



NES Cafe Nintendo Emulator for Java

Author David de Niese
Release 0.57 (25th February 2005)
Email nescafe@davos.co.uk
Web-site <http://www.davieboy.net>

Welcome to NES Cafe

NES Cafe is distributed under the GNU General Public License. A copy of this license agreement has been included with this distribution of NES Cafe. If you have a question or wish to give me any feedback on the NES Cafe Nintendo emulator then please do not hesitate to contact me via email (my address is above) as your comments and suggestions are always welcome. More information on NES Cafe can also be found on the NES Cafe website (address shown above).

Introduction

Welcome to the NES Cafe Nintendo Emulator for Java. In a nutshell, the NES Cafe emulator allows you to play your old 8-bit Nintendo Entertainment System (NES) games on your computer by emulating the original hardware of the NES and tricking the games into thinking that they are running on the original machine. To play one of your old Nintendo games all what you need is NES Cafe and a copy of the game in NES format (these can be obtained from the Internet).

NES Cafe was the first Java-based emulator for the Nintendo with sound support and the only one to offer such a high level of compatibility with the original hardware, by correctly emulating the micro-processors and additional controllers. I started work on NES Cafe in May 2000 for my final year Computer Science project. Since the first release back in 2001, I have been continually working on and improving NES Cafe during my spare time (not that I get a lot of this). NES Cafe is now a stable and powerful emulator that can be run from websites or as a standalone application from your desktop and runs the vast majority of published Nintendo games.

Since the very first release NES Cafe has always been an Open Source project and it will always remain so. Keeping NES Cafe Open Source has enabled the project to go from strength to strength thanks to the helpful feedback and suggestions that I have received from the public over the years. This is something that I am very grateful for and I hope that you will all continue to push and improve NES Cafe further by adding more hardware support, or use the information from this project to build bigger and better Java emulators for the legendary 8-bit console.

Thanks for downloading NES Cafe!
David de Niese



Standard Distributions

The NES Cafe Nintendo emulator is available in three different distribution packages. NES Cafe is available as a compiled application (Binary Distribution), as a compiled Applet for your website (Applet Distribution) or as source code (Source Distribution). There are also some additional Special Editions releases of NES Cafe, such as the Punch-Out Special Edition that are available from the NES Cafe website. The following table lists the different NES Cafe emulator distributions that are available and what kind of person might be interested in downloading each one.

Distribution	Person
Binary	[most people] The majority of people will want the binary version of NES Cafe. This version contains everything (apart from the Nintendo games) that you will require to get the full version of NES Cafe running.
Applet	[web site developers] Anyone wishing to host NES Cafe on their own web-site and allow their visitors to play Nintendo games online will want to download the Applet version of NES Cafe (again, no games are included).
Source Code	[hard-core techie's] People that want to understand more about NES Cafe, or people looking to improve NES Cafe, will want to download this distribution. This version contains all the Java source code for the emulator.

Special Distributions

There are the following two special distributions of NES Cafe that are available. The Punch-Out Special Edition is a modified version of the NES Cafe emulator that allows players to record their times against the fighters online and compete to unlock special challenges. The NES Cafe ROM image and source distribution contains the source code for the NES Cafe ROM image.

Distribution	Person
Punch-Out Special Edition	[nostalgic Punch-out players] This is a special edition of the NES Cafe emulator that is available from the NES Cafe Online website that allows players to record their times against each other and compete to unlock special challenges.
NES Cafe ROM Image and Source	[6502 techie's] This distribution contains the 6502 source code for the NES Cafe ROM image that is distributed with the emulator. People interested in writing NES ROMs in 6502 assembler may find this interesting.



Requirements

Depending on the version of NES Cafe that you download (Binary, Applet or Source Code), you will need to meet the following software and hardware requirements to use NES Cafe. You should ensure that these requirements are met prior to installing and using NES Cafe from your PC.

Binary Distribution

Category	Requirement
Operating System	<p>An Operating System is run when you turn on your computer and allows you to launch other applications. NES Cafe supports all the major Microsoft and Linux Operating Systems.</p> <p>Microsoft Windows XP Microsoft Windows 2000 Microsoft Windows ME</p> <p>Red Hat Linux 9.0 Suse Linux 9.2</p>
Java Virtual Machine Runtime	<p>A Java Virtual Machine allows you to play Java applications on your computer. Any of the following two Java Virtual Machine Runtimes are supported by the NES Cafe emulator:</p> <p>Sun Java Virtual Machine 1.4.2 IBM Java Virtual Machine 1.3.0 (fastest)</p>
WinZip	<p>WinZip is a shareware application that can be used to uncompress files from compressed Zip files. NES Cafe is provided as a Zip file so that the distribution can remain small. The user will need to uncompress the distribution file and extract the files from within. I recommend using WinZip to perform this function.</p>



Applet Distribution

Category	Requirement
Operating System	<p>If you are hosting the Applet from your website then you will need to ensure that the Web Server is running one of the Operating Systems listed below. If you are planning to only run the Applet locally then please refer to the above requirements for the Binary distribution.</p> <p>Microsoft Windows Server 2003 Microsoft Windows XP Microsoft Windows Server 2000 Microsoft Windows 2000 Any mainstream Linux distribution</p>
Java Virtual Machine Runtime	<p>There is no requirement for a Java Virtual Machine to be installed on the Web Server because the Applet code will not be executed on the Web Server, instead the Applet will run on the remote computer that is connected. Therefore, you should ensure that your visitors have a Java Virtual Machine installed prior to being presented with the NES Cafe Applet.</p>
HTTP Web Server	<p>An HTTP Web Server is a software program that allows your computer to serve web page requests from remote computers. Any of the following HTTP Web Servers are supported:</p> <p>Microsoft IIS Web Server 5.0 Apache 2.0.52 (or higher)</p>
WinZip	<p>WinZip is a shareware application that can be used to uncompress files from compressed Zip files. NES Cafe is provided as a Zip file so that the distribution can remain small. The user will need to uncompress the distribution file and extract the files from within. I recommend using WinZip to perform this function.</p>



Source Code Distribution

Category	Requirement
Operating System	<p>An Operating System is run when you turn on your computer and allows you to launch other applications. NES Cafe supports all the major Microsoft and Linux Operating Systems.</p> <p>Microsoft Windows XP Microsoft Windows 2000 Microsoft Windows ME</p> <p>Red Hat Linux 9.0 Suse Linux 9.2</p>
Java Software Development Kit	<p>A Java SDK contains the Java Virtual Machine runtime environment, plus the tools that you will need to develop and compile NES Cafe. The suggested Java SDK is shown below:</p> <p>Sun Java Development Kit 1.4.2</p>
Java Pre-Processor (SJPP)	<p>The Java Pre-Processor was used during the development of NES Cafe to minimise the amount of redundant code contained with each distribution. For example, pre-processor directives were given to ensure that the weight of the GUI code from the Binary distribution would not be included in the stream-lined Applet distribution. The pre-processor used from the Simple Java Pre-Processor.</p>
WinZip	<p>WinZip is a shareware application that can be used to uncompress files from compressed Zip files. NES Cafe is provided as a Zip file so that the distribution can remain small. The user will need to uncompress the distribution file and extract the files from within. I recommend using WinZip to perform this function.</p>



Linked Websites

Application	Website
Apache HTTP Web Server	http://httpd.apache.org/
Every Video Game NES Cafe Forums	http://www.everyvideogame.com/
Microsoft IIS Web Server	http://www.microsoft.com/iis/
Microsoft Windows	http://www.microsoft.com
NES Cafe Website	http://www.davieboy.net/nescafe/
NES Cafe Online Website	http://www.davieboy.net/play/
Red Hat Linux	http://www.redhat.com
Simple Java Pre-Processor	https://sjpp.dev.java.net/
Sun Java Virtual Machine and SDK	http://java.sun.com
Suse Linux	http://www.suse.com
WinZip	http://www.winzip.com

Play NES Cafe Online

Website
NES Cafe Online Website http://www.davieboy.net/play
Every Video Game http://www.everyvideogame.com
www.emule-ation.com http://emuleation.free.fr
EKO ROMs http://www.eko2.wz.cz



Installing NES Cafe

Depending on the version of NES Cafe that you downloaded (Binary, Applet or Source Code) and the Operating System that you are using, you will need to install NES Cafe using one of the following different approaches. It is assumed that the reader is proficient in using the Operating System of their choice before continuing, and that they are familiar with concepts such as directories (folders for Windows users), installing applications and running applications.

Binary Distribution

- 1 Check the requirements for the Binary Distribution and ensure that they are met.
 - 2 Unzip the distribution files (NES Cafe.xxxbin.zip) to a directory (folder) on your computer.
 - 3 Microsoft Windows:
Go to the folder that you uncompressed NES Cafe to and run NES Cafe.bat

UNIX or Linux:
Change to the directory that you uncompressed NES Cafe to and type the following:

```
java -jar nescafe.xxx.jar
```
 - 4 NES Cafe should now be running on your computer.
-

Applet Distribution

- 1 Check the requirements for the Applet Distribution and ensure that they are met.
 - 2 Unzip the distribution files (NES Cafe.xxxapp.zip) to a directory on your Web Server.
 - 3 Navigate with a Web Browser to the URL corresponding to where you installed NES Cafe.
For example, if you are running Microsoft IIS Web Server and you unzipped NES Cafe to C:\inetpub\wwwroot\nescafe on your local machine then you should navigate to <http://localhost/nescfe/nescfe.html> to run the NES Cafe emulator.
 - 4 You should now see NES Cafe running from your Web Server with the default NES ROM. Please see the Applet Configuration section on how to configure the runtime settings.
 - 5 If you are using Microsoft IIS then you may also wish to install (and customise) the optional ASP scripts that come with NES Cafe. These scripts allow visitors to your website you use the Save and Load State features, the Save and Load Battery Backup RAM features and the Screen Shot feature in the Applet version. Information on configuring these is available in the Applet Configuration section of this document.
-



NES Cafe Applet Configuration

The settings for the NES Cafe Applet are all contained within the NES Cafe.html file. The following code listing shows all the possible settings that the Applet supports and the table that follows below shows which settings are optional and what their default values are:

Example Applet Code Tag

```

<applet code=NESCafeApplet archive="NESCafe056.jar" width=256 height=240>

    <param name=ROMFILE           value="roms/nintendogame.nes">
    <param name=LIGHTGUN          value="false">
    <param name=SOUND              value="true">

    <param name=LOADSTATEONSTARTUP value="true">
    <param name=LOADSTATE          value="scripts/loadState.asp">
    <param name=SAVESTATE          value="scripts/saveState.asp">

    <param name=LOADDRAMURL        value="scripts/loadRam.asp">
    <param name=SAVERAMURL          value="scripts/saveRam.asp">

    <param name=SAVESCREEN         value="scripts/saveImage.asp">

</applet>

```

Parameter Settings Explained

Tag	Meaning	Optional	Default
Width	The width in pixels of the displayed Applet. Increasing this value will increase the displayed width of NES Cafe, but will slow NES Cafe down. This setting should be at least 256 to ensure that the entire Nintendo screen is visible. It should be noted that when both the width and height are increased beyond 300 pixels then the NES Cafe screen will be magnified and centred.	No	256
Height	The height in pixels of the displayed Applet. Increasing this value will increase the displayed height of NES Cafe, but will slow NES Cafe down. This setting should be at least 240 to ensure that the entire Nintendo screen is visible. It should be noted that when both the width and height are increased beyond 300 pixels then the NES Cafe screen will be magnified and centred.	No	240+



Tag	Meaning	Optional	Default
ROMFILE	<p>The location of the Nintendo ROM file.</p> <p>When the NES Cafe Applet starts up it will attempt to load and run whichever ROM file is specified by this tag. If no Nintendo ROM file is provided then the default nescafe.nes file will be loaded instead (from inside the JAR file).</p> <p>If you know that your installation of NES Cafe will only be used to run one particular ROM image then it may be worthwhile storing it in the Applet JAR file by overwriting the existing nescafe.nes file. This will improve the download time of NES Cafe since the JAR will contain all the files required to run that installation.</p>	Yes	nescafe.nes
LIGHTGUN	<p>Whether or not the Light Gun is enabled.</p> <p>This tag should be set to True for all the games that require Light Gun (Zapper) support (for example, games such as Duck Hunt).</p>	Yes	False
SOUND	<p>Whether or not Sound should be emulated.</p> <p>This tag should be set to True for all games that you want NES Cafe to emulate the sound for.</p> <p>Java requires a lot of resource to emulate Sound and if this is not available (if you are not getting 60 frames per second) then the sound can appear crackled and distorted. Therefore, this setting allows your low-end visitors to not suffer the poor sound quality and frees up some cycles to speed up the main game emulation.</p>	Yes	False
LOADSTATE	<p>A Saved State to Load when User Presses L</p> <p>This tag points at a NES Cafe Saved State file, or to a CGI script that responds with the Saved State File. An example ASP script called loadstate.asp is included with the Applet Distribution, with heavily remarked code, which could be easily ported to PERL or PHP.</p> <p>The saved state file must belong to the ROMFILE that is currently being used.</p>	Yes	None



Tag	Meaning	Optional	Default
SAVESTATE	<p>A script to store a Saved State on the Server.</p> <p>This tag points at an ASP (or CGI) script which must be capable of receiving Saved State information from the NES Cafe Applet in a predefined format and storing it on the Server.</p> <p>An example ASP script called savestate.asp is included in the Applet distribution to show how such a script could be written, however it is recommended that this is customised prior to being deployed to your own Web Server to ensure that one user cannot overwrite another users Save State files. This script could be easily ported to PERL, PHP or any other CGI language.</p>	Yes	None
LOADSTATE ONSTARTUP	<p>Whether to load the State at Start-up.</p> <p>If this value is true then the State referenced by the LOADSTATE tag will be loaded instantly when the NES Cafe Applet loads up. The State can still be reloaded at any time by pressing L.</p>	Yes	False
LOADRAM URL	<p>A script to load Saved RAM on the Server.</p> <p>This tag points at an ASP (or CGI) script which must be capable of returning Save RAM information to the NES Cafe Applet in a predefined format. An example ASP script called loadram.asp is included in the Applet distribution, which could be easily ported to PERL, PHP or any other CGI language.</p>	Yes	None
SAVERAM URL	<p>A script to store a Save RAM on the Server.</p> <p>This tag points at an ASP (or CGI) script which must be capable of receiving Save RAM information from the NES Cafe Applet in a predefined format and storing it on the Server.</p> <p>An example ASP script called saveram.asp is included in the Applet distribution to show how such a script could be written, however it is recommended that this is customised prior to being deployed to your own Web Server to ensure that one user cannot overwrite another users Save RAM files. This script could be easily ported to PERL, PHP or any other CGI language.</p>	Yes	None



Tag	Meaning	Optional	Default
SAVEIMAGE	<p>Script to save pixel data from the Applet screen.</p> <p>This tag points to an ASP (or CGI) script which must be capable of receiving screen pixel information from the NES Cafe Applet in a predefined format and storing it on the server.</p> <p>An example ASP script called saveimage.asp is included with the Applet Distribution. To view the saved image data in your web browser another example ASP script is also included called showimage.asp, which converts the stored pixel data to PNG format. These scripts could be easily ported to another CGI language.</p>	Yes	None

Example ASP Code Script

A series of ASP (Active Server Page) scripts are included with the Applet distribution. These can be used with Microsoft IIS Web Server to increase the functionality of NES Cafe. Each is heavily commented and the roles of each of the scripts are explained in the following table below. These scripts should be customised before being deployed to your own web server and could be easily ported to any other CGI language, such as PERL, if your Web Server doesn't support ASP*.

Example Script Name	Description
loadram.asp	The script fetches a Save RAM file from the Web Server and presents it to the NES Cafe Applet in NES Cafe Save RAM file format. The script interprets Posted variables, such as the name of the game, and therefore knows which Save RAM file to load. It could be further customised to take into account usernames on your web site to ensure that one user cannot access another users Save RAM files.
saveram.asp	This script receives Save RAM information from the NES Cafe Applet in the NES Cafe Save RAM file format and saves it to the Web Server. It can also interpret Posted variables, such as the name of the game, and can therefore save the Save RAM files with meaningful names. If your website is used by more than one person (as most are) it is important to customise this script to take into account a username to ensure that one users Save RAM for a game doesn't overwrite another users Save RAM.

* Daniel Fisher from www.everyvideogame.com has ported this code to PHP, and the files are included with the Applet distribution. If you use this code, please reference his excellent website.



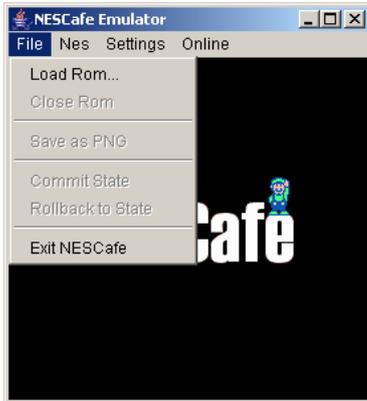
Example Script Name	Description
loadstate.asp	The script fetches a Saved State file from the Web Server and presents it to the NES Cafe Applet in NES Cafe Saved State file format. The script interprets Posted variables, such as the name of the game, and therefore knows which Saved State file to load. It could be further customised to take into account usernames on your web site to ensure that one user cannot access another users Saved State files.
savestate.asp	This script receives Saved State information from the NES Cafe Applet in the NES Cafe Saved State file format and saves it to the Web Server. It can also interpret Posted variables, such as the name of the game, and can therefore save the State file with meaningful names. If your website is used by more than one person (as most are) it is important to customise this script to take into account a username to ensure that one users State files for a game don't overwrite another users State files.
saveimage.asp	This script receives pixel data information from the NES Cafe Applet in the NES Cafe Image file format and saves it to the Web Server. It can also interpret Posted variables, such as the name of the game, and can therefore save the Image data files with meaningful names. If your website is used by more than one person (as most are) it is important to customise this script to take into account a username to ensure that one users image data doesn't overwrite another users image data.
showimage.asp	This script can be used directly from the Web Browser, passing the game name on the command line. It will return the pixel data (saved using saveimage.asp) as a PNG image file.

Note: As mentioned on the previous page, Daniel Fisher from www.everyvideogame.com has ported these ASP scripts to PHP and the files are available with the NES Cafe Applet distribution. If you use his PHP code on your website then please do reference his excellent website.

Using NES Cafe

Binary Distribution

When running NES Cafe in standard mode (from the Binary Distribution) the menu system allows you to perform most of the functions that you will require. The File menu allows you to load and close ROM files, as well as commit and rollback to saved states. The NES menu allows you to pause and reset the Nintendo hardware, the View menu controls the display options and the Sound menu manages the audio options. The following diagrams take you through the menus:

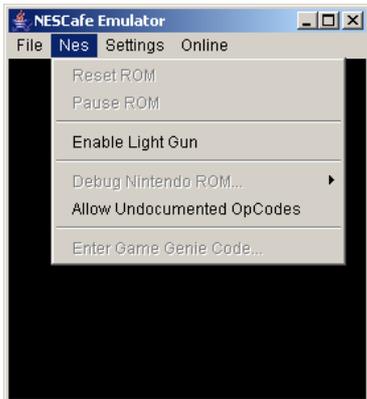


Loading ROM Files

The file menu can be used for loading and closing Nintendo ROM files. When you start NES Cafe click on the Load Rom menu item and a dialogue box will be presented allowing you to select the ROM image that you want to load. Shortly afterwards the game will start running in the main window.

Committing States and Rolling Back

You can also use this menu to commit the state of NES Cafe and then load it back again at a later stage. For example, if you are just about to battle Bowser then you could hit Commit State (keyboard shortcut C). If you were then to die just hit Rollback to State (keyboard shortcut L) and you would be right back where you were ready for a rematch!



Pausing NES Cafe

Some games never allow you to pause them exactly where you want to (for example, you cannot pause Punch-Out in the middle of a boxing round). Well now, by selecting Pause ROM from the NES menu (keyboard shortcut P) you can pause the actual emulation of the Nintendo game instead, allowing all games to be paused upon request.

Light Gun (Zapper) Support

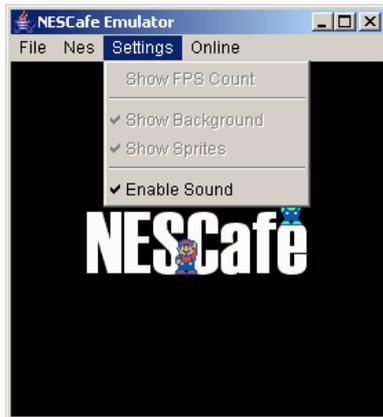
If the game you are playing requires a Light Gun (such as Duck Hunt) then simply click on the Enable Light Gun menu item to have the gun plugged into Joy pad Port 2. You can now use the mouse to aim and left mouse button to fire.

Game Genie Support

NES Cafe supports Game Genie codes. Click on Enter Game Genie Code and then supply a code for the game that you are currently playing. There are hundreds of known Game Genie codes for almost all Nintendo games on the Internet.

Nintendo 6502 Debugging Engine

NES Cafe also includes a Nintendo 6502 Debugging Engine. This allows you to see what is really going on inside the Nintendo game that you are playing – but be warned, you will require a good working knowledge of 6502 Assembler.



The Settings Menu

The Settings Menu can be used to show the current frame rate that you are getting (which will be around 60 frames per second). If you are experiencing slow performance then it might be interesting to see exactly how slow the emulation is running. Chances are that your hardware may need to be improved to get the full 60 frames per second.

The Sound submenu can be used to enable or disable the Sound whilst playing NES Cafe. If the Sound menu is greyed out then you may not have any sound card installed on your computer or you may be running an older version of the Java Virtual Machine (one that doesn't support sound).

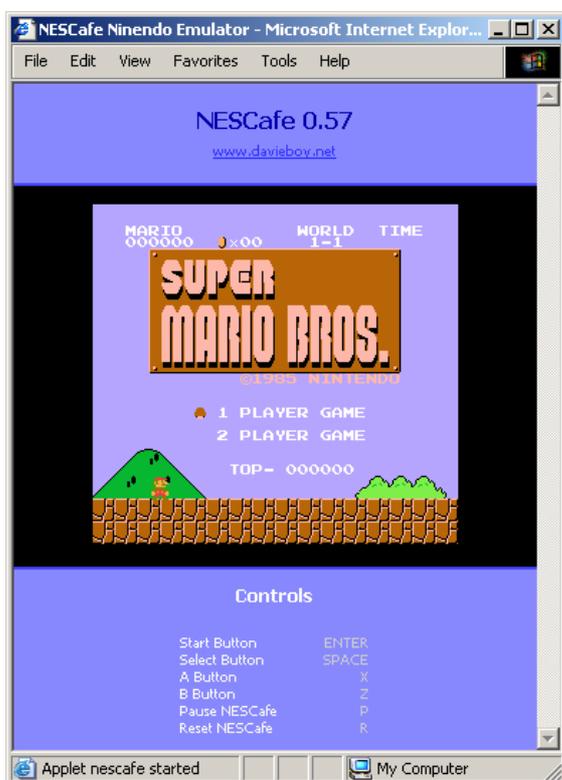


The Online Menu

The Online menu allows you to download ROM images from the NES Cafe website directly into your version of NES Cafe. Simply click on Download ROM and a dialogue will appear that shows all the games that are currently available online. Unfortunately, the list is usually small or not available because of outstanding copyright protection issues surrounding the provision of Nintendo ROM files. However, the functionality has been provided in case these rules change or copyright is abandoned for specific games.



Applet Distribution



The Applet version runs from within a Web Browser. The screen-shot on the left shows NES Cafe running from within Microsoft Internet Explorer, hosted from a Microsoft IIS HTTP Web Server. The main game (Super Mario Bros) appears in the central window and the bottom panel shows the controls that are available to Applet users.

The look and feel of the NES Cafe interface is predominately from the NES Cafe.html file (the actual NES Cafe Java Applet only presents the game window). If you intend hosting NES Cafe from your website then please feel free to change the NES Cafe.html page to your suiting and brand, however I would appreciate it if you could retain a link to the NES Cafe homepage with a comment such as 'Powered by NES Cafe 0.57'.

Playing Games (the Controls)

The following tables show the keys that can be used whilst Nintendo games are running in the standard and Applet versions of the NES Cafe emulator. The Applet user interface alludes to most of the available key controls, but there are a couple of additional keys that are also available.

Controls for Joy Pad 1

Nintendo Function	NES Cafe Standalone	NES Cafe Applet
Start button	Enter	Enter
Select button	Spacebar	Spacebar
A button	X	X
B button	Z	Z
Up button	Up arrow	Up arrow
Down button	Down arrow	Down arrow
Left button	Left arrow	Left arrow
Right button	Right arrow	Right arrow

**Controls for Joy Pad 2 (requires Light Gun to be Enabled)**

Nintendo Function	NES Cafe Standalone	NES Cafe Applet
Aim Light Gun (Zapper)	Move mouse	Move mouse
Fire Light Gun (Zapper)	Click left Mouse Button	Click Left Mouse Button

Adjustment Controls

Nintendo Function	NES Cafe Standalone	NES Cafe Applet
Pause Emulation	P	P
Reset the Game	R	R
Reset the Game & Clear Save RAM		
Sound Toggle	S	S (must be enabled in tag)
Commit State of Emulator	C	C
Rollback to Saved State	L	L
Toggle Monochrome/Colour	B	B
Tint Adjust Down	-	-
Tint Adjust Up	+	+
Hue Adjust Down	9	9
Hue Adjust Up	0	0
Save Screenshot	A	A
Control Player 1	<	<
Control Player 2	>	>
Display ROM Information	I	I

NES Cafe Debug Engine Controls

Nintendo Function	NES Cafe Standalone	NES Cafe Applet
Toggle Debug Mode	F5	<i>not available</i>
Step by Instruction	F6 (when in debug mode)	<i>not available</i>
Step by 20 Instructions	F7 (when in debug mode)	<i>not available</i>
Step to next Event	F8 (when in debug mode)	<i>not available</i>



NES Cafe Settings File

The NES Cafe Settings file can be used to store user-specific keyboard controls. The file should be placed in the same directory as the main JAR file for both the Applet and Standalone versions and it allows users to specify their own custom controls. The format of the file is as follows:

```
[Controls]
Joypad_A=X
Joypad_B=Z
Joypad_Start=ENTER
Joypad_Select=SPACE
```

nescafe.settings example 1

```
[Controls]
Joypad_A=90
Joypad_B=88
Joypad_Start=ENTER
Joypad_Select=SPACE
```

nescafe.settings example 1

When specifying the control, you can either use reserved keywords (such as ENTER, SPACE, SHIFT, CTRL or PGUP), the actual key value (such as A, B, C or Z) or the actual ASCII value (such as 65 for A, 66 for B or so on). Only the buttons can be reassigned, the directions cannot.



NES Cafe Online Features

Legal Notice (read before proceeding)

NES Cafe allows you to download ROMs directly from the NES Cafe Website, however you should only download Nintendo games that you legally own the original cartridge for, otherwise you are acting illegally. The author (David de Niese) accepts no liability or responsibility from your use of NES Cafe or from you downloading a Nintendo ROM that you are not legally entitled to download.

Configuring NES Cafe to Work with your Proxy Server

If you use a Proxy Server to connect to the Internet, you will need to configure NES Cafe to use it by going to the Online menu and selecting 'Configure Internet Connection'. In the dialog that is presented, you need to specify the name of your proxy server and the port number that you communicate with your proxy server on. If your proxy server requires authentication you can also specify a username and password. Unfortunately, NES Cafe will not support proxy scripts so please input only the IP address or name of your proxy server on the network.

Configuring NES Cafe to Work with your Firewall

If you use a Firewall, such as Norton or Black ICE, and you want to be able to use NES Cafe for online features then you will need to allow NES Cafe to use port 80 (HTTP). Instructions on how to do this will be included with the documentation for your firewall product. Please be aware that NES Cafe does not attempt to broadcast any personal information from your computer (you can confirm this by viewing the source code that is available from the NES Cafe website). However, you should be reminded that because NES Cafe is an Open Source product someone could have changed it to act maliciously, therefore please ensure that the version of NES Cafe you are using came from the NES Cafe site and that it only attempts to access www.davieboy.net on port 80.



Hardware Supported

The following list of hardware is emulated by NES Cafe:

- The n6502 Micro-processor
- The Nintendo Picture Processing Unit (PPU)
- 5 Sound Channels (2 Square, Triangle, Noise and DMC)
- NES Joy-pad and Light Gun

Additional supported features:

- Allows users to Save and Load the State of the NES
- Emulates and interprets Game Genie Codes
- Provides a built-in Nintendo 6502 Debugger
- Provides a built-in ROM Download Client

The following Memory Management Controllers (MMC's) are supported:

001: Nintendo MMC1	064: Tengen Rambo-1	119: TQ-ROM
002: PROM Switch (UNROM)	065: Irem H-3001	122: Sunsoft 74161/32
003: VROM Switch (CNROM)	066: Bandai 74161/32	140: Mapper 140
004: Nintendo MMC3	067: Sunsoft Mapper 3	151: VS Unisystem (Konami)
005: Nintendo MMC5	068: Sunsoft Mapper 4	180: Nichibutsu
006: Konami FFE F4xxx	070: 74161/32	181: Hacker International Type 2
007: Rare AOROM	071: Camerica Mapper	182: PC-SuperDonkeyKong
008: Konami FFE F3xxx	072: Jaleco Early Mapper 0	183: Gimmick (Bootleg)
009: Nintendo MMC2	073: Konami VRC3	184: Sunsoft 74161/32
010: Nintendo MMC4	075: Jaleco/Konami VRC1	185: CHR-ROM Disable Protect
011: Color Dreams	076: Namco 109	189: Street Fighter 2 Yoko
015: 100-in-1	077: Irem Early Mapper 0	222: Mapper 222
017: Konami FFE F8xxx	078: Jaleco 74161/32	225: 72-in-1
018: Jaleco SS8806	079: Nina-3 (AVE)	226: 76-in-1
021: Konami VRC4 2A	080: Taito X-005	227: 1200-in-1
022: Konami VRC4 type 1B	082: Taito C075	228: Action 52
023: Konami VRC2 type B	086: Jaleco Early Mapper 2	229: 31-in-1
032: Irem G-101	087: Konami 74161/32	231: 20-in-1
033: Taito TC0190 TC0350	088: Namco 118	232: Quattro Games
034: Nina-1	089: Sunsoft Early Mapper	233: 42-in-1
040: SMB2J	091: PC-HK-SF3	236: 800-in-1
041: Caltron 6-in-1	092: Jaleco Early Mapper 1	240: Gen Ke Le Zhuan
046: Rumble Station	093: Sunsoft 74161/32	242: Wai Xing Zhan Shi
047: NES-QJ	094: Capcom 74161/32	243: PC-Sachen/Hacker
048: Taito TC190V	097: Irem 74161/32	244: Mapper 244
050: SMB2J	099: VS Unisystem	245: Yong Zhe Dou E Long
057: 54-in-1	101: Jaleco 74161/32	246: Phone Serm Berm
058: 68-in-1	105: Nintendo World Championship	248: Bao Qing Tian
060: 65-in-1	113: PC-Sachen/Hacker	251: Mapper 251
062: Mapper 62	117: PC-Future	255: 110-in-1



Credits and Thanks

For their Documentation

Jeremy Chadwick,
Matt Conte,
Brice Fines (sprite priorities),
Marat Fayzullin,
Firebug (memory mappers),
Loopy (scrolling),
Freddy Offenga (undocumented opcodes)
Darren Ranalli (NEStor),
Brad Taylor (sound),

For their involvement

Jeremy Chadwick
Thea Chell
Daniel Fisher
Tyler Gibson
Rob Gonzalez
SmashManiac

NES Cafe History

NES Cafe 0.57

- Improve Sound processing and better support for DMC
- Applet Mode can now use C and L to commit and load States via CGI scripts
- Fixed bug where GUI screen was not blanking when ROM images were closed.
- Images saved to PNG format instead (press A in both Standalone or Applet version)
- Press I to show Cartridge ROM information in both Standalone and Applet version
- Press Q to clear Save RAM and reset the Cartridge in both Standalone and Applet version
- New Applet tag LOADSTATEONSTARTUP for forcing State to load on start-up
- Sound channel information is now included in Save State files
- Settings file can be used to store Controls in both Standalone and Applet versions
- Press < and > to swap between controlling Player 1 and Player 2
- Special thanks to Daniel Fisher from www.everyvideogame.com for his help.

NES Cafe 0.56

- V flag in P register not be set correctly on addition and subtraction (cheers Qian Wenjie)
- JMP (\$aaaa) not correctly implemented and fixed (cheers Qian Wenjie)
- Improved GUI, more consistent between Applet and Standalone versions.
- Sound toggle bug fixed when pressing S in standalone didn't enable channel selection.
- Microsoft JVM 5.0 works in Applet Mode now



NES Cafe 0.55

- 77 new Mappers supported (including fixes to existing Mappers)
- Better Implementation of handling UP+DOWN or LEFT+RIGHT (SmashManiac)
- Embedded NES Cafe ROM into the main distribution
- Game Images are stored as DDNB files, which will provide metadata for their content
- Fix to PPU: No longer reset PPU address mode during Vertical Blank.
- Fix to PPU: Reading from VRAM in ppuRead correctly mirrors the Palette memory.
- Remove Processor Interface (speed up)
- Added code to correct incorrectly dumped ROM images (partial implementation).
- Added code to change clock cycles for specific games (such as Battle Toads and SMB3).
- Larger screen sizes are now supported in Applet mode.

NES Cafe 0.54

- DMC Sound Support
- Applet now reads GIF files from within JAR file
- Can now Load a Saved State from Applet Mode
- Improvements to the SoundInterface (a bit smoother)
- Fixed bug with JoyPad - UP+DOWN or LEFT+RIGHT were not cancelling (SmashManiac)
- Fixed bug in N6502 where Inactive Display was sleeping for 200ms (SmashManiac)

NES Cafe 0.53

- Applet is now compiled with 1.1 Class Structure so works with Microsoft JVM Plugin.
- NES Cafe Client now works with Corporate Firewalls and Proxy Servers.

NES Cafe 0.52

- Fixed major bug with PPU clearing Sprite0 Hit on Reg 2002 Read.
- Added an inbuilt debugging engine (press F5 to enter).
- Added ROM Download Engine (download ROMs directly from Internet into NES Cafe).
- NES Cafe display is now resizable (need fast machine!).
- Support for GZIP and ZIP compressed files.
- Support for the Nintendo Zapper (Light Gun) added.
- GUI improvements and Checkbox Menu Items.
- Battery Backed Memory fully implemented - Save RAM.
- Dropped CPU Cycles per scan line down to 116
- Colour Emphasis working in PPU register 2001
- Fixed bug with PPU where rendering was not happening if Screen was Off.
- Fixed Sprite 0 Collision Detection, works inline with Damian Yerrick's Test.
- Fixed Nintendo MMC1 and MMC3.
- Added Mapper Konami FFE F4xxx and FFE F3xxx
- Added Mapper Color Dreams
- Added Mapper 100-in-1 and 1200-in-1
- Wrote and provided NES Cafe ROM Image (Demo NES ROM)



NES Cafe 0.50

- Applet Mode has been re-introduced and improved.
- The GUI has had some internal improvements.

NES Cafe 0.43

- Debug Mode has been removed from N6502 processor.
- Undocumented Opcodes Processing now an option. (Jeremy Chadwick suggested)
- MMC2 Mapper now perfect - will run Punchout without glitches.
- Removed NET and Applet support because it wasn't working correctly.
- Picture Processing Unit now perfect - better support for all games.

NES Cafe 0.42

- Incorrect addressing mode used with RRA \$aaaa,Y instruction. (Rob Gonzalez)
- SAX instruction doesn't set the Carry bit. (Rob Gonzalez)
- LSR instruction is not clearing the SIGN bit. (Rob Gonzalez)
- LoadSaveRam method causes problems when run as Applet. (Tyler Gibson)