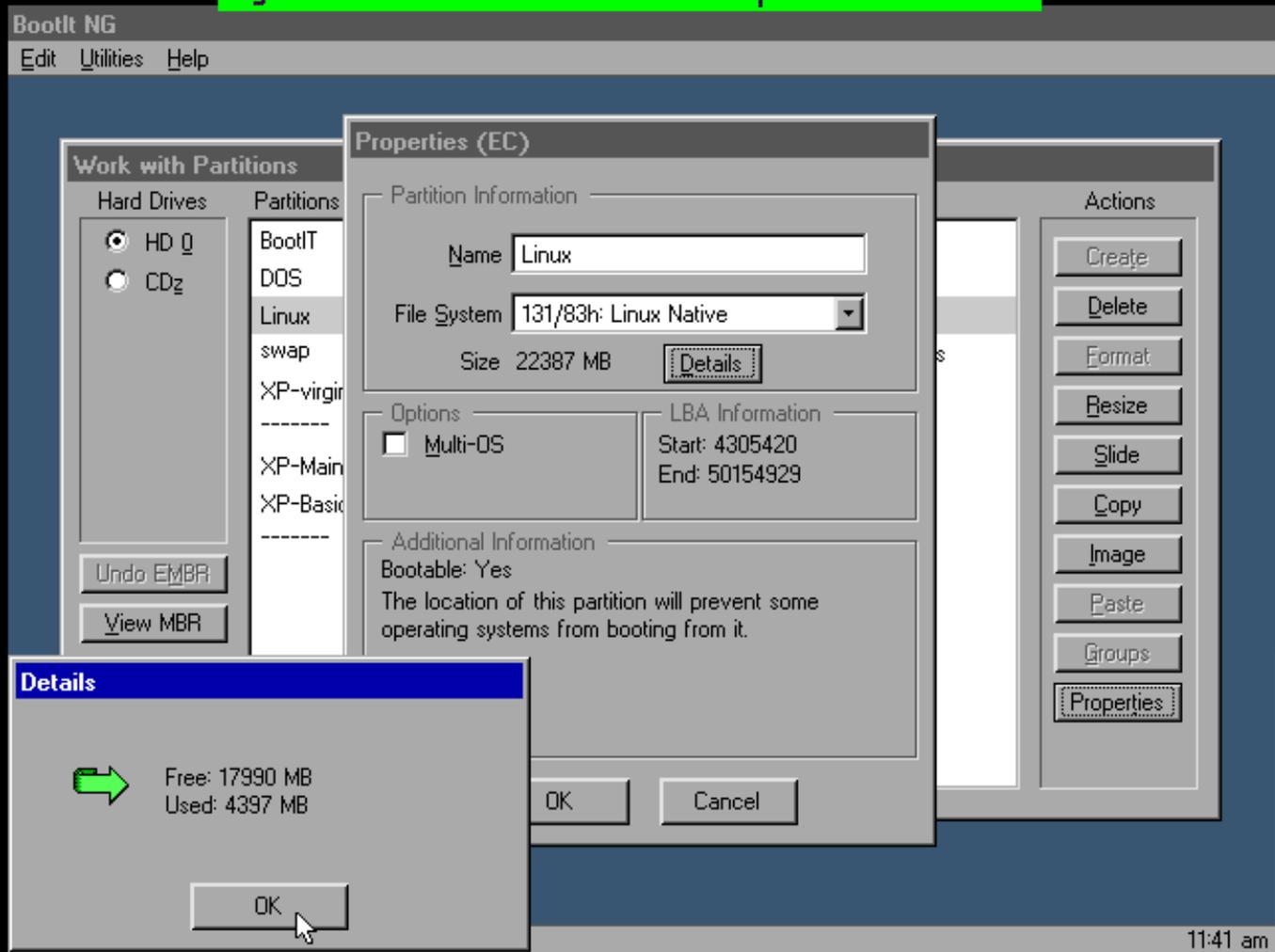


Figure 7- Main- Partition Work- Properties- Linux Swap

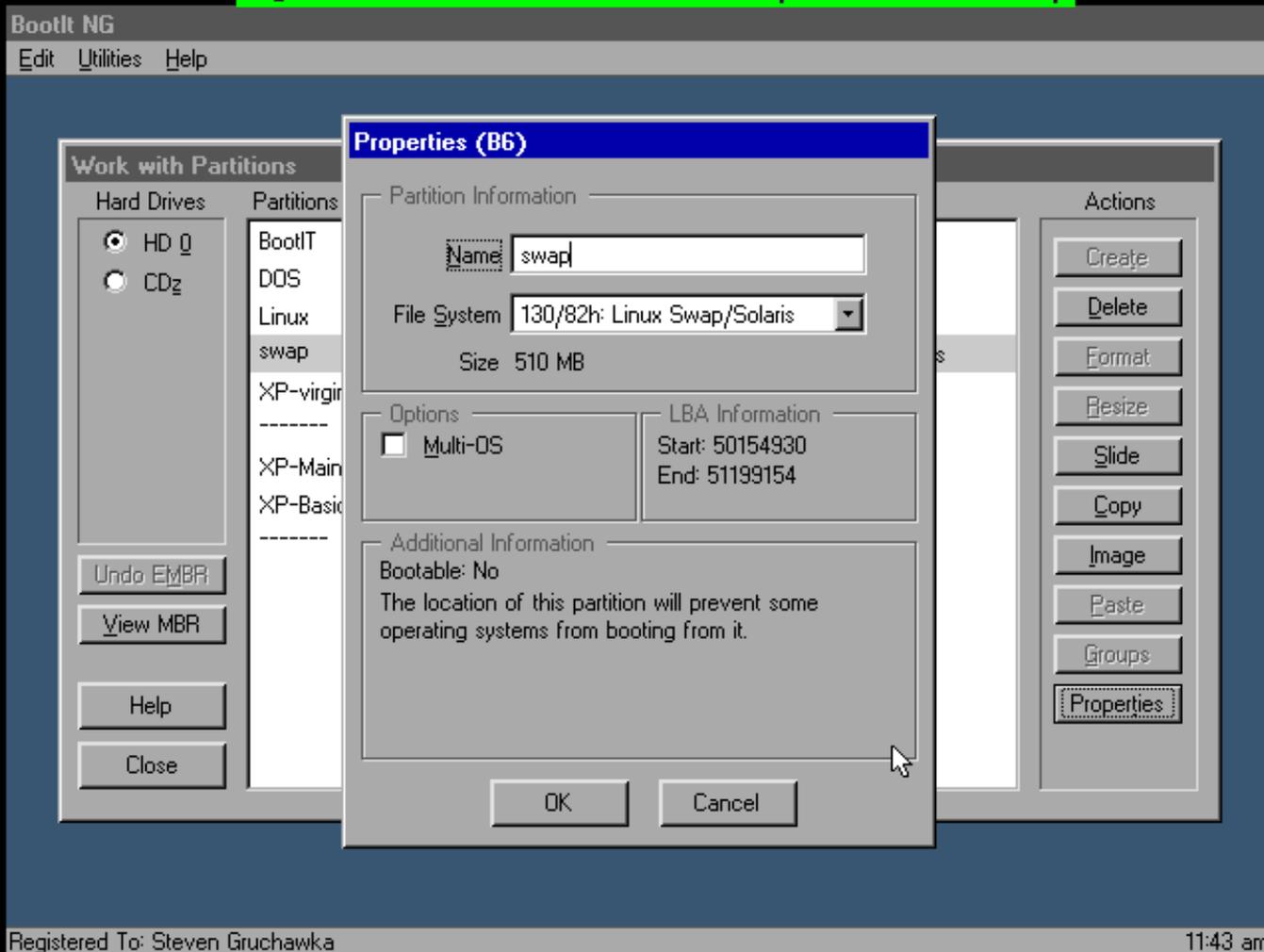


Figure 8- Main- Partition Work- Properties- XP

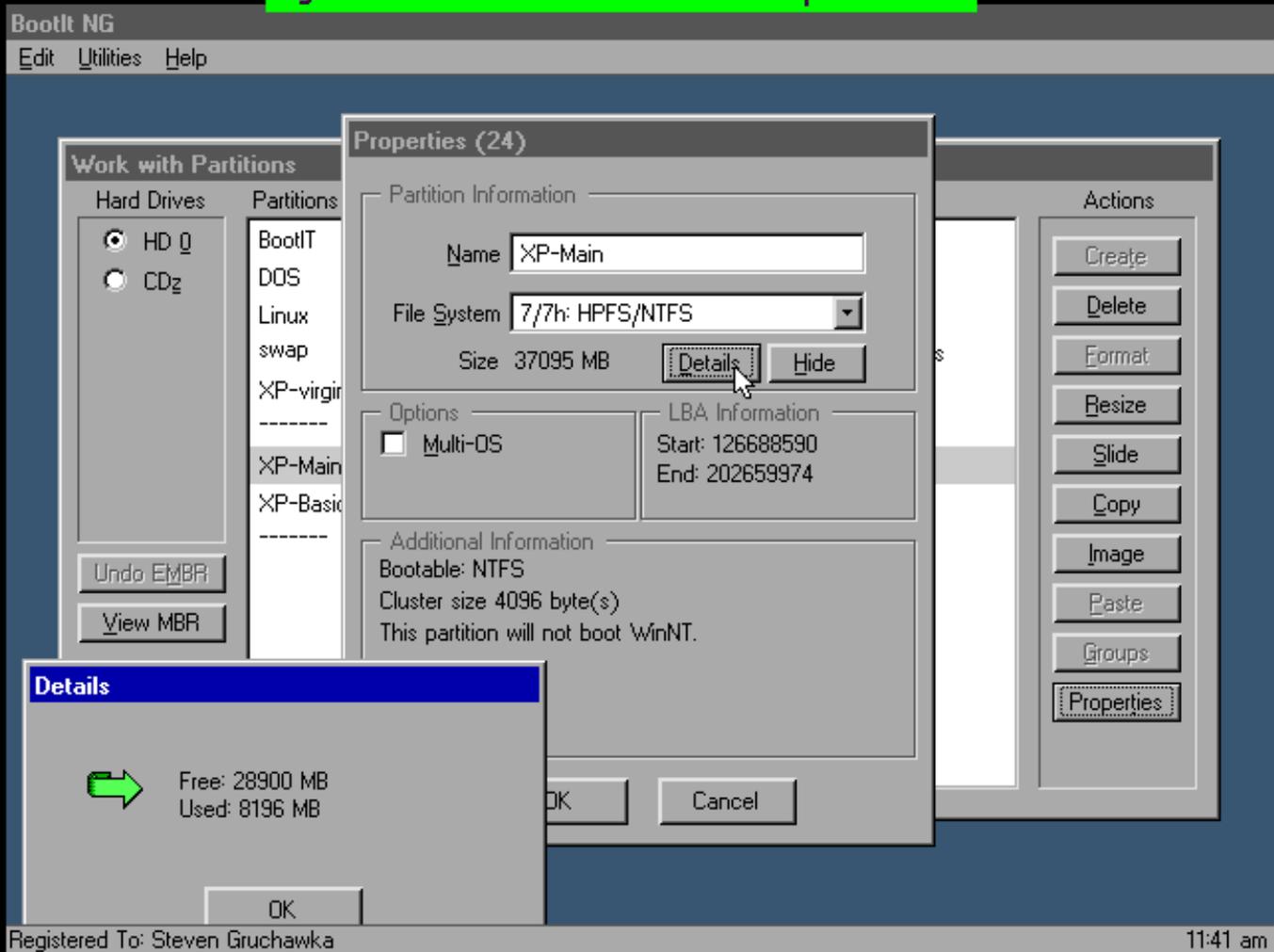


Figure 9- Main- Boot Edit

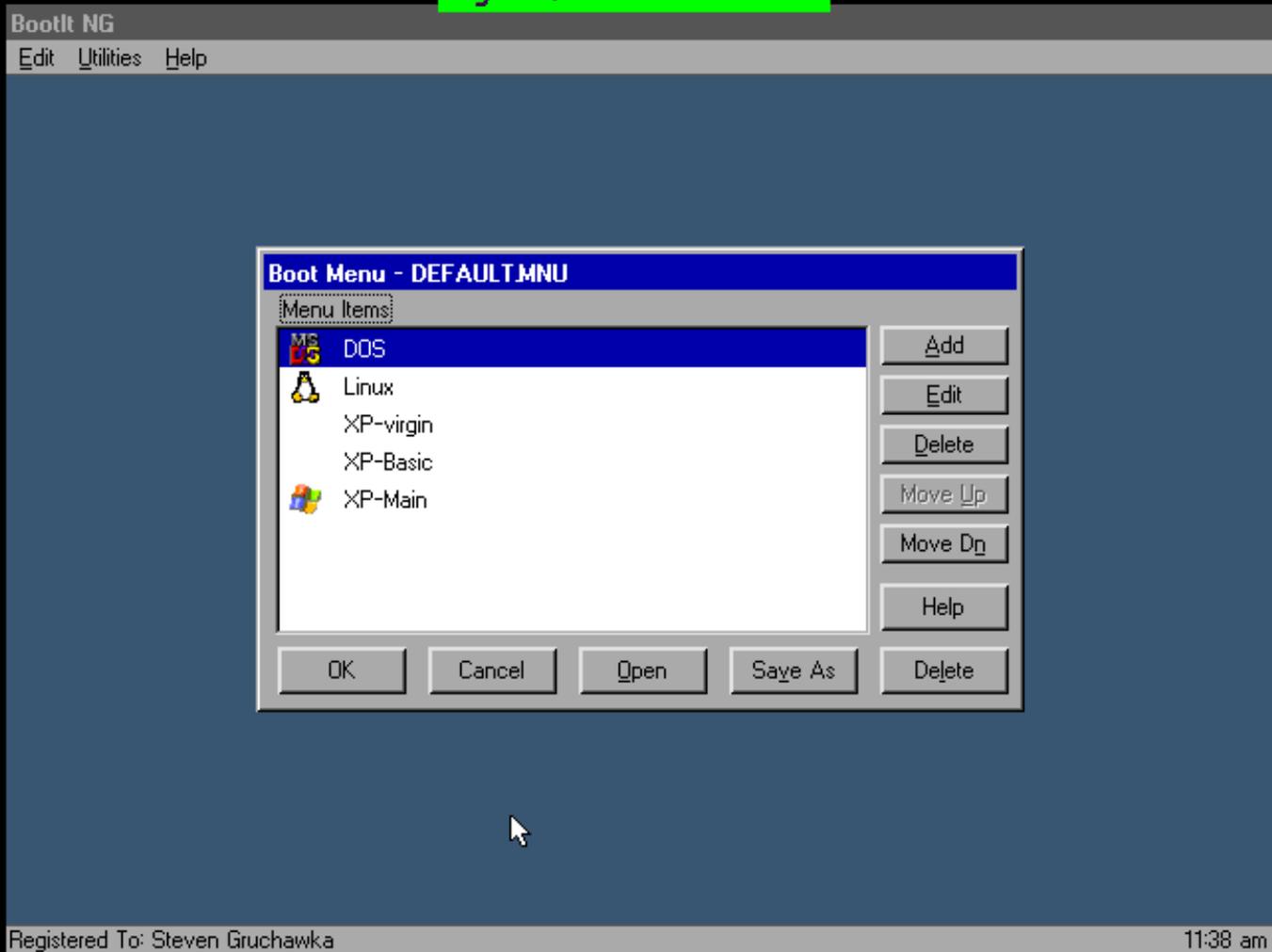


Figure 10- Main- Boot Edit- Add

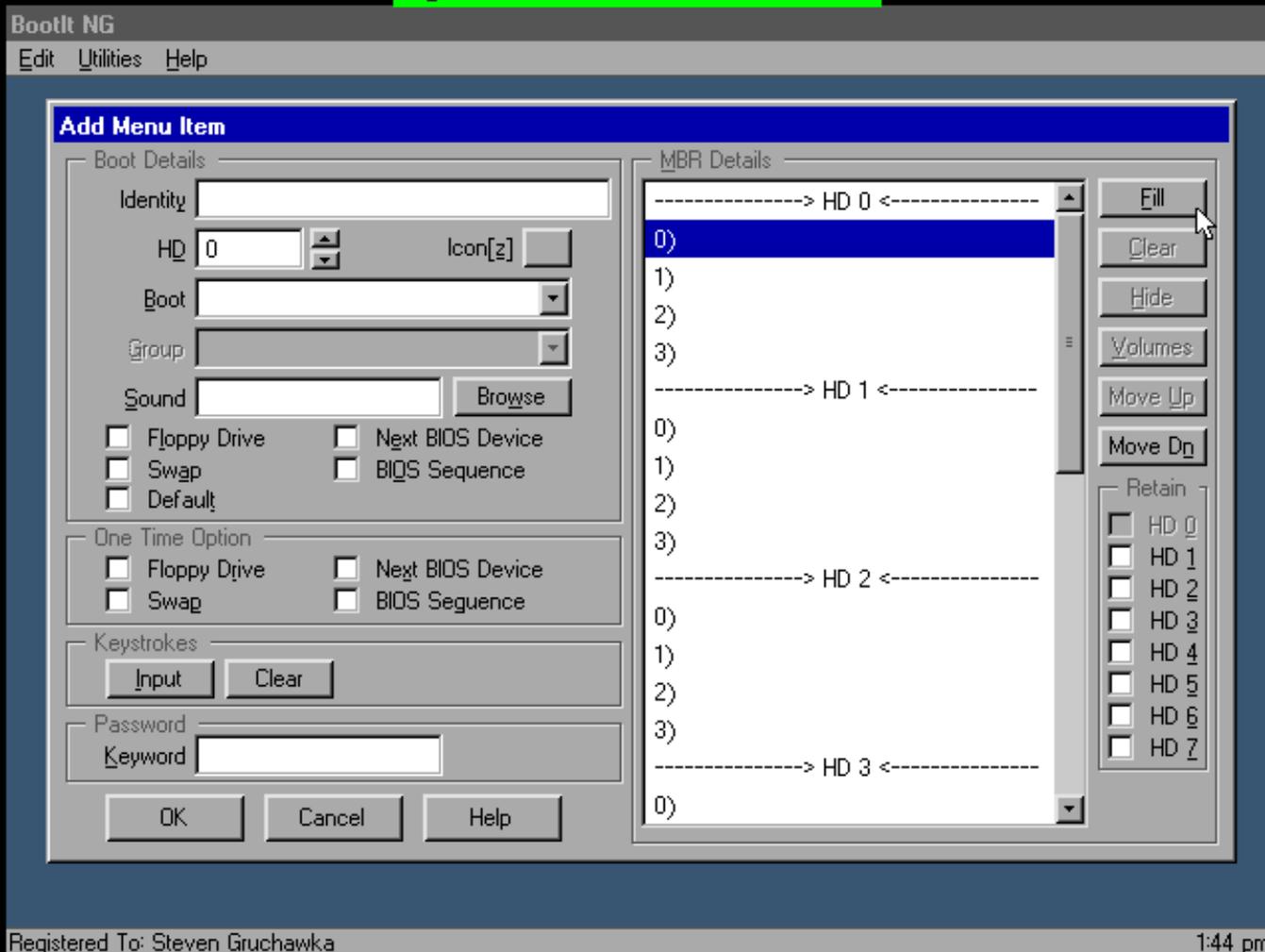


Figure 11- Main- Boot Edit- Add- Fill

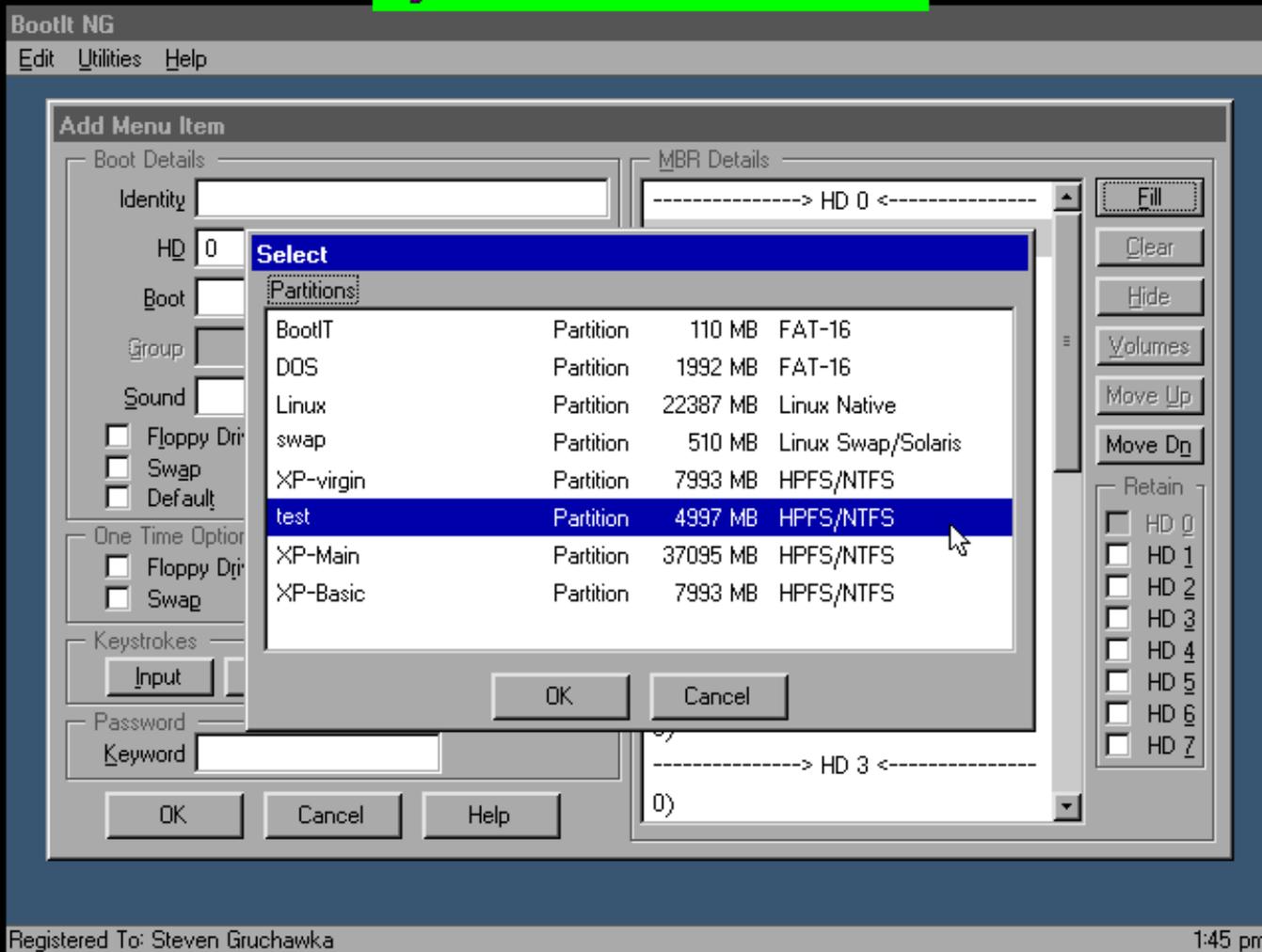


Figure 12- Main- Boot Edit- DOS

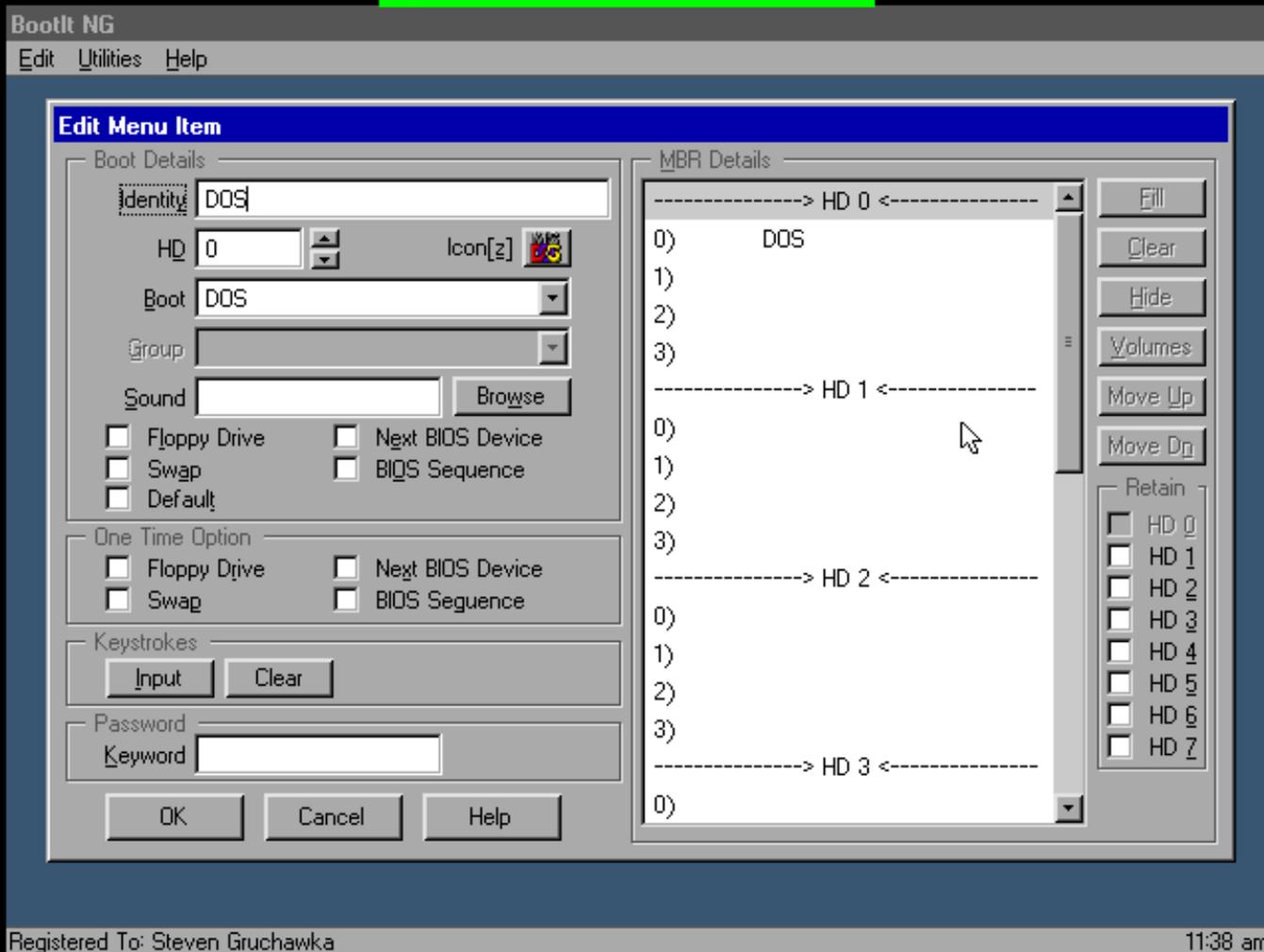


Figure 13- Main- Boot Edit- Linux

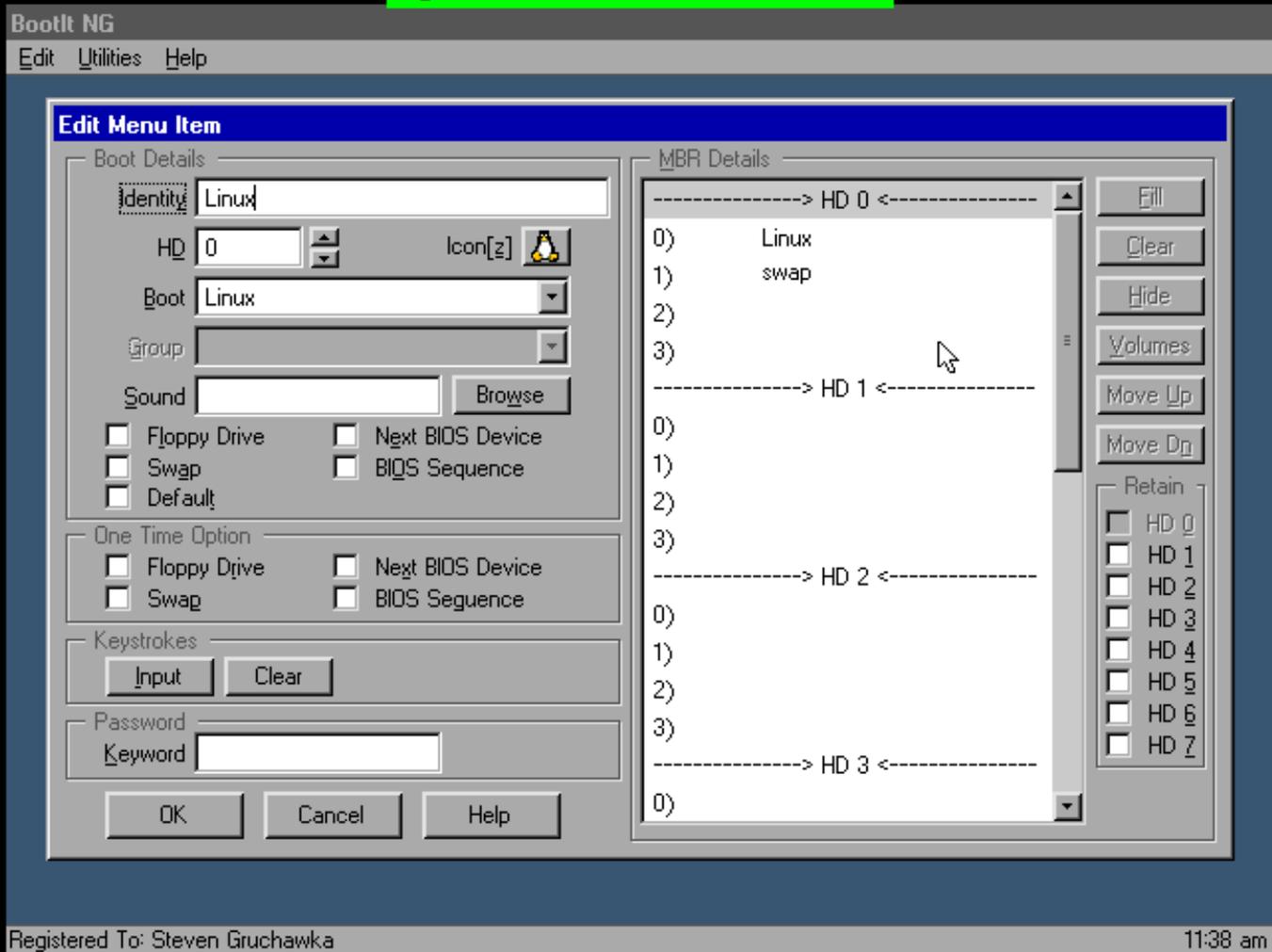


Figure 14- Main- Boot Edit- XP

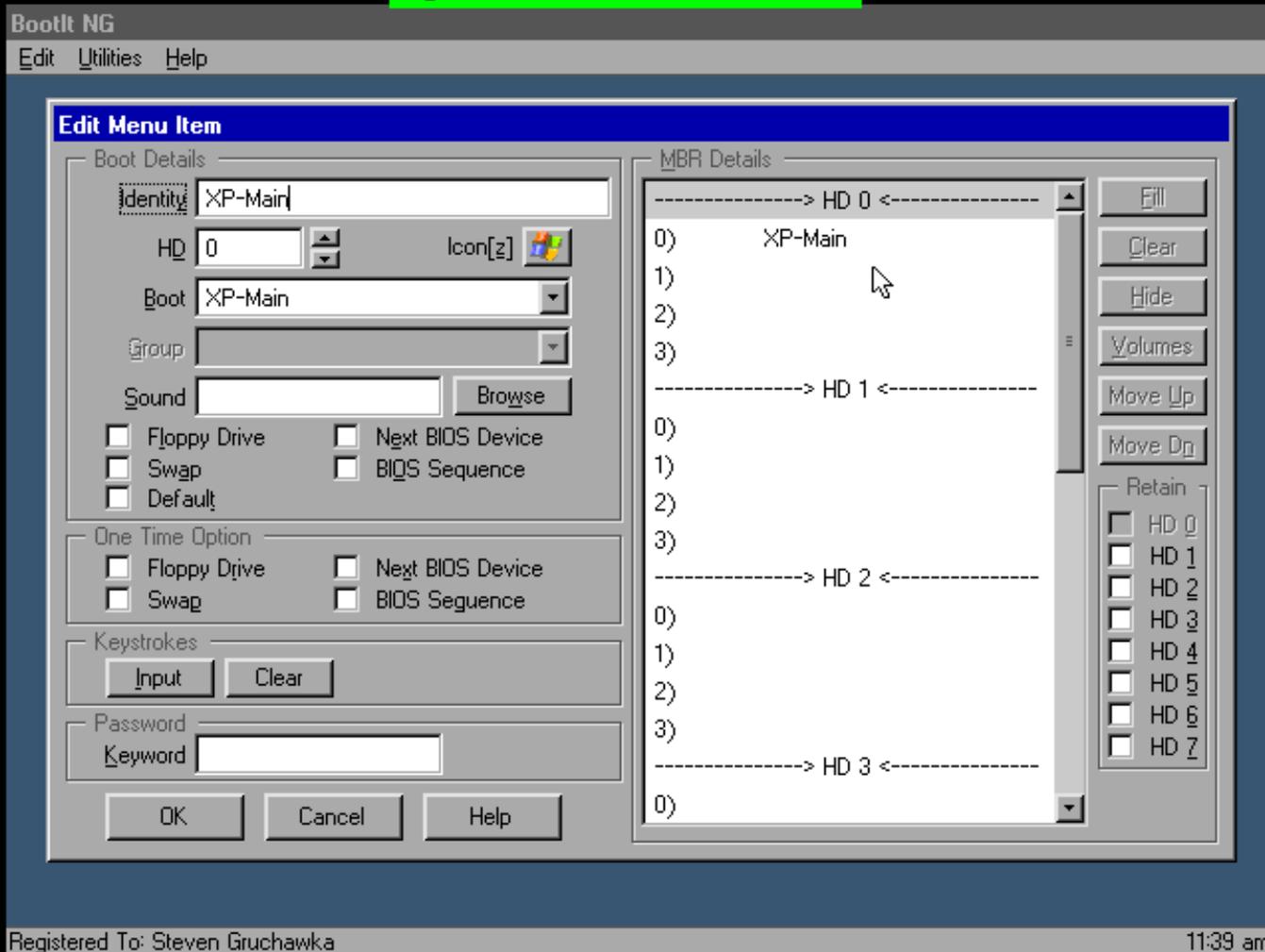


Figure 15- Main- Settings

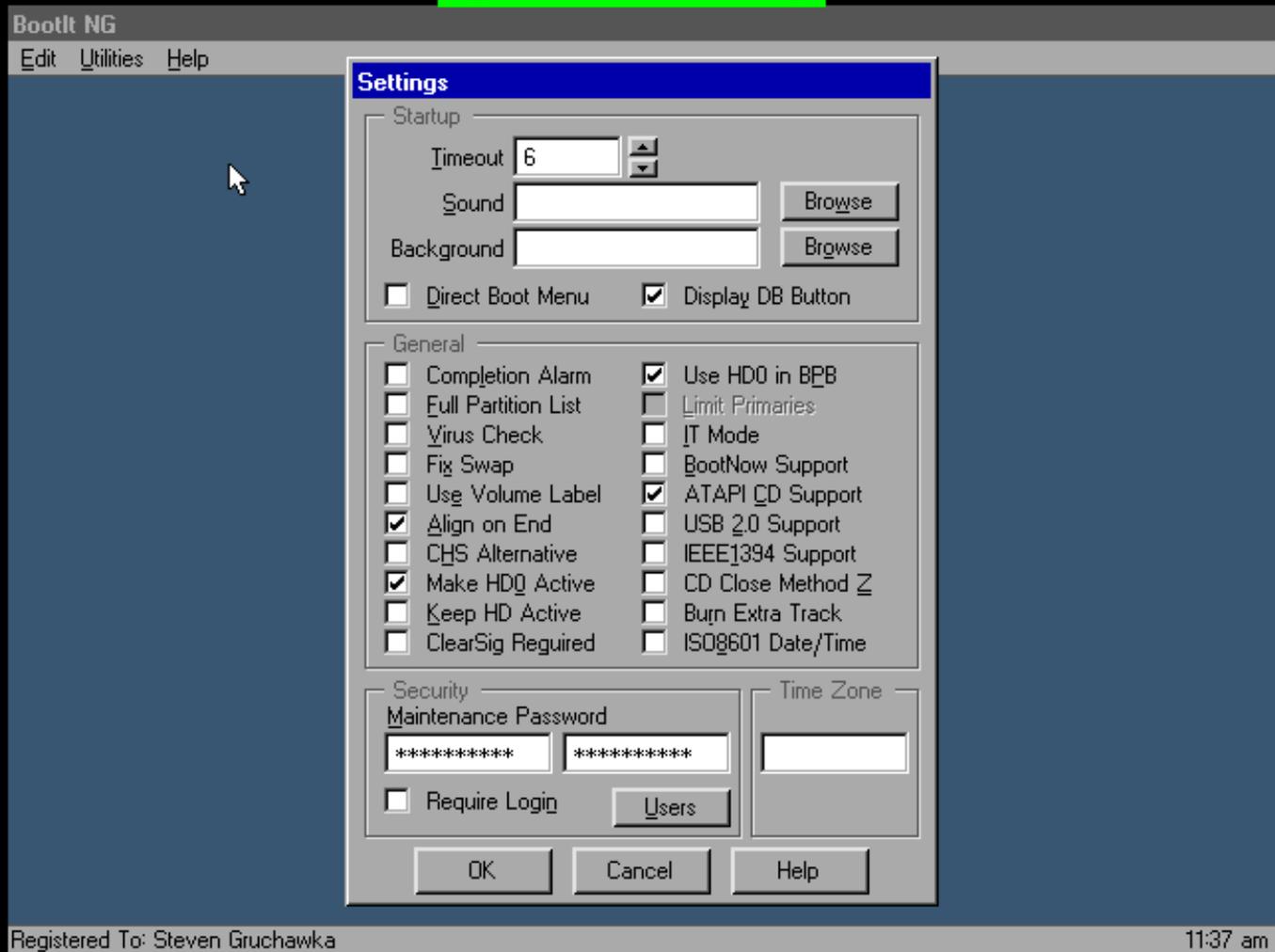


Figure 16- Main- Partition Work- Create

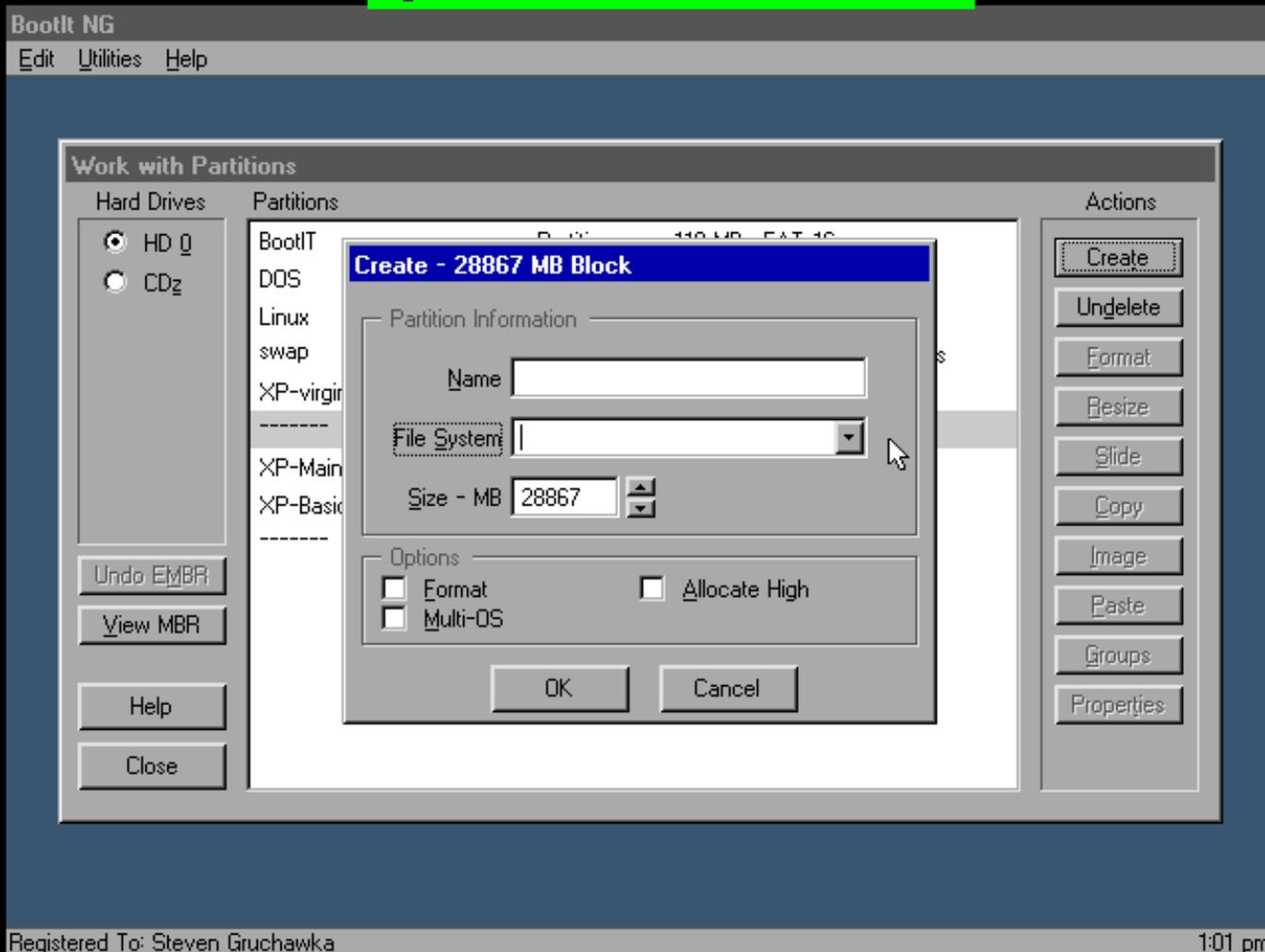


Figure 17- Main- Partition Work- Create- File Type

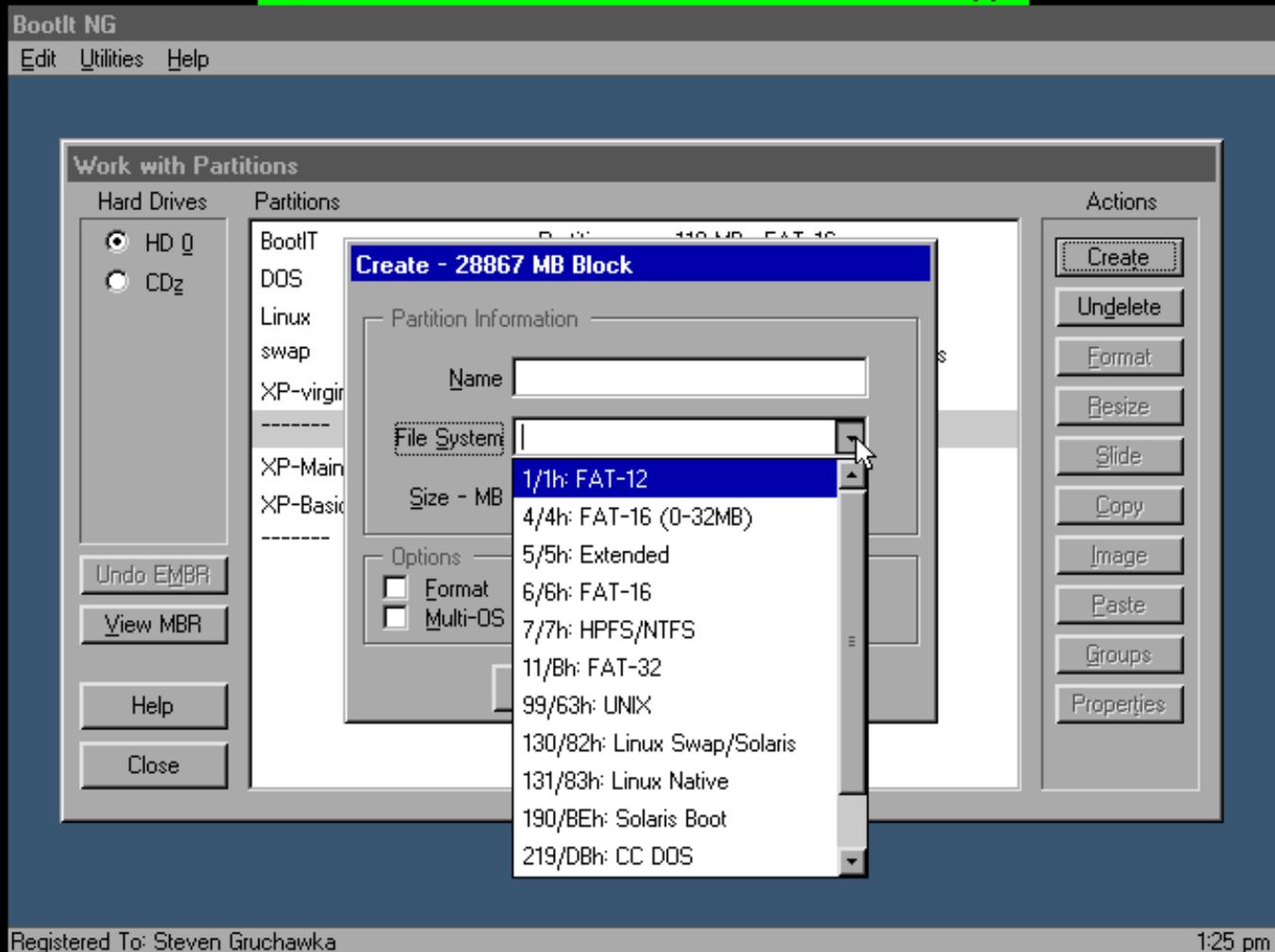


Figure 18- Main- Partition Work- View MBR

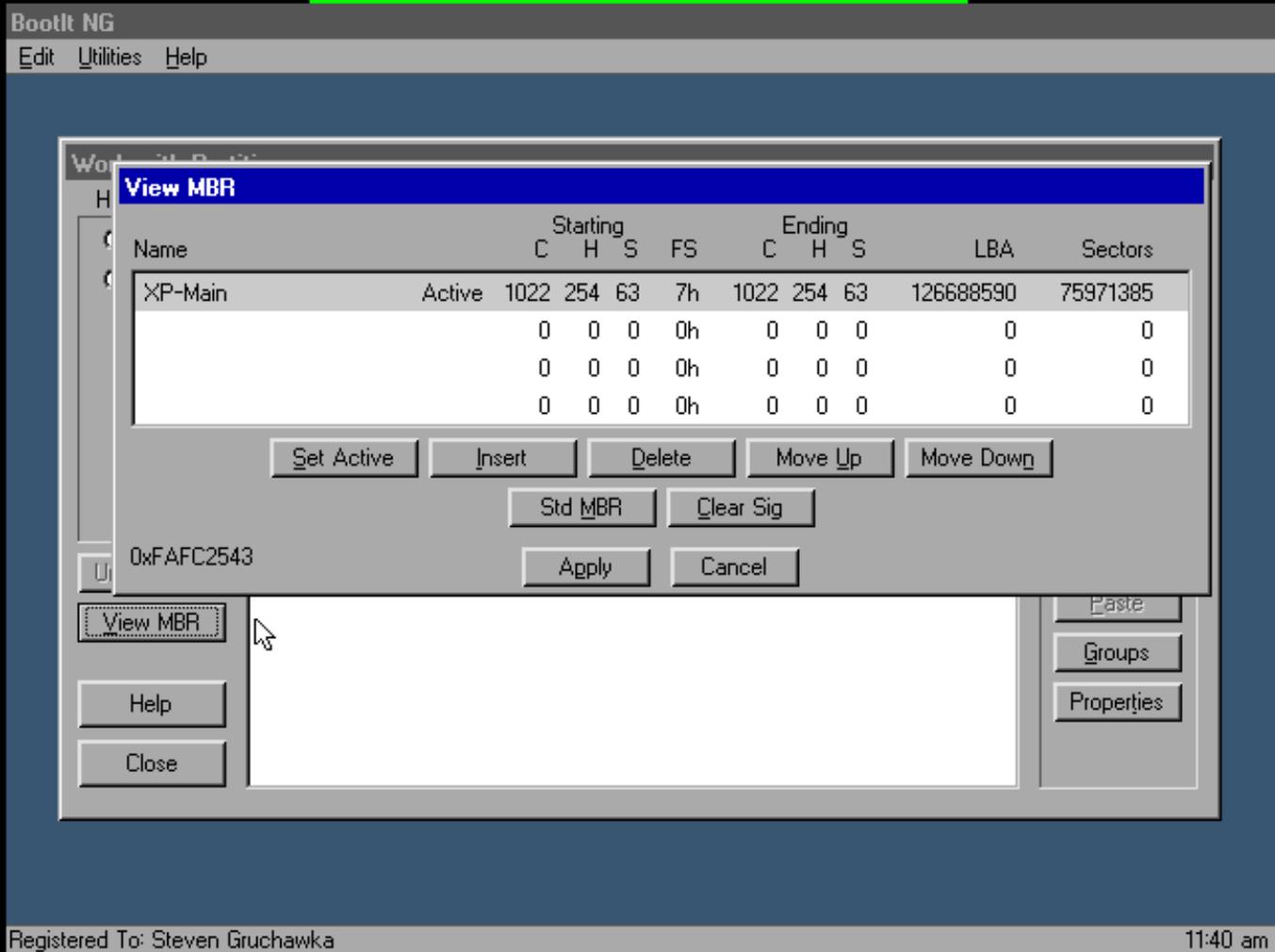


Figure 19- Main- Backup - Restore

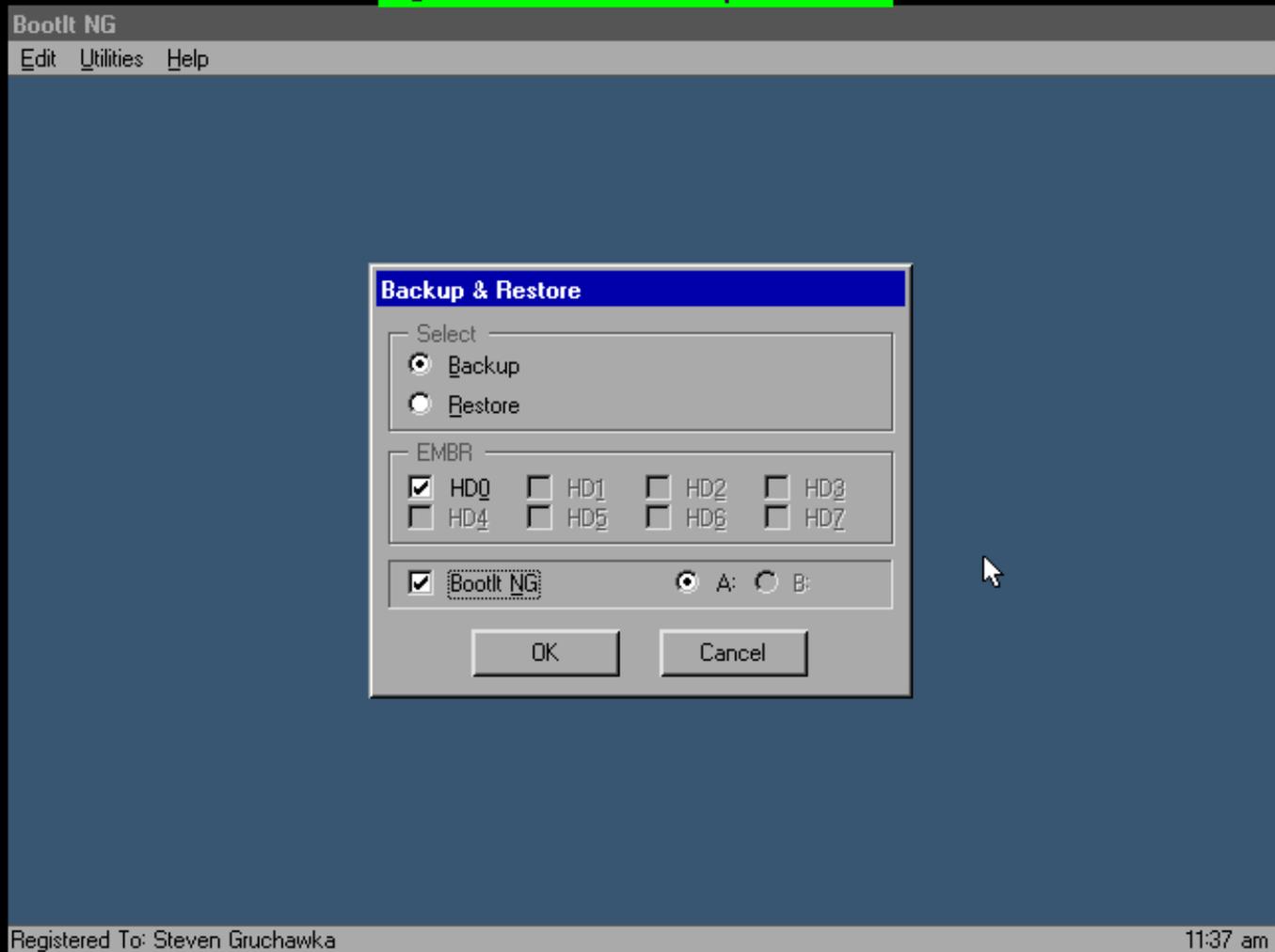


Figure 20- Main- Partition Work- Resize- step 1

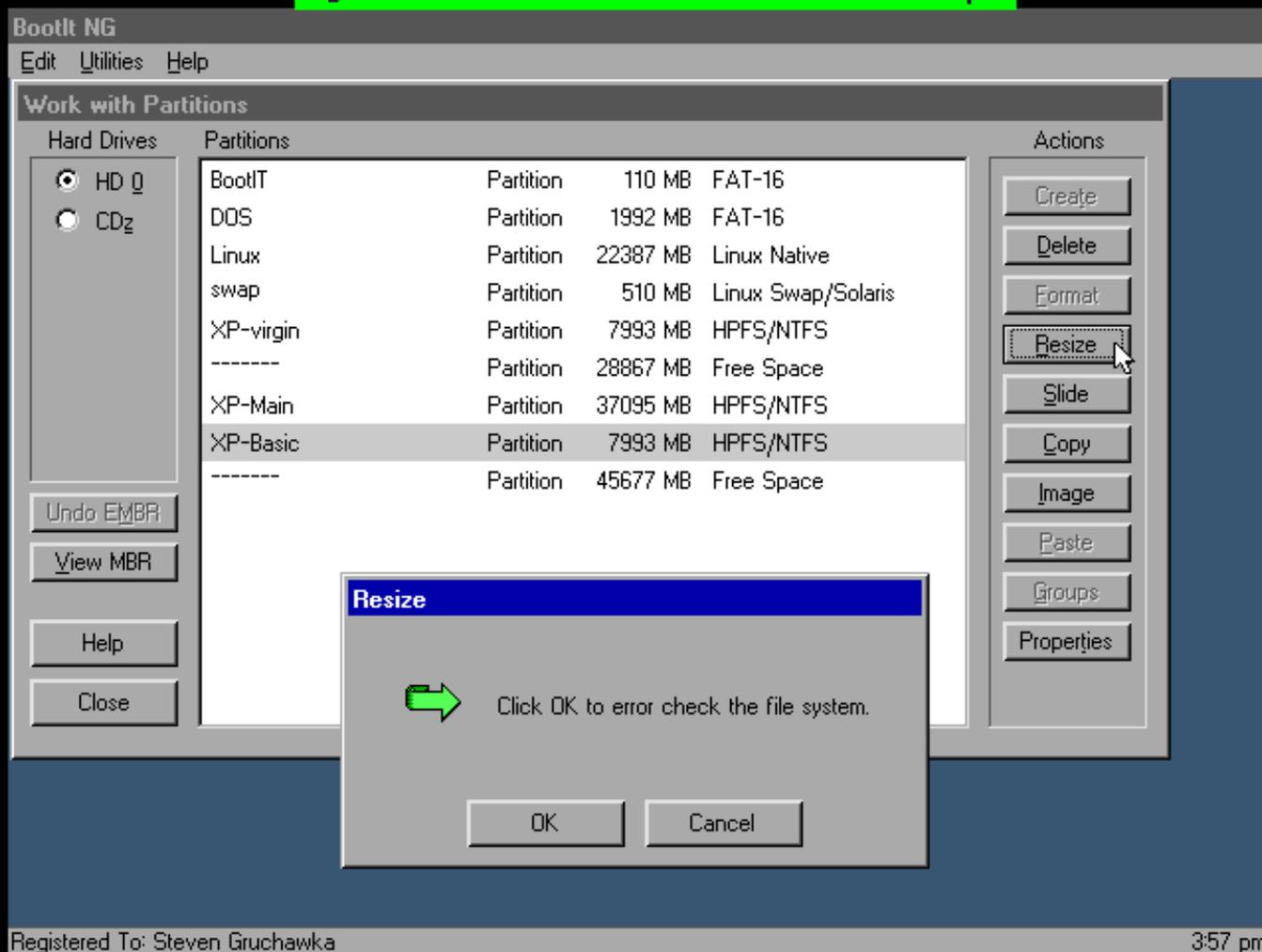


Figure 21- Main- Partition Work- Resize- step 2

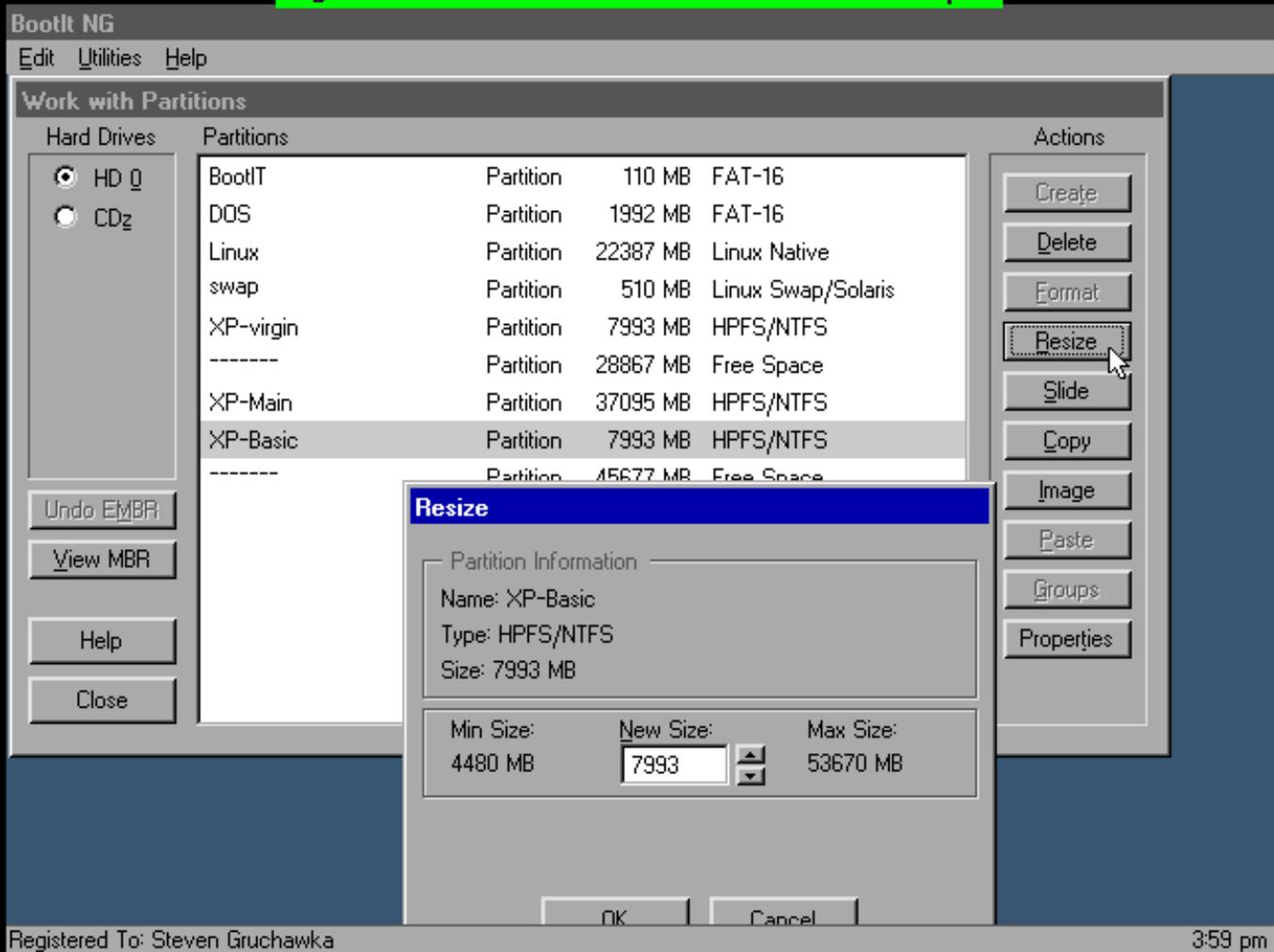
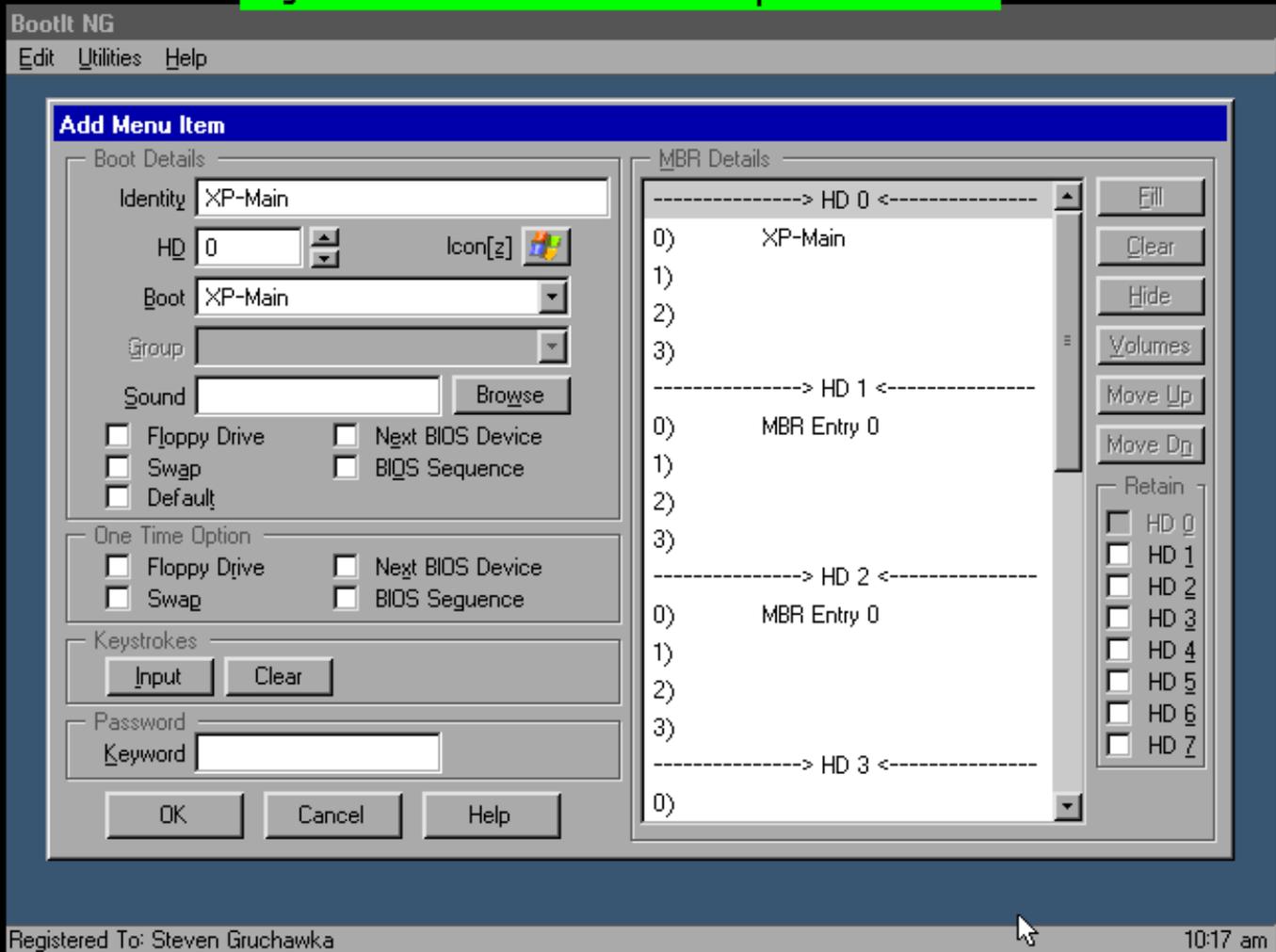


Figure 22- Main- Boot Edit- Multiple Hard Drives



# Quick Start BING

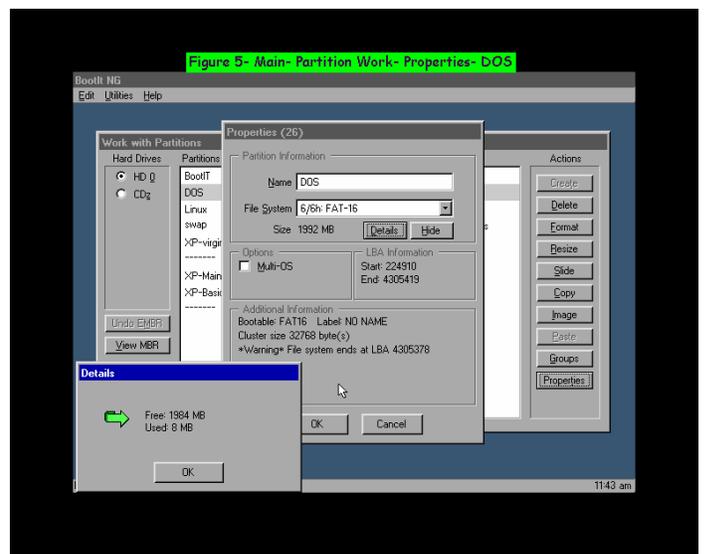
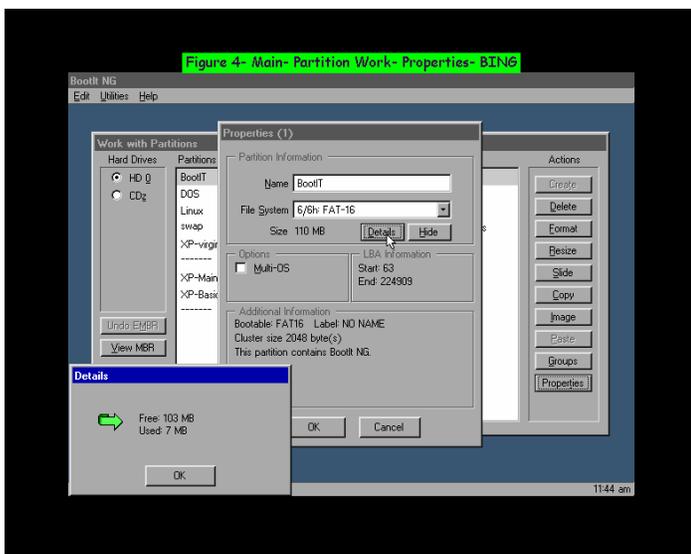
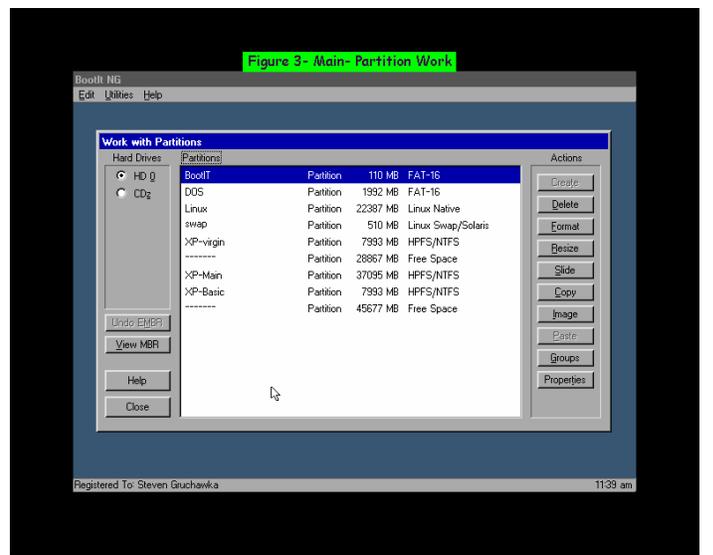
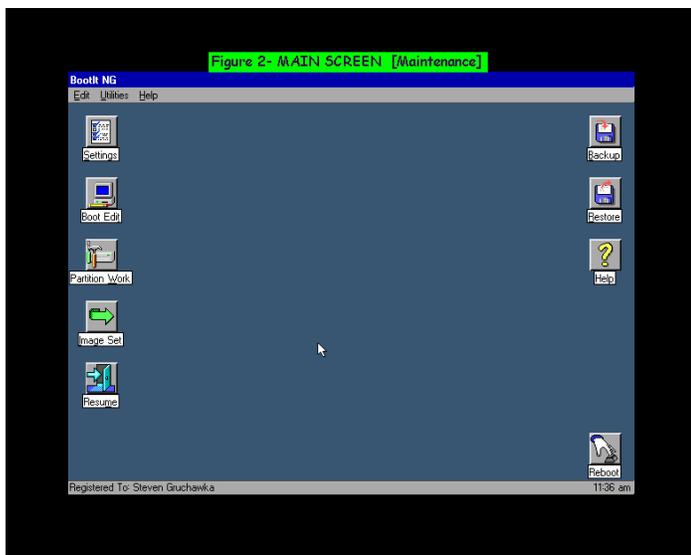
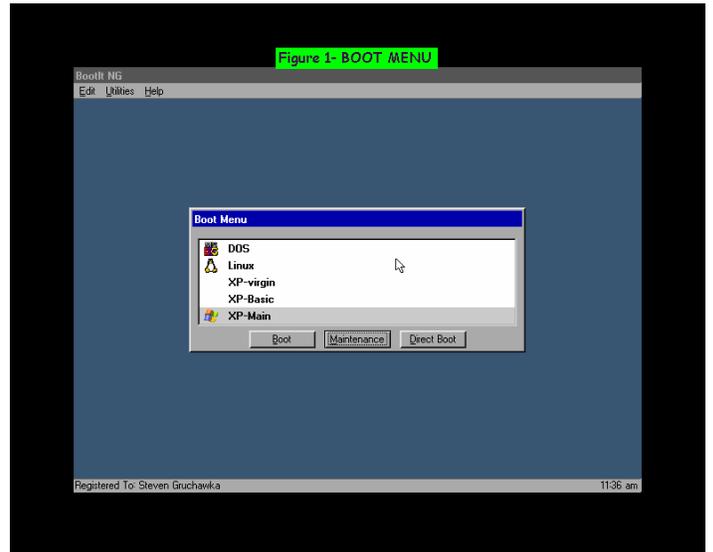


Figure 6- Main- Partition Work- Properties- Linux Root

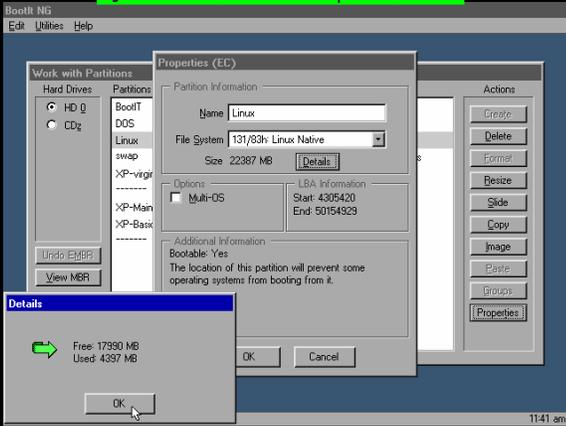


Figure 7- Main- Partition Work- Properties- Linux Swap

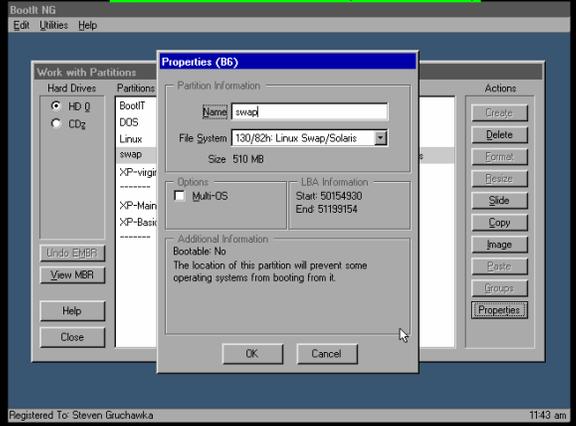


Figure 8- Main- Partition Work- Properties- XP

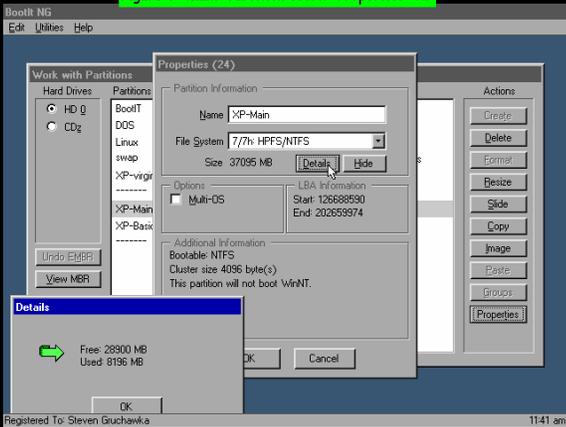


Figure 9- Main- Boot Edit

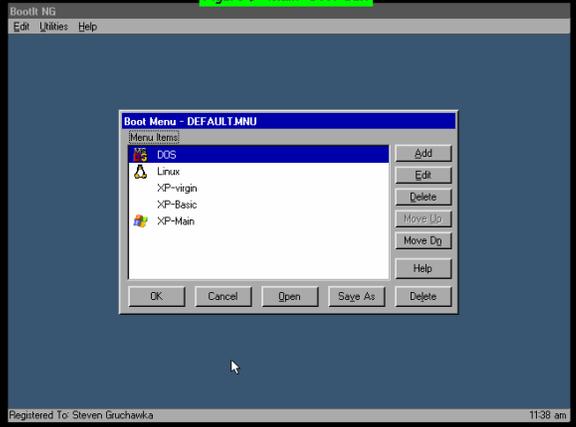


Figure 10- Main- Boot Edit- Add

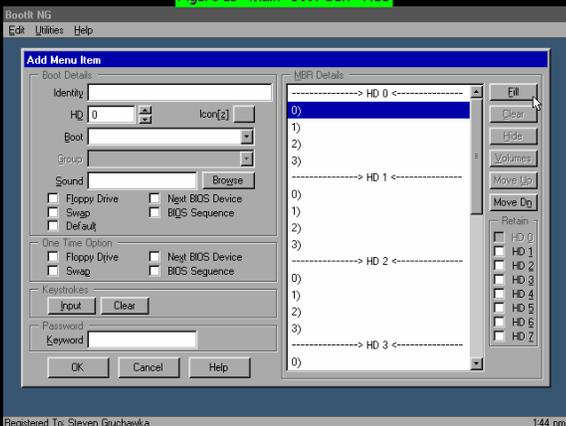


Figure 11- Main- Boot Edit- Add-Fill

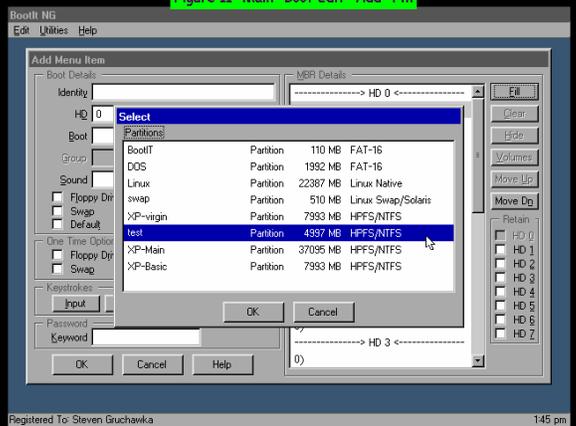


Figure 12- Main- Boot Edit- DOS

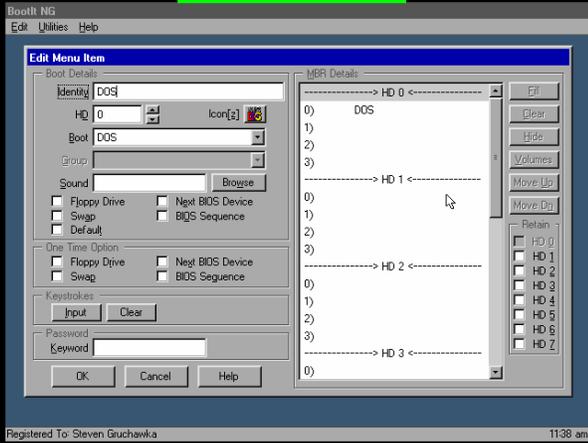


Figure 13- Main- Boot Edit- Linux

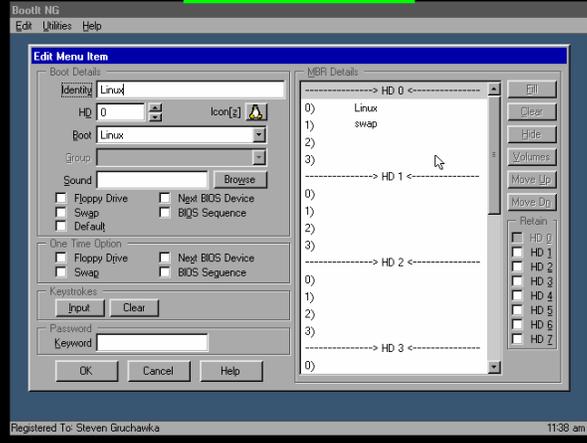


Figure 14- Main- Boot Edit- XP

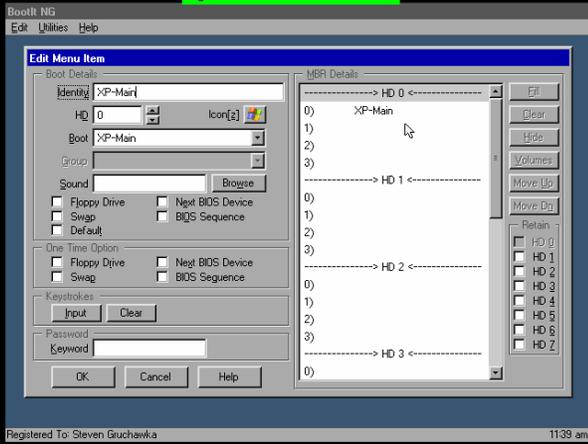


Figure 15- Main- Settings

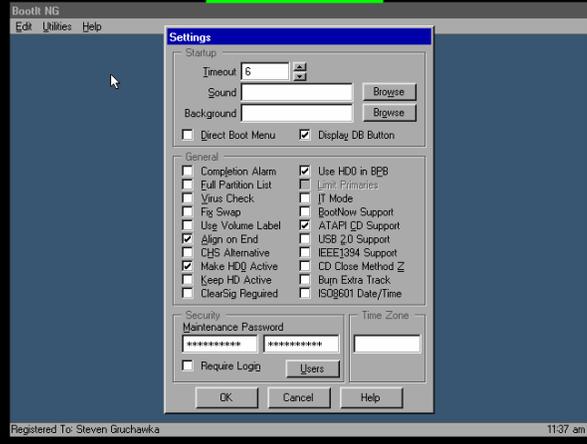


Figure 16- Main- Partition Work- Create

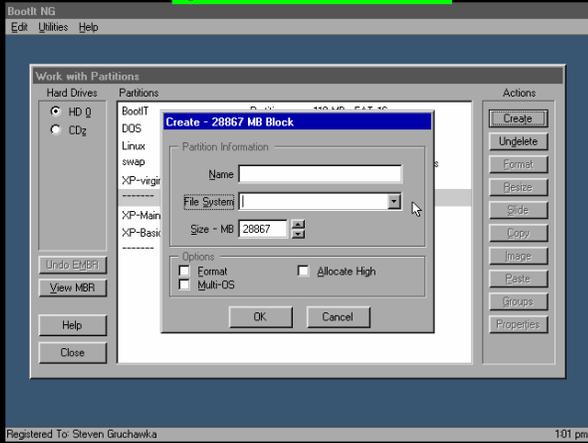


Figure 17- Main- Partition Work- Create- File Type

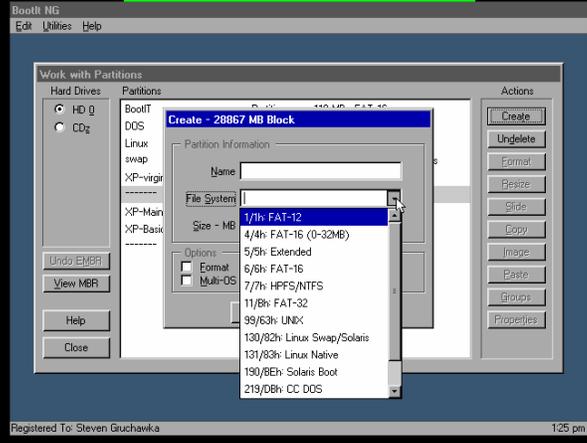


Figure 18- Main- Partition Work- View MBR

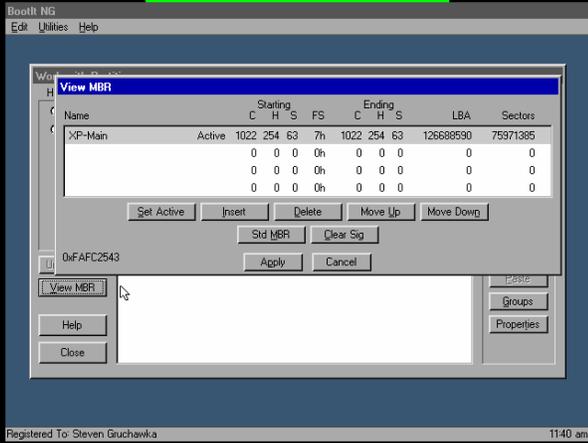


Figure 19- Main- Backup - Restore

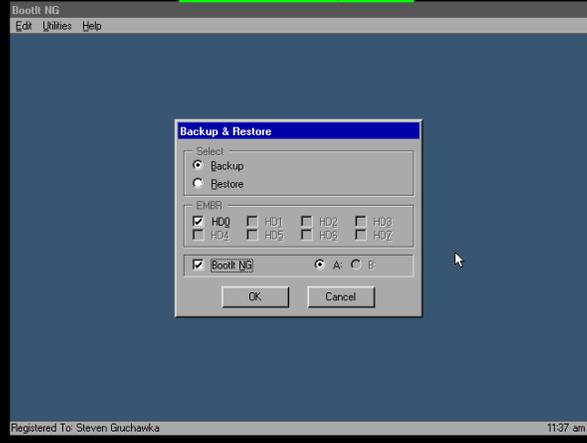


Figure 20- Main- Partition Work- Resize- step 1

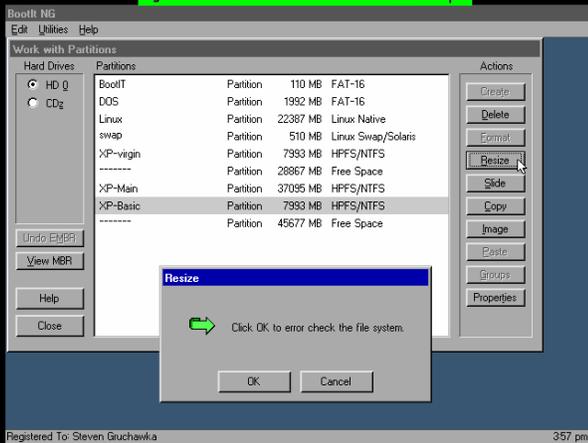


Figure 21- Main- Partition Work- Resize- step 2

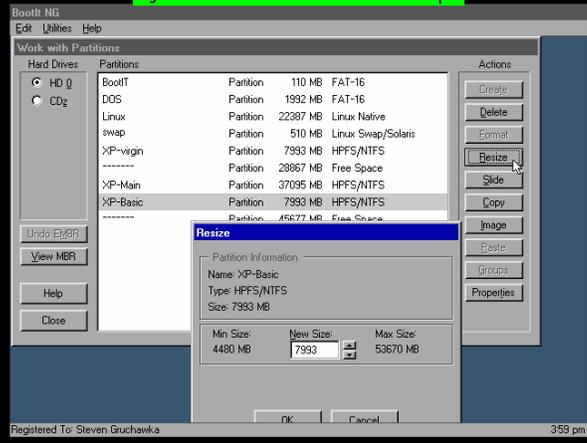


Figure 22- Main- Boot Edit- Multiple Hard Drives

