4.2.2 Use GRUB Legacy

Click one of the buttons to take you to that part of the video.

Use GRUB 0:00-0:41

In this demonstration, I want to show you how to configure the GRUB bootloader on a Linux system.

The Fedora 13 system I'm working on here uses the GRUB bootloader, but it's got one problem. By default when the system boots up the GRUB bootloader menu is not displayed. Instead it just automatically selects a particular bootloader option, and it boots without providing me with any way to interact with the bootloader, doesn't provide me with any way to provide kernel options. It doesn't even allow me to select a menu item to select which operating system I want to install, and we need to fix this, because I like having that flexibility.

View grub.conf and menu.lst 0:41-1:19

Let's open up a terminal session on our system here, terminal and we need to switch to our root user account, 'su -' and let's go to the 'cd /boot/grub' directory.

I do an 'ls' command here. Notice that there is a file in here called grub.conf. Some Linux distributions configure the GRUB bootloader using the grub.conf file. Others use the menu.lst file. Notice we have both here. However, if we do an 'ls -l' command, you'll see that menu.lst is not a real file. Instead it's a symbolic link that points to grub.conf.

Configure grub Components 1:19-2:00

If we want to make changes to the GRUB configuration on this system, we have to edit the grub.conf file. Let's go ahead and do that. Let's open it in the vi editor, 'vi grub.conf', and let's take a look at our default configuration. Notice that the default is set to zero, that means that the first menu item in the GRUB menu will be selected by default if the user doesn't select anything else.

However, down here is one of our issues. Timeout equals zero. Timeout specifies the number of seconds before the default menu option is selected for you. Well, it's set to zero which means you don't get a choice. After zero seconds, the default, the first menu item, will be selected for you.

Edit the grub.conf File 2:01-2:48

In addition, there's another problem down here. See that item right here that says hiddenmenu? This prevents the graphical menu from being displayed at first boot, so we need to make a lot of changes here.

The first thing we need to do is to comment that particular parameter out. So I'll go into insert mode and then I'll enter a pound sign (#) which comments out that particular line, so that the menu will not be hidden. Now even if we were to reboot at this point we would still not see the menu. Well, we'd actually see it but it would appear for just a fraction of a second and then the default menu option, the first one, would be selected for us because default is set to zero and timeout is set to zero.

We need to change the timeout value from zero to eight. That will give us eight seconds to select a menu option, and if we use the arrow keys at all, it disables the timer and we have as much time as we want.

Add a New Menu Item 2:49-4:34

In addition to this, notice that we only have one menu option as defined by title. We have just one title to boot Fedora Linux. What if we want to boot from the floppy disk? That could be a very useful troubleshooting tool, and we want to add a menu item that will allow us to do that.

Go ahead and add a new line, and let's enter 'title', and then the name of the title or the menu option is 'Floppy'. With this defined we now need to specify how to boot the system if somebody selects the floppy menu option. Let's go ahead and do 'rootnoverify' and then we have to specify where to boot from, '(fd0)'.

This is a little different, notice up here, from the root option used for the Fedora option. We have, up here, root and then we specify where the root file system is located on the first partition of the first hard disk drive (hd0,0). Well down here we're saying rootnoverify (fd0).

The rootverify option does a similar thing to root. It tells the GRUB bootloader where the operating system to boot resides. The difference here is we use noverify to specify that GRUB may not recognize the operating system on the floppy disk. We might boot it off of say a DOS or Windows Floppy disk for example.

rootnoverify tells the GRUB bootloader to just boot it, we don't care what operating system is on there, just go ahead and boot it. You may not recognize it, that's okay, just boot it anyway.

Next we have to specify 'chainloader +1'. The chainloader +1 command tells the GRUB bootloader that it should read one sector from the start of the partition. That will allow it to boot off of the floppy disk.

Save Changes to the File 4:35-5:54

At this point I think our configuration is complete, let's go ahead and save our changes to the file, press Escape, 'exit' and the changes to the grub.conf file have been written.

To view it now, we need to reboot the system. I'm going to issue the 'init 6' command to reboot the system. Notice that something different has happened, we have two different menu options that we can choose from, the first one boots Fedora. That title portion of the grub.conf file was created for us. We didn't have to manually create it, it was there already, but we did manually create the floppy option.

I also want to point out the a option listed on the third line in the instructions below. It says enter a to modify kernel arguments before booting. If you want to send kernel arguments to the operating system, you hit a and this screen is displayed which allows you to send kernel options.

For example, if we wanted to boot it into runlevel 3, we could enter a 3 at the end, just like we did in a different demonstration for our SUSE Linux. This is how you get to the kernel options on Fedora.

We'll just leave it at the defaults for now. Let's press Escape to go back and let's select our default option here to tell GRUB to boot Fedora operating system. All right my system is up, so I'm going to log in now as my rtracy user. Put in my password. We now have a functioning GRUB menu.

Configure an Encrypted Password 5:55-9:51

At this point there's lots of different things we could do. For example if we wanted to, we could put a password in the GRUB menu such that you are not allowed to boot the system unless you supply the appropriate password.

To do this, we need to open up a terminal session here, we'll go up to Applications, System Tools, Terminal, and I'm going to change to my root user account, 'su -' enter my password. I'm going to, as root, open up the grub.conf file.

This time I'm going to do it in the gedit editor. So I enter 'gedit /boot/grub/grub.conf', and I'm going to run this in the background so I can have access to the shell prompt, and there's my grub.conf file.

What I need to do is generate an encrypted password. The syntax for adding a password to your GRUB menu is simply to put the word password and then put the password that you want to use for the system. The problem is if you put a clear text password it's not very secure because it's clear text and all someone would have to do is get a hold of the grub.conf file and they could see exactly what the GRUB password is.

So instead we want to generate an encrypted GRUB password. To do this, we enter 'grub-md5-crypt' to create an encrypted password for GRUB to use. Then we have to enter what password we want. The encrypted version of the password that I just entered is shown right here.

So I select it, and go up here and say copy, and then I go over here to my grub.conf file and what I have to do is tell the GRUB menu that the password that I'm going to put in here is not a clear text password, but instead is an encrypted password, an MD5 encrypted password. So I enter '--' and then 'md5' and then I'm gonna come up here and do Edit, Paste to paste the password that we generated. The encrypted password that we generated over here.

I need to specify what options, which menu options, this password is going to apply to. The way you do that is by entering lock. Let's go down here, under our first menu option under the Fedora option just enter 'lock'. That tells the GRUB menu that before you're allowed to select this item you have to enter the password that we specify.

Let's do the same thing with floppy 'lock', let's save our changes to the file, exit out, and let's reboot the system by typing 'init 6'.

Notice down here I have my timer going, say it's going to be booted automatically in four seconds, if I press anything on the keyboard, it turns the timer off. Let's say I want to select my Fedora menu item here, watch what happens when I do. It says sorry, you have to be authenticated. Press any key to continue. It doesn't allow me to select it without entering a password.

To do this you enter 'p' to enter the password that we configured. Now we go back to the GRUB menu the way it was when we didn't have a password, because I've authenticated to GRUB and now I can go ahead and select whichever menu option I want.

Before we do that, however, I want to point out that you can manage the GRUB boot menu interactively, you're not stuck with whatever is configured in your grub.conf file or menu.lst depending upon which distribution you're working on.

Notice here there's an option, the e option to edit the command before booting. We can enter 'e' and this allows us to edit the title section for the menu option we had selected. In this case for the Fedora system. We have the lock option, the root option, and the various kernel parameters are going to be passed to the system.

If we wanted to, we could edit these right here using the e key again. You could add a new line by entering o. You could delete a line by pressing d, whatever it is that you need to do. When you're done you can just press 'b' to boot the system and that's what we'll do here. We'll go ahead and boot it up.

Summary 9:52-10:18

That's how you work with the GRUB boot menu. We talked about the GRUB boot configuration file, either /boot/grub.conf or /boot/menu.lst. We went through the various pieces in that file. We talked about how to set the timeout value, how to set the default menu option. We also added a new menu option to the grub.conf file. Finally we configured our GRUB boot menu with a password, so the user has to authenticate before they're allowed to do anything, including selecting options from the GRUB boot menu.
