# nucore

**USER MANUAL** 

Revision 2.0A 01.07.12

Copyright 2009 Big Guys Pinball LLC. Author: Chuck Hess

Please submit any revision suggestions to: <u>chuck@bigguyspinball.com</u>

#### Contents

Installation Instructions
Section One - Requirements
A. Machine Specifications (Minimum)4
B. Software requirements4
C. Other Requirements4
Section Two – Computer BIOS Settings
Section Three – Installation Ubuntu Linux
Step 1 – Connect to the internet
Step 2 – Insert installation CD6
Step 3 – Start Ubuntu6
Step 4 – Install Ubuntu9
Section Four – Installation Nucore
Step 1 - Login13
Step 2 – Assign a password to the root user14
Step 3 – Allow root user login17
Step 4 – Final Installation20
Section Five – Installing Nucore ROM Files23
Section Six – Master Volume29
Section Six – Troubleshooting
Nucore Software Users Guide
Nucore – Boot-up
Nucore – Attract Mode
Controlling Nucore – Flipper and Action Buttons
Nucore Jukebox
Nucore Configuration Menu
Configuration Menu – Game Options
Configuration Menu – Jukebox Options40
Configuration Menu – System Options41
Configuration Menu – USB Update42
Nucore Command Line Options
Nucore Keyboard Commands47
Nucore Support and Tips

# **Installation Instructions**

The following section will walk you through step by step instructions on how to install Ubuntu Linux and Nucore. Before you proceed make sure you have the latest installation instructions and Nucore deploy by checking the Support forum at:

http://www.bigguyspinball.com/community/

# **Section One - Requirements**

Nucore runs on Ubuntu Linux version 8.04 LTS. It is possible that Nucore will run on other Linux distros but Ubuntu is the only fully-tested and supported version of Linux. You must install Linux before proceeding (see Section Two.)

## A. Machine Specifications (Minimum)

- Intel (E-6600) or AMD X2 5000 dual-core processor (or greater)
- A motherboard with an integrated parallel port
- 2GB of system ram
- 8GB of mass storage (for os and application)
- Compatible video integrated or card (for use with original Pin2000 monitors an Ultimarc Arcade VGA PCI adapter or another video card with a scan line converter. Not required for use with a LCD monitor)
- Compatible sound integrated or card (check Ubuntu site for suggestions)
- CDROM drive for initial software load

## **B. Software requirements**

Ubuntu 8.04 LTS (The installation CD was supplied with your package)

## **C. Other Requirements**

Internet access (installation only) Newer hi-res monitor (installation only) USB thumb drive (FAT32 format) for upgrades and loading music.

# Section Two – Computer BIOS Settings

Bios settings are very important for game speed and sooth graphics. We need to maximize speed and turn off all power saving features that will cause delays. The items below are common settings. The names may vary from bios to bios and some may not be available. Some bios' are organized as basic/advanced, some have separate menus for power management. Be aware that some menus have scroll bars with hidden items on the menu that are off the bottom of the screen.

Speed:

- 1) System Bios Cacheable Enabled.
- 2) CPU internal Cache Enabled.
- 3) External Cache Enabled.
- 4) Video Bios Cacheable Enabled

Power Management

1) CPU throttling

On AMD based systems this is called "Cool and Quiet". Make sure this is disabled

On Intel Core2 based systems there are three settings you'll need to disable: Limit CPUID MaxVal – Disable C1E Function – Disable EIST Function – Disable

ACPI Suspend type – S1
 HPET Support - Enabled.

USB Devices 1) USB Keyboard function – Enable 2) USB Mouse function - Enable

Special Features:

1) Parallel Port: SPP recommended. (All modes will work EPP, ECP)

2) Power On After Power Failure - ON, This eliminates pressing power button on every power up.

# Section Three – Installation Ubuntu Linux

Please follow the installation instructions closely. Failure to do so may result in a failed install. When installing Ubuntu make sure you have a newer monitor that can run 1024x768 resolution at a minimum. Failure to connect to a monitor like this will cause Ubuntu to run in 800x600 mode and you will not be able to step through all of the confirmation screens.

#### **Step 1 – Connect to the internet**

Connect your computer to a network or directly to a modem that has active access to the internet.

#### Step 2 - Insert installation CD

Power-on the computer and insert the Ubuntu 8.04 LTS installation CD in the CD Drive. Make sure the computer boots from the CD. If it doesn't boot from the CD check your bios settings (see Section Two.)

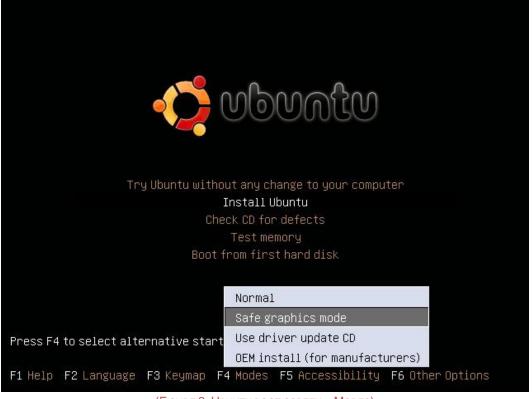
#### Step 3 – Start Ubuntu

Once the CD boots you will see this screen (fig 1)

		Language	36	
Arabic		Hindi	Português	
Белару	ская	Hrvatski	Română	
Българ	ски	Magyarul	Русский	
Bengal:	i l	Bahasa Indonesia	Sámegillii	
Bosansi	ki	Italiano	Slovenčina	
Català		日本語	Slovenščina	
Čeština	a	ქართული	Shqip	
Dansk		Khmer	Svenska	
Deutscl	n	한국어	Tamil	
Dzongki	ha	Kurdî	Thai	
Ελληνικ	ά	Lietuviškai	Tagalog	
28 s Englisł	1	Latviski	Türkçe	
20 S Espera	nto	Македонски	Українська	
Españo.	1	Malayalam	Tiếng Việt	
Eesti		Norsk bokmål	Wolof	
Euskar	az	Nepali	中文(简体)	
Suomi		Nederlands	中文(繁體)	
França.	is	Norsk nynorsk		
Galego		Punjabi(Gurmukhi)		
Gujara	ti	Polski		
Hebrew		Português do Brasil	- Aller Abies and the Wester	
F1 Help F2 Langua	ge F3 Keymap	F4 Modes F5 Access.	ibility F6 Other Option:	10

(FIGURE 1. UBUNTU BOOT SCREEN – LANGUAGE SELECT)

Press (ENTER) to select English. Next you will need to press the (F4) key and select "Safe graphics mode" (Fig2)



(FIGURE 2. UBUNTU BOOT SCREEN – MODES)

Press (ENTER). Using the up and down arrow keys select "Try Ubuntu without any change to your computer" and Press (ENTER). (fig3)

S UBUALU
Try Ubuntu without any change to your computer
Install Ubuntu
Check CD for defects
Test memory
Boot from first hard disk
eduner visiteria eta ante ante ante ante eta cura suberte tean eta
Press F4 to select alternative start-up and installation modes.
F1 Help F2 Language F3 Keymap F4 Modes F5 Accessibility F6 Other Options
(Figure 3. Ubuntu boot screen – try Ubuntu)

After the system finishes the initial load you will see a screen with two icons: Example and install. Click on the install icon and this screen will appear (fig 4)



 $(\mathsf{F}\mathsf{I}\mathsf{G}\mathsf{U}\mathsf{R}\mathsf{E}\,\mathsf{4},\,\mathsf{U}\mathsf{B}\mathsf{U}\mathsf{N}\mathsf{T}\mathsf{U}\,\,\mathsf{I}\mathsf{N}\mathsf{S}\mathsf{T}\mathsf{A}\mathsf{L}\mathsf{L}\,\,\mathsf{S}\mathsf{C}\mathsf{R}\mathsf{E}\mathsf{E}\mathsf{N}-\mathsf{L}\mathsf{A}\mathsf{N}\mathsf{G}\mathsf{U}\mathsf{A}\mathsf{G}\mathsf{E}\,\,\mathsf{S}\mathsf{E}\mathsf{L}\mathsf{E}\mathsf{C}\mathsf{T})$ 

Click the forward button to select English as your language.

#### Step 4 – Install Ubuntu

Next you will see the following screen (fig 5)

Applications	Places System 🍯		Live session user	💂 🕸 Tue Jun 16, 2:42 PM Ŭ
Example	<u> </u>	install		
-Mainple	Where are you	J?		
(Install)		country and time zone. If the indica orrect time zone, you can adjust it a		
	Selected city:	Detroit	Selected region: United States	\$
	Time zone:	EDT (GMT-4:00)	Current time: 10:42:39 AM	
	Step 2 of 7		Cancel 🖕 Back	e Eorward
🔳 🔔 Install				

(FIGURE 5. UBUNTU INSTALL SCREEN - TIMEZONE)

Use your mouse to select your region and city. Once you have done this click the Forward button. Next you will see the following screen (fig 6)

- Applications	Places System 🕘 📄 🕢	Live session user 🛛 🛒 🕸 Tue Jun 16, 2:43 PM ⊍
		1000
Example	🚣 install	
	Keyboard layout	
6	Which layout is most similar to your keyboard?	
Install	Syria Tajikistan Thailand Turkey USA Ukraine	USA USA - Alternative international (former us_intl) USA - Classic Dvorak USA - Colemak USA - Dvorak USA - Dvorak USA - Dvorak international USA - Group toggle on multiply/divide key
	United Kingdom Uzbekistan Vietnam	USA - International (AltGr dead keys) USA - International (with dead keys)
	You can type into this box to test your new keyboard           Step 3 of 7	layout.
🗐 🄔 Install		

(FIGURE 6. UBUNTU INSTALL SCREEN – KEYBOARD SELECT)

This selects the type of keyboard you will use. Use the default selection and click Forward. Next you will see the following screen (fig 7)

- Applications	Places System 🗐 📿 🕢	Live session user 🛛 🜉 幯 Tue Jun 16,	2:43 PM Ŭ
	2 ( h h h h h h h h h h h h h h h h h h		
Example	install		
	Prepare disk space		
<u>(</u>	How do you want to partition the disk?		
	Guided - use entire disk		
Install	🖲 SCSI1 (0,0,0) (sda) - 17.2 GB ATA Virtual HD		107
	🔿 Manual		
			1 All and the second
			State of the second sec
			Freedor
	Step 4 of 7	el 🖉 🦾 🖉 🖕 Eorward	
🔳 🏩 Install		I	
	(FIGURE 7. UBUNTU INSTALL SCREEN – PAR	TITION MANAGER)	

If your hard drive is blank it will default to Guided. If your hard drive is not blank you will see a different screen on which guided is an option. Choose Guided – use entire disk and click Forward. Next you will see the following screen (fig 8)

-🛟 Applications	Places System 🥹 🔄 🕢	Live session user 🛛 💂 🕸 Tue Jun	16, 2:45 PM Ŭ
Example	📥 install	_   ×	
	Who are you?		
6	What is your name?		
	NUCORE	]	
Install	What name do you want to use to log in?		1.17
	nucore		
- Hell	If more than one person will use this computer, yo	u can set up multiple accounts after installation.	
	Choose a password to keep your account safe.		11.16
	*****		18th
	Enter the same password twice, so that it can be o	hecked for typing errors.	Here in
	What is the name of this computer?		
	nucore-desktop		
	This name will be used if you make the computer v	isible to others on a network.	
	Step 5 of 7	Cancel 👍 Back 😝 Exward	
🔳 🏩 Install			

(FIGURE 8. UBUNTU INSTALL SCREEN - USER SETUP)

Fill in the 'What is your name field?' with 'nucore' (lower case.) The login name will change to nucore and the name of the computer will say 'nucore-desktop'. Enter your password as 'nucore' (no quotes – lower case.) Click the Forward button. Next you will see the following screen (fig 9)

-🛟 Applications	Places System 🕹 🖂 🕢	Live session user 🛛 💂 🕸 Tue Jun 16, 2:	46 PM
Example	🛓 install		
	Ready to install		
<u> </u>	Your new operating system will now be installed with the following se	ettings:	
(install)	Language: English Keyboard layout: USA Name: NUCORE Login name: nucore Location: America/Detroit Migration Assistant:		The second
	If you continue, the changes listed below will be written to the dis Otherwise, you will be able to make further changes manually. WARNING: This will destroy all data on any partitions you have re well as on the partitions that are going to be formatted		
	Step 7 of 7	Cancel	
🗩 🏩 Install			

(FIGURE 9. UBUNTU INSTALL SCREEN - INSTALL REVIEW)

On this screen click Install. During the installation process you will see a progress bar (fig 10)



(FIGURE 10. UBUNTU INSTALL SCREEN - INSTALL PROGRESS)

The installation will take approximately 10 minutes depending on the speed on your machine. You may get an error during the installation process that the Ubuntu installation CD is bad. If this happens remove the CD, clean it gently with a soft cloth and restart the installation process. Linux is very finicky about CDROM drives and disks. If cleaning the disc doesn't solve the problem you may want to try another CDROM drive or download a burn a new installation disc. Please report the issue on the support forums (<u>http://www.bigguyspinball.com/community/viewforum.php?f=18</u>)



Once the installation is complete you will see this screen (fig 11)

Click the Restart now button and remove the Ubuntu Installation CD when prompted. The Linux installation is now complete.

# **Section Four – Installation Nucore**

## Step 1 - Login

Once the computer reboots you will see the login screen (fig 12)



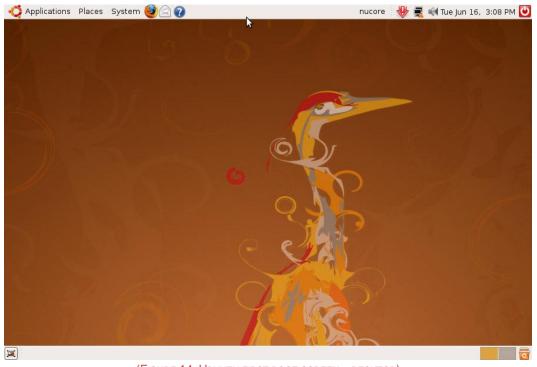
(FIGURE 12. UBUNTU FIRST BOOT SCREEN - LOGIN - USERNAME)

Enter 'nucore' in the Username box and press (Enter). You will then be prompted for a password (fig 13)



(FIGURE 13. UBUNTU FIRST BOOT SCREEN - LOGIN - PASSWORD)

Enter 'nucore' in the Password box and press (Enter). Next you will see the Ubuntu Desktop (fig 14)



(FIGURE 14. UBUNTU FIRST BOOT SCREEN - DESKTOP)

#### Step 2 - Assign a password to the root user

The Linux administrative user is 'root'. Now you will need to create a password for the root user. Click the System option on the top menu bar. Next move your mouse down to Administration which will bring up another menu. Click Users and Groups from this menu (fig 15)



(FIGURE 15. UBUNTU SETUP – MENU)

Next you will see the following screen (fig 16)

🛟 Applications Places Syste	em 🙋 🗟 🕢		nucore 🛛 🕀 🛒	🕬 Tue Jun 16, 3:09 PM 💟
				29
	-	Users Settings	×	
	Name Login na	me Home directory	f Add User	
	Sincore nucore	/home/nucore	Properties	
	S root root	/root		
			Delete	2 1 1 1 1 A 1
		1	Anage Groups	and the Th
Martin Charles				
				2 Martin Park
	🕜 <u>H</u> elp		Inkock 🔀 <u>C</u> lose	
14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		C III		
the second of the		400		1.1.1.1
			KG	14 14 14 13 28 1
		1100		
🗐 🛃 Users Settings				
	(FIGURE 16. UBUI	NTU SETUP – USER	RS AND GROUPS)	

Select the root user and then click the unlock button. At this point you will be asked to authenticate (fig 17)

- Applications Places	System 🥘 📄 🕢	nuc	core 🛛 🖖 🚍	🛯 🗐 Tue Jun 16,	3:10 PM
					7
	3	Users Settings	×		
	٩	Authenticate			
	M	System policy prevents modifying the configuration An application is attempting to perform an action that requires privileges. Authentication as one of users below is required to perform this action. and nucore,,, (nucore) Password for nucore: Password for nuco	f the		XA A A A A A A A A A A A A A A A A A A
🗐 📑 Users Settings	( <b>0</b> )				
	(Figur	E <b>17. U</b> BUNTU SETUP – AUTHORIZATIO	N)		

Enter 'nucore' in the Password for nucore box and click Authenticate. Now select the root user again and click the Properties button and you will see the following screen (fig 18)

🗳 Applications Places System 🎯 🗟 🕢		nucore   🖖 🛒	🕷 Tue Jun 16, 3:52 PM 😈
	Account 'root' Properties		
	Account User Privileges Advanced		
	Basic Settings		
	Username: root		
	Real name: root		
	Contact Information		
Contraction of the second s	Office location:		
	Work phone:		
	Home phone:		
	Password		
	Set password by hand		
and the second second second	User password:		
	Con <u>fi</u> rmation:		
	⊖ Generate <u>r</u> andom password		
	Password set to:		
1418 1 K	Cancel 4		
	T SS.		
🔳 🗾 Users Settings			

(FIGURE 18. UBUNTU SETUP – ROOT PASSWORD)

Click in the 'Set password by hand' circle and enter 'nucore' in both boxes. Click OK. You have now assigned the password 'nucore' to the 'root' (or admin) user.

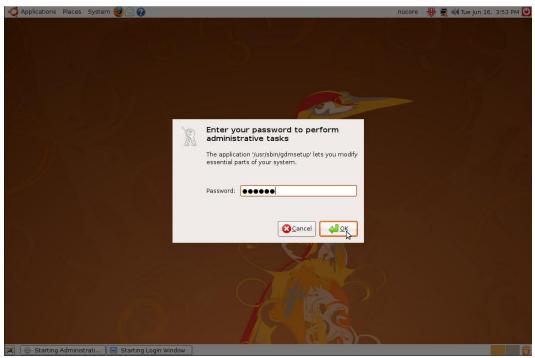
#### Step 3 – Allow root user login

Now that you have setup the root user you need to enable root user login. Click the System option on the top menu bar. Next move your mouse down to Administration which will bring up another menu. Click Login Window from this menu (fig 19)



(FIGURE 19. UBUNTU SETUP – MENU)

Once you click this you will be prompted for your password (fig 20)



(FIGURE 20. UBUNTU SETUP – PASSWORD)

Enter 'nucore' in the password box and click OK. The Login Window Preferences screen will appear. Click the Security tab to show the following screen (fig 21)

🗳 Applications Places System 🎯 🗟 🕢		nucore	🚸 🛒 📢 Tue Jun 16, 3:54 PM 💟
	Login Window Preferences		
General	Local Remote Accessibility Security Users		All the second
	able Automatic Login		
User			
Ena	able <u>T</u> imed Login		Sec. 1
Uger			
Paus	e before login: 30 🔹 seconds		
	llo <u>w</u> remote timed logins		
Securi	ty		
Logi	n retry delay: 1		1. 1. 1. 1.
Minir	nal UID: 1000		100 100 100
	<mark>llow local system administrator login</mark> ∣low remote system administrator login	11	and the second
	na <u>b</u> le debug messages to system log		to a flat of the second
	eny TCP connections to Xserver		and the second
	1 Never place cookies on NFS only allow login if user owns their home directory		
Per	Any anaw Joy in goed owns their nonne directory ) Qnly allow login if user's home directory permissions are secure ) Allow login if group write permissions on user's home directory ) Allow login if all write permissions on user's home directory Configure <u>X</u> Server		E
C He	lp 🔀 <u>C</u> lose		
💌 🔲 Login Window Prefere			

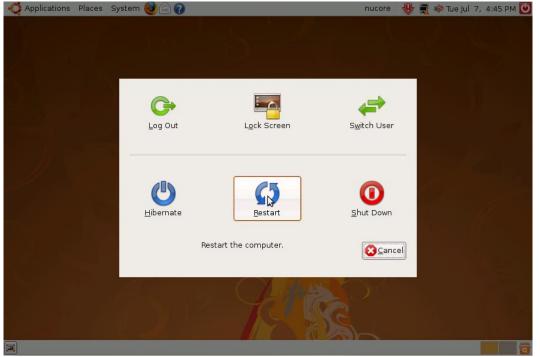
(FIGURE 21. UBUNTU SETUP - LOGIN WINDOW PREFERENCES)

Move your mouse to the Allow local system administrator login box and click it (fig 22)

🗳 Applications Places System 🕘 😭 👔		nucore	₩ 🕄	镧 Tue Jun 16, 3:54 PM 💟
	Login Window Preferences			
	General Local Remote Accessibility Security Users			
	🗆 Enable Automatic Login			
	User:			
	Enable <u>T</u> imed Login			
	Uger:			
	Pause before login: 30 🚔 seconds			
	Allow remote timed logins			
	Security			
	Login <u>r</u> etry delay: 1			
	Minimal UID:			
	☑ Allow local system administrator login			
and the second	Allow remote system administrator login			
	Enable debug messages to system log			
	☑ Deny TCP connections to Xserver			
	☑ Never place cookies on NFS			
	Only allow login if user owns their home directory			
	Permissions			
	Only allow login if user's home directory permissions are secure			
	Allow login if group write permissions on user's home directory			
	<ul> <li>Allow login if all write permissions on user's home directory</li> </ul>			
	Confine V.C.			
	Configure <u>X</u> Server			
📧 🗔 Login Window Prefere				

(FIGURE 22. UBUNTU SETUP - LOGIN WINDOW PREFERENCES)

Then click Close. You can now login as the 'root' user. At this point click the red power button on the top right corner of the screen. You will see the following screen (fig 23)



(FIGURE 23. UBUNTU SETUP - LOG OUT)

Click the Restart button.

## **Step 4 – Final Installation**

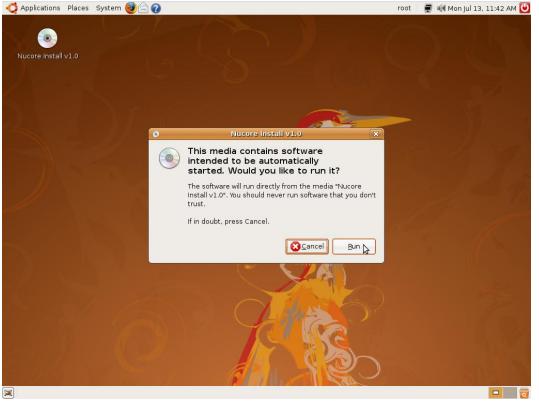
You will now need to login as the 'root' user. Enter 'root' as the Username on the login page and press (ENTER) (fig 24)



(FIGURE 24. UBUNTU SETUP - ROOT LOGIN)

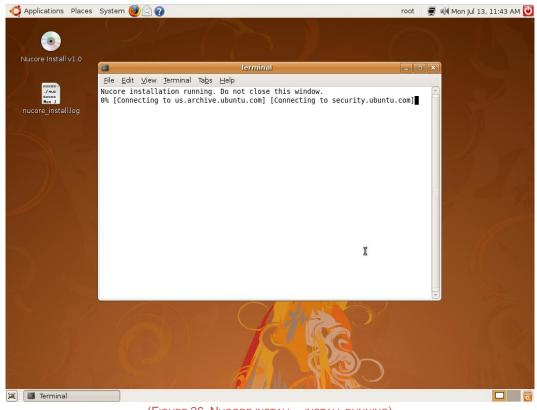
Next enter 'nucore' as the password in the Password box and press (ENTER). Next insert the Nucore Install disc in the CDROM drive. When the system has recognized the disc you will see a popup window (fig 25)

NOTE: A few people have reported that running that installing Nucore, which updates Linux, disables Firefox and makes it very difficult for a novice user to download the ROM files. Before installing Nucore it would be a good idea to skip ahead to section five and download the Nucore ROMs to your desktop. Do not try to copy them to the Nucore folder as it won't exist until you install Nucore. Once you have downloaded the ROMs continue in this section and install Nucore. After installing Nucore follow the remaining instructions in section five to copy the files to the correct Nucore folder.



(FIGURE 25. NUCORE INSTALL - CONFIRM INSTALL)

Now click the Run button this will start the installation (FIG 26)



(FIGURE 26. NUCORE INSTALL – INSTALL RUNNING)

The installation will take approximately 30 minutes (depending on your internet connection.) Do not close the install window or attempt to do anything else on the machine while the install is running. The screen may go black. You can press the space bar to bring the screen back up. You will also notice a new file on the desktop (nucore\_install.log.) This is a log file that will show you the details of the installation. Once the installation window closes open the log file by clicking on it. This is an example of a successful install (fig 27.)

🎻 Applications Places System 🥹 🏹 🍞	g (~/Desktop) - gedit
-	y (~/Desktop) - geait
<u>F</u> ile <u>E</u> dit ⊻iew <u>S</u> earch <u>T</u> ools <u>D</u> ocuments <u>H</u> elp	
Image: New Open         Image: Save         Image: Print         Image: Save         Image: Save <th>ind Replace</th>	ind Replace
📄 nucore_install.log 🛛	
./nucore/install/install started running at Mon Jul 13 11:	43:07 EDT 2009
<pre>Mon Jul 13 11:43:12 EDT 2009 [SUCCESS] cp -r ./ /root/Desktop/nu Mon Jul 13 11:43:12 EDT 2009 [SUCCESS] apt-get -y update r Mon Jul 13 12:00:01 EDT 2009 [SUCCESS] apt-get -y upgrade Mon Jul 13 12:00:01 EDT 2009 [SUCCESS] apt-get -y install Mon Jul 13 12:00:15 EDT 2009 [SUCCESS] apt-get -y install Mon Jul 13 12:00:22 EDT 2009 [SUCCESS] apt-get -y install Mon Jul 13 12:00:22 EDT 2009 [SUCCESS] apt-get -y install Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] apt-get -y install Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] cp -R ./libs/* /usr Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] cp ./start/exec_nuc Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ch -s libItdl.so.3. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libItdl.so.3. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libItdl.so.3. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libItdl.so.3. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libItdl.so.3. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libItdl.so.3. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libSDL_mixer- Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libSDL_mixer- Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libSDL_mixer- Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libftchipl.s ran without error Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ln -s libftd2xx.so. Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:30 EDT 2009 [SUCCESS] ldconfig ran withou Mon Jul 13 12:00:3</pre>	coretest/nucore/install ran without error an without error Ibsdl-mixerl.2 ran without error libsdl-mixerl.2 ran without error libsdc++5 ran without error vusbmount ran without error /local/lib ran without error ore /etc/init.d/exec_nucore ran without error 1.4 libltdl.so. 0 ran without error 0.11.3 libmg123.so ran without error 1.2.so.0 libSDL_mixer.30 ran without error 1.2.so.0 libSDL_mixer.30.0 ran without error 0.1.1 libftdliso 0.4.15 libftdiso ran without error t error ut error
	Ln 1, Col 1 INS
🔳 📝 nucore_install.log (~/	

(FIGURE 27. NUCORE INSTALL – LOG FILE)

The second line from the bottom will say, "Nucore install was a success." If you see this message you are finished with the install and may proceed to Section Five. If you receive a message that says errors have occurred make sure you are connected to the internet and you can go to a web site. If you are connected run the installation again by removing and re-inserting the install CD. Errors can also occur if Ubuntu's repositories are temporarily offline. If this happens the apt-get commands will show failure. In this case wait a few minutes and run the installation again. If you still haven't successfully completed the installation go to the Big Guys Support page and upload your log file.

## Section Five - Installing Nucore ROM Files

Open your Home folder by clicking Places on the top menu and selecting Home Folder (fig 29)



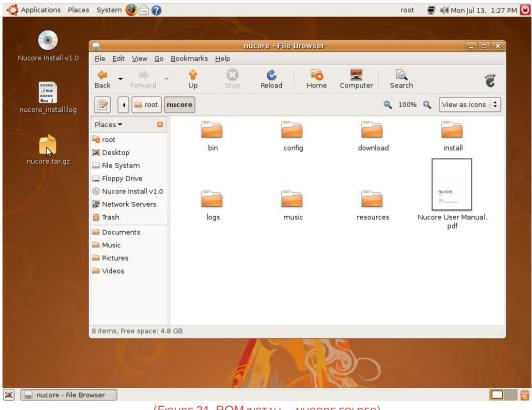
(FIGURE 29. ROM INSTALL - HOME FOLDER)

Next click on the nucore folder (fig 30)

- 🏹 Application	s Places System 🥹	2			root 🛛 💂 剩 Mon Ju	ul 13, 1:19 PM Ŭ
			root - File Browser		_ • ×	
Nucore Insta	<u>—</u> <u>F</u> ile <u>E</u> dit <u>∨</u> iew <u>G</u> o	<u>B</u> ookmarks <u>H</u> elp	1000 - File Blowser			
./nuc	Back Forward	Up Stop	C Reload Home	Computer Search	Ĵ,	
Mon J nucore_inst	📄 🖣 🗟 root			🔍 100%	🔍 🛛 View as Icons 😂	
	Places 🕶 🛛					1
	🗟 root					
	🔲 Desktop	Desktop	Documents	Music	nucore	
	🔜 File System 🚍 Floppy Drive					
	Nucore Install v1.0	Pictures	Public	Templates	Videos	13.
	2 Network Servers	Pictures	Public	lemplates	videos	- P (0)
	词 Trash					
	🗎 Documents					
	逼 Music					
	Pictures					
	🔤 Videos					
						has
	8 items, Free space: 5.0	) GB				
2)/			(A)	NW)		
🔳 🕞 root - I	File Browser					

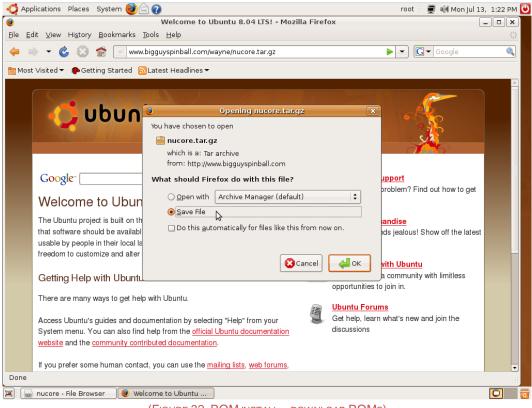
(FIGURE 30. ROM INSTALL - HOME FOLDER)

You will now see the contents of the nucore folder (fig 31)



(FIGURE 31. ROM INSTALL – NUCORE FOLDER)

You now need to download the Nucore ROM package from <u>www.pinball.com</u>. Run the Firefox browser (click on the globe with fire next to the System option on the top bar.) Enter the following address into the browser <u>http://www.bigguyspinball.com/roms</u> and press ENTER. When the save dialog box pops up click Save File and the click the OK button (fig 32.)



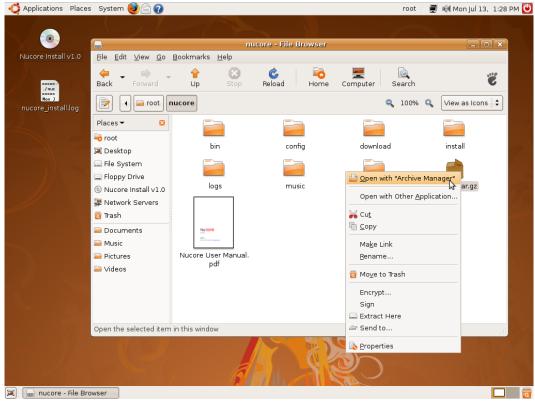
(FIGURE 32. ROM INSTALL - DOWNLOAD ROMS)

Once the download is finished close the browser. Now you will need to copy the Nucore rom file to your Nucore directory. Click on nucore.tar.tar on your desktop (fig 33)

Applications Places	s System 🥘 🗟 🕢			root	📕 🗐 Mon Jul 13, 1:27 PM
			nucore - File Browser		
Nucore Install v1.0	<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>G</u> o <u>B</u> ook	marks <u>H</u> elp			
	💝 🚽 👘 👻 Back Forward	🔶 🔀 Up Stop	Contraction Reload Home	Computer Search	Ű
Nucore_install.log		e		<mark>9</mark> 100%	• 🔍 View as Icons 😫
	Places 👻 🛛 🛛				
	🗟 root				
	🖼 Desktop	bin	config	download	install
nucore.tar.gz	🔜 File System				
	🚍 Floppy Drive				
	Nucore Install v1.0				nucore
	Potwork Servers				
	👼 Trash	logs	music	resources	Nucore User Manual. pdf
	Documents				
	Music Pictures				
	🥁 Videos				
	udeos				
	8 items, Free space: 4.8 GB				
🛋 🗐 nucore - File Bro	owser	11 10			

(FIGURE 33. ROM INSTALL - COPY ROMS)

Drag and drop the file in the Nucore directory. Next right-click on the nucore.tar.tar file and choose Open with "Archive Manager" (fig 34)



(FIGURE 34. ROM INSTALL - EXTRACT ROMS)

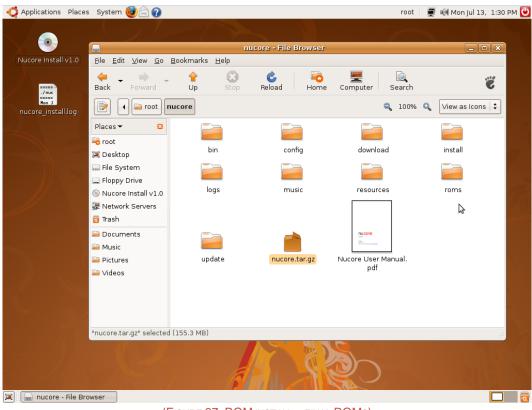
Once Archive Manager starts hold the CONTROL key and click the ROMs and update folders. Then click Extract (fig 35)

Applications Places System	em 🕘 😭 🕜				root	🛒 剩 Mon Jul 13, 1:29	PM 🍱
	nucore.tar.gz			ন			
<u>Archive Edit View H</u> elp			<u>ارتارک</u>				
New Open - Extra	t Add Files	Add Folder	Stop	er		_ <b>_ X</b>	
👍 Back 🔿 🏠 🔂 Loca	ation: 📔 /			) <mark>o</mark> me	Computer Search	Ű	
Name	✓ Size	Туре	Date Modified		<b>Q</b> 100%	Q View as Icons 🛟	
📄 roms	204.7 MB	Folder	12 July 2009, 23:02		- 100 <i>7</i> 0		
📄 update	20.0 MB	Folder	19 May 2009, 15:54				
					download	install	
					resources	nucore.tar.gz	
					resources	nacoreitangz	
2 objects (224.8 MB), 2 objects s	selected (0 bytes)						
"nucor	e.tar.gz" selected	(155.3 MB)					
				5			
El Martin				7119			
🗐 🔚 nucore - File Browser	anucore.tar.g	z					
			OM INSTALL – EX	трас			
	(FIG	UKE 33. K	OW INSTALL - EX	IRAC			

The Archive Manager will show the current directory which should be /root/nucore. Now click the Extract button (fig 36)

Applications Places Sy	ystem 🕹 🗟 🕜		r	oot 🔋	🛃 剩 Mon Jul 13, 1:29 PM 🔁
2	Extrac	t	×	~	
📝 🛛 🗟 root 🗤 nucor	e	Crea	ate Fo <u>l</u> der		_ <b>— X</b>
Places	Name	✓ Modified	d		
🔍 Search	🗎 bin	Today at	at 11:43	ch	3
Recently Used	🖴 config	Today at		ch	
🗟 root	🗎 download	Today at	at 11:43	0% 🔍	View as Icons 🗘
🖼 Desktop	🗀 install	Today at	at 11:43		
🔜 File System	逼 logs	Today at	at 11:43		
🔜 Nucore Install v1.0	🖴 music	Today at			install
🔜 Floppy Drive	🗎 resources	Today at			
🗎 Documents	nucore.tar.gz	Today at			
· · · · · · · · · · · · · · · · · · ·	Nucore User Manual.pdf	Today at	at 11:43		nucore.tar.gz
Add Bemove					
Files	Ac	tions			
<ul> <li><u>A</u>ll files</li> </ul>		🗹 Re-crea <u>t</u> e folders			
Selected files		✓ Over <u>w</u> rite existing files			
O <u>F</u> iles:		🗌 Do not extract older files			
		Password:			
Open destination folder	after extraction				
😢 Help		[ S⊆ancel ]	<u>≩</u> Extract		
"nu	icore.tar.gz" selected (155.3 MB)				
			C		
🔳  nucore - File Browse	r 🛛 🚭 nucore.tar.gz	)			
	(FIGURE 36.	ROM INSTALL - EXTRACT RO	Ms)		

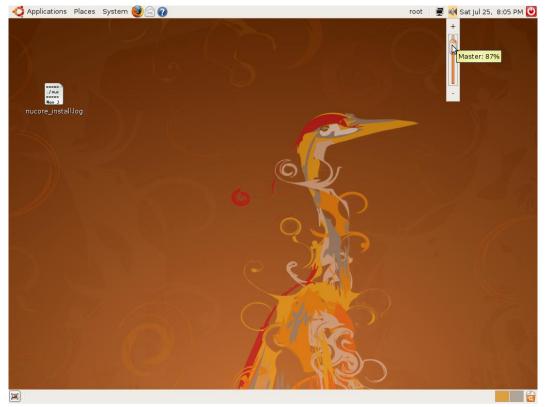
The two folders will extract in the Nucore directory and the archive manager will close (fig 37)



(FIGURE 37. ROM INSTALL - FINAL ROMS)

#### **Section Six – Master Volume**

Now is a good time to set your master volume since it's very easy to do in the windows manager. Click on the speaker icon in the upper right side of the top menu bar. Adjust the slider to 87%. This is a good starting value and you can always change this setting later (fig 37a)



(FIGURE 37A.- SETTING MASTER VOLUME)

At this point the installation procedure is complete and you can shut the system down and connect it to your game. When you connect your Nucore machine to your game make sure the USB interface board is also connected. Nucore will not run without the USB board.

# Section Six – Troubleshooting

If nucore fails to start on reboot please repeat the final installation instructions in Section Four – Step Four. If nucore fails to start again you'll need to check and make sure you copied the proper files into the correct locations (Section Five.) The GDM (windows manager) will no longer auto start. If nucore fails to load you will come to a text only login prompt. Enter your username and password (root/nucore) this will leave you at a terminal prompt. To start the GDM type the following:

## /etc/init.d/gdm start

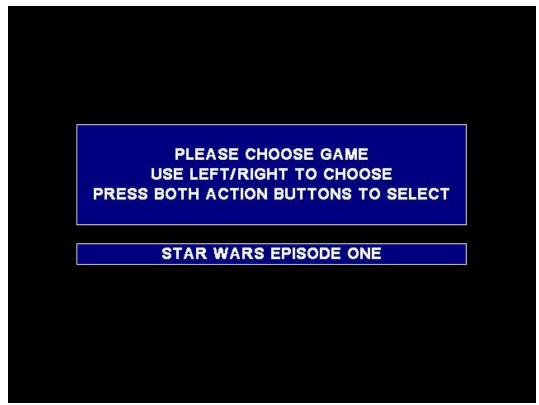
This will start the GDM and allow you to check your files graphically. If you know Linux commands you can skip this step and use the terminal window.

## **Nucore Software Users Guide**

This section will instruct you how to use Nucore and all of the modes and menus.

## Nucore – Boot-up

During boot-up Nucore defaults to auto playfield selection. The software attempts to automatically determine which playfield is installed. If it's able to detect which playfield is installed the game will automatically start. If for some reason the playfield is not detected you will see the following screen (fig 38)



(FIGURE 38. NUCORE - GAME CHOOSER)

This screen will allow you to choose which playfield you have installed. Once Nucore is loaded you can also hard-select which game is installed (see Configuration Menu.) If for some reason you need to exit from this screen press the F1 key on your keyboard. This will exit Nucore and take you back to a terminal prompt.

# Nucore – Attract Mode

When you first boot Nucore and your game goes into attract mode you will notice something new, the Nucore logo in the upper right hand corner of the screen (fig 39)

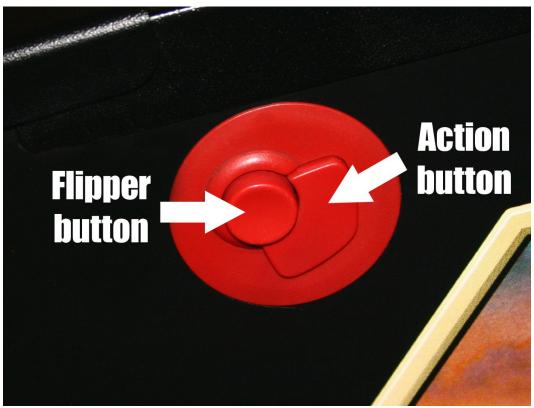


(FIGURE 39. NUCORE – ATTRACT MODE)

This logo signifies that Nucore is in attract mode which is very important. Most of the Nucore features will not start unless the game is in attract mode, the Jukebox being the prime example. If you have a problem starting the Jukebox make sure you see this logo in the upper right corner. The logo is not visible during game modes or diagnostic/configuration screens.

# **Controlling Nucore – Flipper and Action Buttons**

Pinball 2000 machines have 2 flipper buttons and two action buttons (unique to pinball 2000) (fig 40)



(FIGURE 40. PINBALL 2000 BUTTONS)

Most functions in Nucore are controlled by these buttons eliminating the need for a keyboard. In most cases starting and exiting modes relies on simultaneously pressing both action buttons. Example: While in attract mode simultaneously holding both left and right action buttons down starts the Jukebox mode. Simultaneously pressing these same buttons will also exit the Jukebox mode. If one or both of your actions buttons don't work you will not be able to fully utilize Nucore. Replacement button assemblies are available at most pinball suppliers.

# **Nucore Jukebox**

Nucore has a built-in jukebox that can be activated while in attract mode (fig 41)



(FIGURE 41. NUCORE JUKEBOX)

While in attract mode you can simultaneously press the left and right action button (fig 40) to start the Jukebox. The jukebox will play songs in order of the automatically generated playlist (see config menu) or in a random order. While in jukebox mode pressing the left or right flipper button will change songs. While in random mode either flipper button will randomly choose a song. While playing songs in list order the left flipper moves back a song in the list while the right flipper button plays the next song in the list.

To control the music volume you will use the left and right action buttons. The left action button lowers the volume while the right action button increases volume. The current volume level will show on the bottom of the jukebox screen (fig 42)



(FIGURE 42. NUCORE JUKEBOX VOLUME DISPLAY)

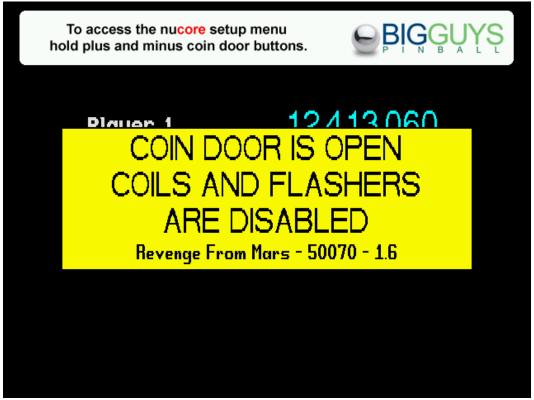
Pressing the left action button while the volume is all the way off will display "MUTED". Pressing the right action button while the volume is at 100% will display "MAXIMUM".

To exit the jukebox mode simultaneously press both action buttons and you will be taken back to the attract mode screen. If you press the game start button while in jukebox mode the jukebox will stop automatically and the game will begin. The jukebox will automatically restart after a specified amount of time (see jukebox delay – config menu.)

To add songs to the jukebox you can use the USB Update function in the config menu (see config menu.) The amount of songs you can add to the jukebox is only limited by your physical storage on the Nucore machine. Advanced Linux users can also specify network shares that contain music. See the support forums for more details.

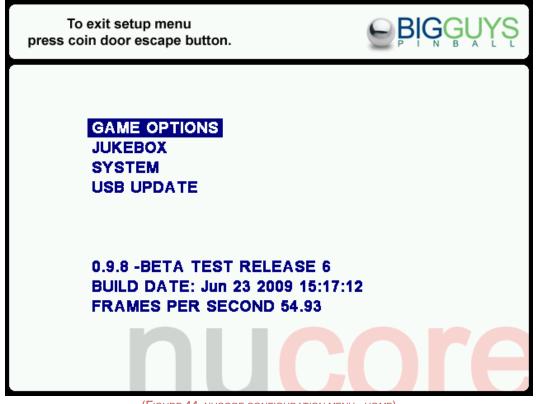
# **Nucore Configuration Menu**

We have created a custom Nucore setting menu that you can access while the coin door is open. While the machine is running open the coin door. You will see this screen (fig 43)



(FIGURE 43. NUCORE COIN DOOR OPEN)

While the coin door in open you simultaneously press the plus and minus buttons on the coin door to start the configuration menu (fig 44)

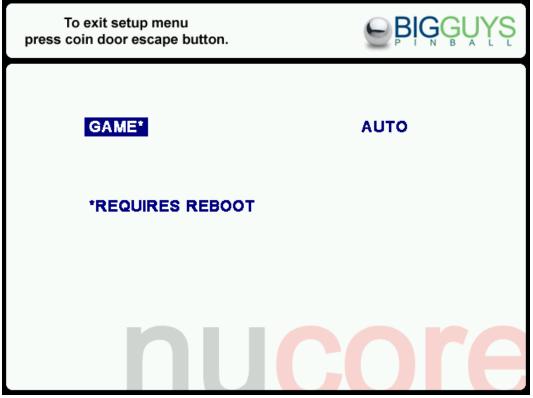


(FIGURE 44. NUCORE CONFIGURATION MENU - HOME)

This configuration home screen contains a menu of options. It will also show you the version of Nucore you are running, the build date, and how many frames per second your system is generation (maximum rate ~60fps.) You can select which menu item you want to change by pressing the + and - buttons on the coin door. To choose a menu options press the ENTER button on the coin door. To back out of a menu item or exit the menu press the ESCAPE button.

## **Configuration Menu – Game Options**

Game options has one item – Game selection (fg 45)

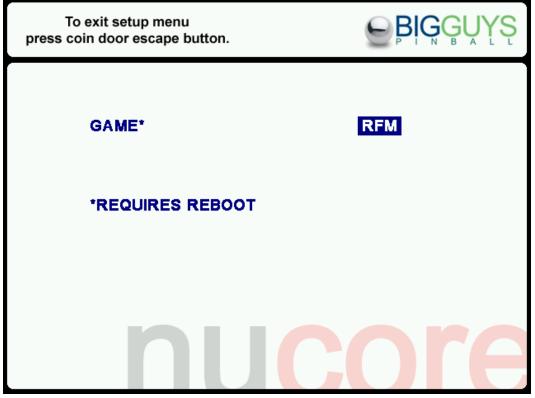


(FIGURE 45. NUCORE GAME SELECTION)

Game selection has 3 options:

- AUTO (default)
- RFM Revenge From Mars
- SWE1 Star Wars Episode One

When you first see this screen the GAME\* option will be highlighted. To change the game selection press the ENTER button on the coin door. Now the game options will become highlighted (fig 46)

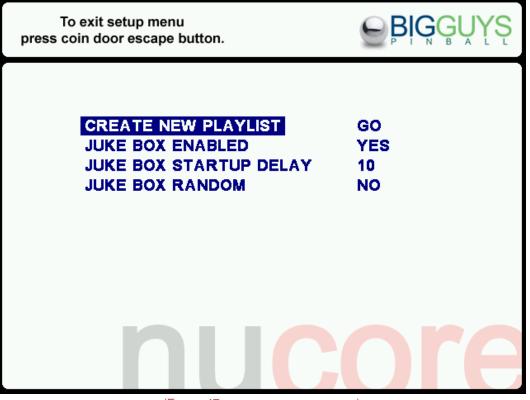


(FIGURE 46. NUCORE GAME OPTION)

Pressing the + and – buttons on the coin door will change the game. Choosing AUTO will let Nucore automatically determine which playfield is installed. If there are serious issues with the playfield the auto detection may fail. Also, if you only have one playfield choose that specific game. Once you have made your selection press the ENTER button then press ESCAPE to return to the main menu. All of the menus function this way so please keep this in mind. When a screen displays \*REQUIRES REBOOT and the option you change has an \* next to it the game will automatically reboot once you leave the config menu.

### **Configuration Menu – Jukebox Options**

There are four options on the jukebox menu (fig 47)



(FIGURE 47. NUCORE JUKEBOX OPTIONS)

CREATE NEW PLAYLIST

This option will automatically re-generate the jukebox playlist. You will only need to run this option if you manually add music or network shares. Adding new music using the USB Update automatically runs this option.

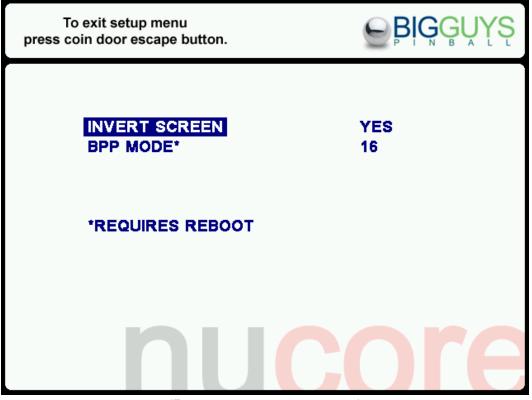
- JUKE BOX ENABLED This option will allow you to disable/enable the jukebox functionality.
- JUKE BOX STARTUP DELAY

This is the time (in seconds) that Nucore waits to restart the jukebox after a game is finished. Note: the jukebox will only automatically start if it was previously running while a game was started.

• JUKE BOX RANDOM This option enables/disables random song selection.

## **Configuration Menu – System Options**

There are two options on the system menu (fig 48)



(FIGURE 48. NUCORE SYSTEM OPTIONS)

INVERT SCREEN

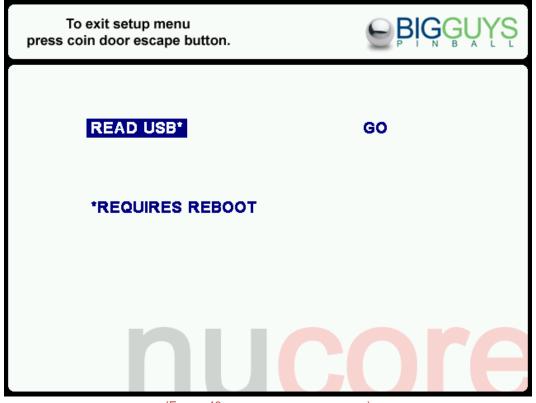
This option will allow you to invert the screen (Default NO.)

BPP MODE

This option allows you to select the bit depth of Nucore. The default is 16 and should not be changed unless you decide to run Nucore under a X11 environment such as Gnome or KDE. If you choose to run it in a windows manager select 32. There will be a slight performance hit when you select this option.

## **Configuration Menu – USB Update**

The USB Update procedure is fully automatic and very easy to use. In order to use the USB Update you'll need a formatted USB drive such as a memory stick or external hard drive. NOTE: The drive MUST be formatted as Fat32 or it will not work. The update procedure will allow you to add music to the jukebox library and update game code. To load music copy any MP3 files (no other file formats are supported) to the USB device. Do not put the music in a folder as the update will only copy .mp3 files that are in the base directory of the device. When you are ready to add or update files have your USB drive ready and enter the USB UPDATE menu (fig 49)



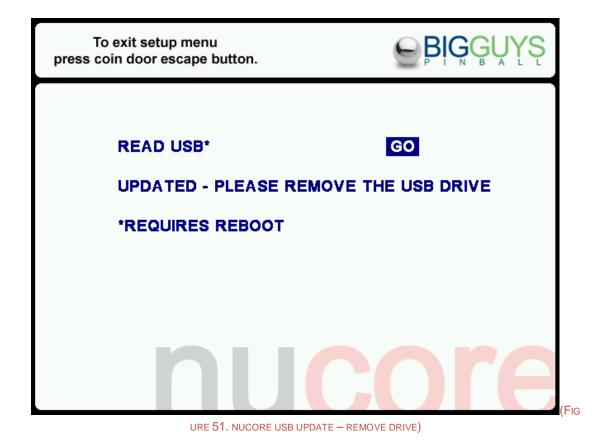
(FIGURE 49. NUCORE USB UPDATE - HOME)

- 1. Press the ENTER button on the coin door and you will see the word GO highlighted.
- 2. Press the ENTER button again to begin the procedure. You will see this screen (fig 50)



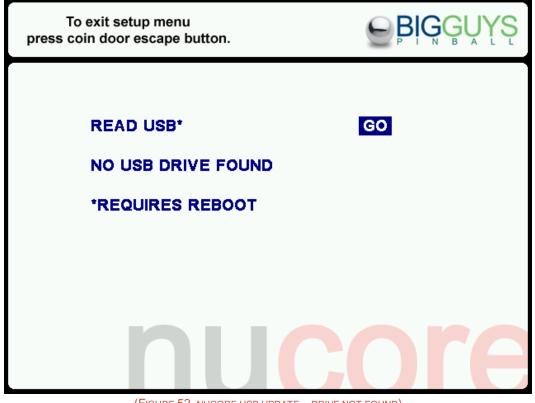
URE 50. NUCORE USB UPDATE - HOME)

- 3. Now insert you USB drive in the Nucore computer. TIP: You can purchase a 6' USB extension cable and run the cable from your Nucore computer to the coin door area. This will make connecting a USB device much easier.
- 4. Once the drive is recognized Nucore will copy the files from the USB drive.
- 5. When the file copy procedure is complete you will be prompted to remove the drive (fig 51)



6. You may now remove the drive from the computer. Press the ESCAPE button on the coin door twice and Nucore will restart.

If there is a problem with reading the USB drive Nucore will stop after 20 seconds and display the following error (fig 52)



(FIGURE 52. NUCORE USB UPDATE – DRIVE NOT FOUND)

If you get this error check the following:

- Make sure the USB drive is formatted.
- If using a USB extension cable make sure it's connected properly to the computer. You may also want to try connecting the drive directly to the computer in case of a faulty cable
- Check BIOS settings

#### Log Files

Whenever you execute the USB update Nucore will copy the log files from your computer to the USB device. These files can be very useful for troubleshooting any issues you may be having.

## **Nucore Command Line Options**

Nucore has a number of command line options you can choose. Most people will never have any reason to manually run Nucore unless there are technical issues such as failed playfield detection. The Nucore executable is in the /root/nucore/bin/ directory. To run Nucore from a terminal session type:

#### ./run nucore (options)

To see the list of options type ./run Nucore ?

\*\*\*\*\*\*\*\*\*\*\*

usage: nucore [game(rfm\_15,swe1\_14,auto)] [options]

General Options:

-nojukeplay	disable playback of jukebox songs
-genplaylist	create a new jukebox playlist

Video Options:

-flipscreen	display video flipped upside down
-fullscreen	display in full screen
-window	runs the emulator in windowed mode
-bpp (16 or 32)	selects bit-depth for renderer

Port options:

-parallel pnum redirect the parallel port to host port# (hex or dec)

\*\*\*\*\*\*\*

- Disable Jukebox (-nojukeplay) This will turn off jukebox functionality. This can also be changed from the config menu.
- Generate Playlist (-genplaylist) Nucore will search the music directories for .mp3 sound files and automatically add them to the master playlist.
- Flipscreen (-flipscreen)
   This will allow you to invert the screen. This can also be changed from the config menu.
- Fullscreen Mode (-fullscreen)
   This will run the emulator in fullscreen mode. This can also be changed from the config menu.

5. Window Mode (-window)

This will run the emulator in windowed mode. This can also be changed from the config menu.

- No Watermark (-nowatermark)
   This will disable the watermark. This setting will be removed for production.
- 7. Bits Per Pixel (-bpp)

This specifies which bit depth Nucore will use. When running the emulator in xwindows ALWAYS specify -bpp 32. Otherwise you may experience slowdown. When running Nucore from the console specify -bpp 16. This can also be changed from the config menu.

Parallel Port Address (-parallel [hex address ex. 0x378])
 This allows you to specify which address your parallel port is set to.

## **Nucore Keyboard Commands**

KEY Function

- F1 This will exit the emulator.
- F2 This will toggle screen flipping (useful for repairs)
- F3 (-) Fine adjust light timing\*
- F4 (+) Fine adjust light timing\*
- F5 (-) Coarse adjust light timing\*
- F6 (+)Coarse adjust light timing\*

\*Due to differences in computer architecture you may notice GI light flickering. The timing adjust will allow you to fine tune the GI timing for your specific computer. While making these adjustments you may notice the relay clicking on and off, this is expected. These settings are saved.

# **Nucore Support and Tips**

If you need additional support or encounter any possible bugs please go to the Nucore Support Forum on the Big Guys Pinball site:

#### http://www.bigguyspinball.com/community/viewforum.php?f=18

You will be able to search this forum for solutions to your issue and possibly help other people with the issues. This forum will also contain the latest Nucore software and manuals. Also, if you have any ideas for improvements or additions to Nucore please post them on the site. We are very interested in your input.