



Previous User's Manual

Version 0.4

Manual Written by-

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Manual Version 0.1

Previous on WWW - <http://previous.alternative-system.com/>

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Introduction

Introducing Previous

Previous is a NeXT Computer emulator based on the Atari emulator Hatari. Previous is open source software and it is distributed under the terms of the [GNU General Public License \(GPL\)](#).

Previous uses the latest CPU emulation core from WinUAE. Previous is confirmed to compile and run on Linux, Mac OS X and Windows. It may also work on other Systems which are supported by the SDL library, like FreeBSD, NetBSD and BeOS.

How the Dream Come True

Building a NeXT Computer Emulator was the dream of our NeXT International Forum and all the people who loves NeXT Computer. Many quotes come out in the forum like – “I guess if that guy could do it for the Lisa, someone can do it for a NeXT”, “It would be great to have a NeXT hardware emulator!”. But now the dream is true by the NeXT hardware emulator Previous. Previous is come out by the help of many peoples. Let’s we see-

Main Developers –

1. Gilles Fétis (gilles504@gmail.com)
2. Andreas Grabher (andreas.grabher@cablenet.at)

Contributors & Codes from Other Projects –

1. Thomas Huth (huth@tuxfamily.org) – The developer of Hatari. Without Hatari then we have to work hard and hard on Previous and Thomas has also helped us to develop Previous in many situation.
2. Toni Wilen (twilen@winuae.net) – Thanks for his WinUAE project so we can have the new CPU emulation core! He has also helped us in many situation.

3. The NeXT International Forum (<http://www.nextcomputers.org/forums/>) – Thanks to all forum members without help of them there were no emulator called Previous!
4. Gavin Thomas Nicol, Piotr Twarecki, Michael Bosshard, Vaughan Kaufman, Jerome Vernet and Peter Leonard – They helped us in many situation.
5. Hatari (<http://hatari.tuxfamily.org/>) - Hatari is an Atari ST/STE/TT/Falcon emulator. Previous is based on its source code. This User's Manual includes some information's from Hatari User's Manual.
6. WinUAE (<http://www.winuae.net/>) – WinUAE is a Commodore Amiga Emulator for Windows. It is from Commodore Amiga Emulator UAE. WinUAE has new CPU core. This is the CPU core that Previous use.
7. RSCODE (<http://rscode.sourceforge.net/>) - The RSCODE project is an implementation of a Reed-Solomon error correction algorithm. Previous use this for emulating Magneto Optical Disk Drive.

Listed in random order - and if someone is missing here, please remind me!

Features

Previous All in one NeXT Computer Emulator. It aims To Emulate-

- NeXT Computer (original 68030 Cube)
- NeXTcube
- NeXTstation
- NeXTstation Color

And all its peripherals –

- Harddisk,CD-ROM,Floppy
- MO Drive

- Sound
- Ethernet
- Printer
- NeXTdimension for NeXTcube etc.

And Previous will can all version of NeXTStep, OpenStep and also NetBSD. (see [Missing Features & Known Issues](#) for details)

Missing Features & Known Issues

WARNING:

This is software in an early development state. Always make sure you only work on copies of your images or other data. There is a risk of data loss.

Previous is still work in progress. Some hardware is not yet emulated. Status:

Item	Status
CPU	Good
MMU	Good
FPU	Good
DSP	Missing
DMA	Partial
Memory	Good
2 bit Graphics	Good
Color Graphics	Good
RTC	Good
Timers	Buggy
SCSI Drive	Good
Magneto Optical Disk Drive	Buggy
Floppy Drive	Missing
Ethernet	Dummy
Serial	Missing
Printer	Missing
Sound	Missing

Keyboard	Good
Mouse	Good
NeXTdimension	Missing

The Turbo chipset is not emulated.

There are remaining problems with the host to emulated machine interface for input devices, mainly keyboard.

As version 0.4 Previous can boot & install NeXTStep (0.8 – 3.3 and 4.0 beta) and OpenStep (4.0 – 4.2) successfully.

Known Issues:

1. Un-emulated hardware may cause problems in certain situations (see above).
2. The kernel sometimes hangs during the boot process after printing "root on" (this is called "root on hang"). NeXTstep 3.0 and later are affected.
3. The MO drive causes problems in certain situations. Writing to MO images is temporarily disabled.
4. Keys are not mapped correctly depending on the host keyboard layout.
5. Shortcuts do not work properly or overlap with host commands on some platforms.
6. The clock does not tick accurately. Real time clock power-on test may fail sporadically on fast host systems.
7. FPU only works on x86 hosts.
8. Mac OS X: When minimizing and maximizing the application window there might occur a blue layer above the window's contents. This is an SDL bug.
9. Mac OS X: The native GUI is still showing Hatari's preferences.

System Requirements

Previous currently has the following minimum system requirements:

- A Fast PC
- SDL Library (<http://www.libsdl.org/>)
- zLib Library (<http://www.gzip.org/zlib/>)

In the course of time Previous has successfully been tested by various people on the following systems:

- MacOS X
- Windows XP , 7
- Ubuntu
- Raspberry Pi

Compiling and Running

Compiling Previous

For using Previous, you need to have installed the following libraries:

Required:

- The SDL library v1.2.15 (v2.x won't work) (<http://www.libsdl.org>)
- The zlib compression library (<http://www.gzip.org/zlib/>)

Don't forget to also install the header files of these libraries for compiling Previous (some Linux distributions use separate development packages for these header files)!

For compiling Previous, you need a C compiler (preferably GNU C), and a working CMake installation (see <http://www.cmake.org/> for details).

CMake can generate makefiles for various flavors of "Make" (like GNU-Make) and various IDEs like Xcode on Mac OS X, MSVC on Windows. To run CMake, you've got to pass the path to the sources of Previous as parameter, for example run the following if you are in the topmost directory of the Previous source tree:

```
cmake .
```

If you're tracking Previous version control, it's preferable to do the build in a separate build directory as above would overwrite the (non-CMake) Makefiles coming with Previous:

```
mkdir -p build
```

```
cd build
```

```
cmake ..
```

Have a look at the manual of CMake for other options. Alternatively, you can use the "cmake-gui" program to configure the sources with a graphical application.

After cmake finished the configuration successfully, you can compile Previous by typing "make". If all works fine, you'll get the executable "Previous" in the src/ subdirectory of the build tree.

Running Previous

For running the emulator, you need an image of the boot ROM of the emulated machine.

While the emulator is running, you can open the configuration menu by pressing F12, toggle between fullscreen and windowed mode by pressing F11 and initiate a clean shut down by pressing F10 (emulates the power button). (see [Using Previous](#) for details.)

Using Previous

Once you've started Previous successfully, you can use the emulator as an almost complete NeXT computer system.

The GUI

By seeing the GUI you will say – “*Oh, This is Hatari’s Interface!*”

Yes, you are right. The interface may be like as Hatari But it is not Hatari it is Previous!

Press F12 to enter the GUI. Navigate it with the mouse. The GUI is rather self explanatory.

The Main Menu



You can reach the other setup dialogs from the main menu by clicking on the appropriate buttons.

You can load the current settings from a configuration file by clicking on “*Load config.*” and you can save the current settings to a configuration file by clicking on “*Save config.*”.

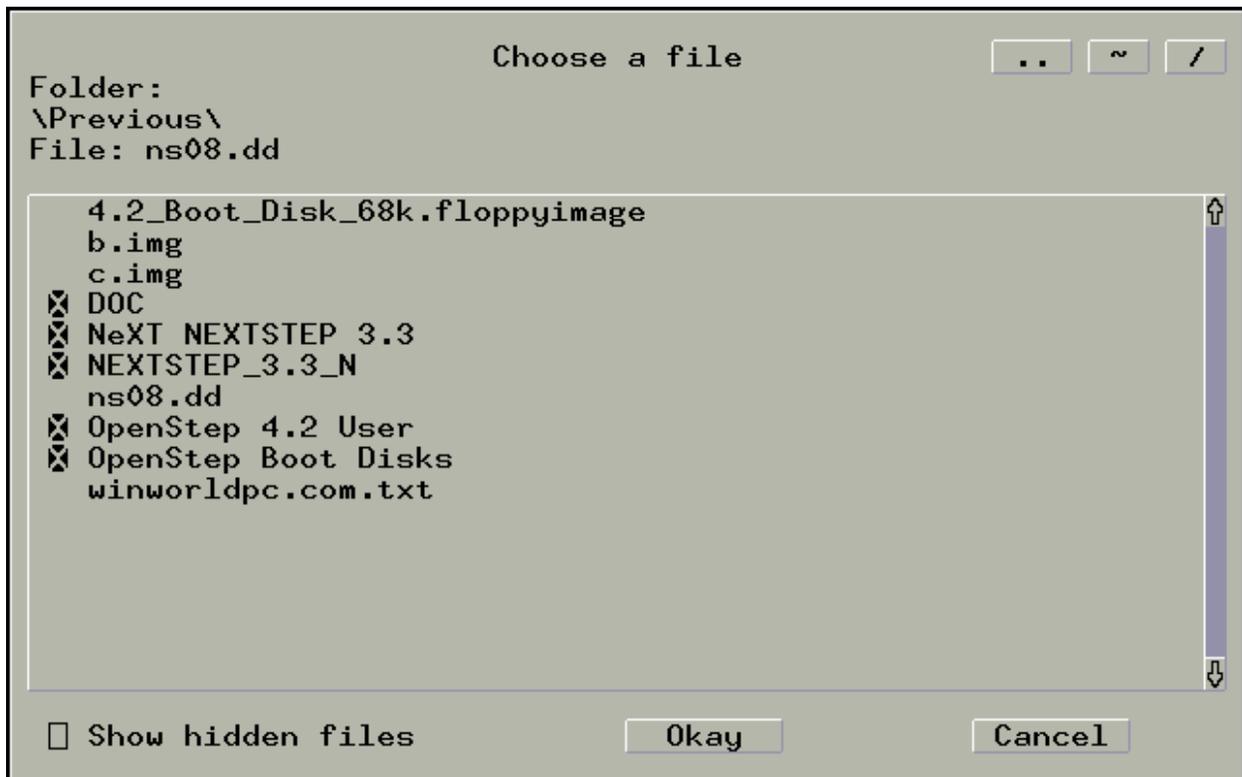
Click “*OK*” to go back and continue the emulation. All changed options will be applied.

Select the “*Reset*” machine option if you want the emulated machine to perform a cold reset. This is equal to switching the power off and on again on a real NeXT machine.

Click “*Quit*” to terminate Previous and return to the host OS.

Click “*Cancel*” to abandon any changes that you have made.

The File Selector Dialog



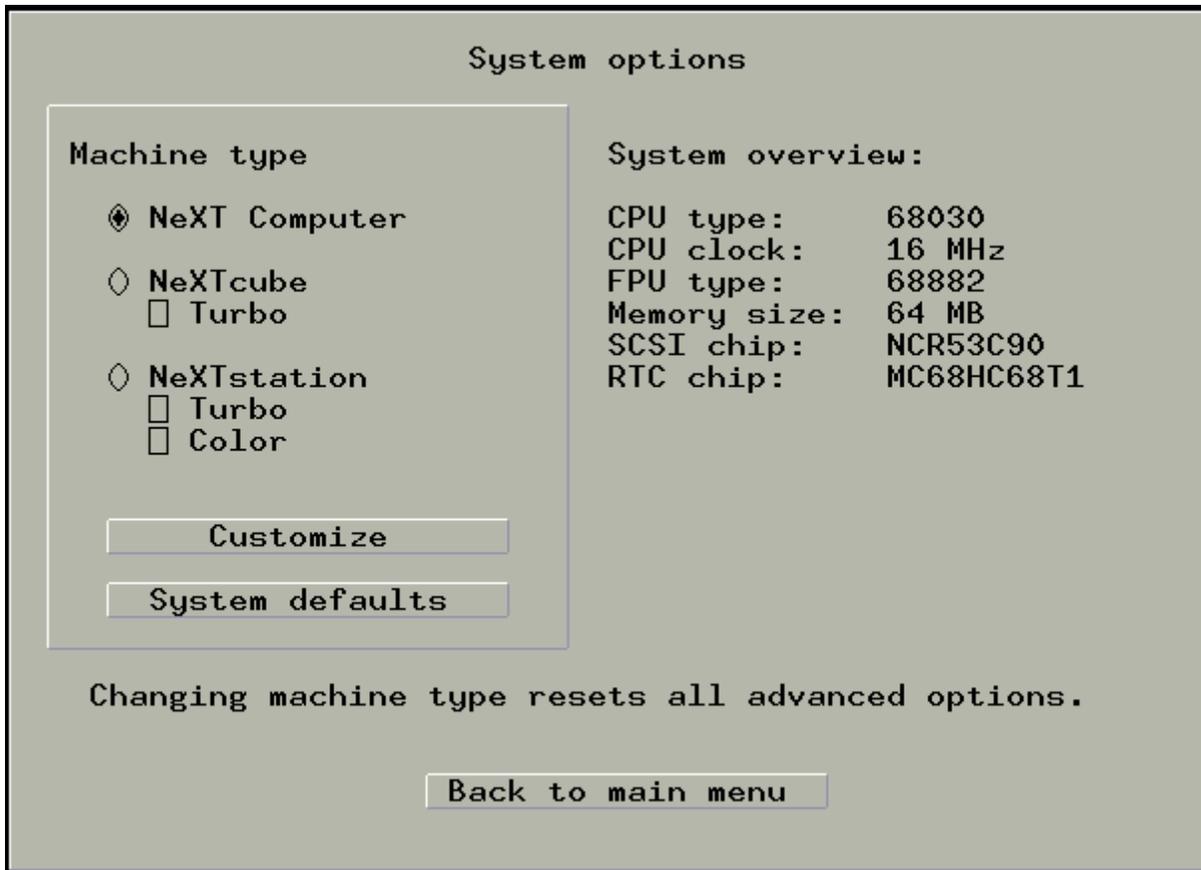
The file selector dialog appears whenever you are prompted to choose a file or folder.

To enter a folder or choose a file, simply click on the entry in the main box of the dialog. To navigate in the file list, you can use the scrollbar on the right with mouse, or use keyboard up + down arrow, page up + down, Home and End keys.

You can use the three buttons in the upper right corner for additional folder navigation. Click the “..” button to go up one level in the directory tree. Click the “~” button to return to your home

directory. The “/” button can be clicked to go to the root directory of the file system.

The System Dialog



In this Dialog you can select what NeXT Machine you want to emulate. In the left side will show you that for your selected machine what things will be emulated.

Click “*Customize*” to see Advance System Dialog and customize your emulated hardware.

Click “*System defaults*” to use emulated system’s defaults.

The Advance System Dialog

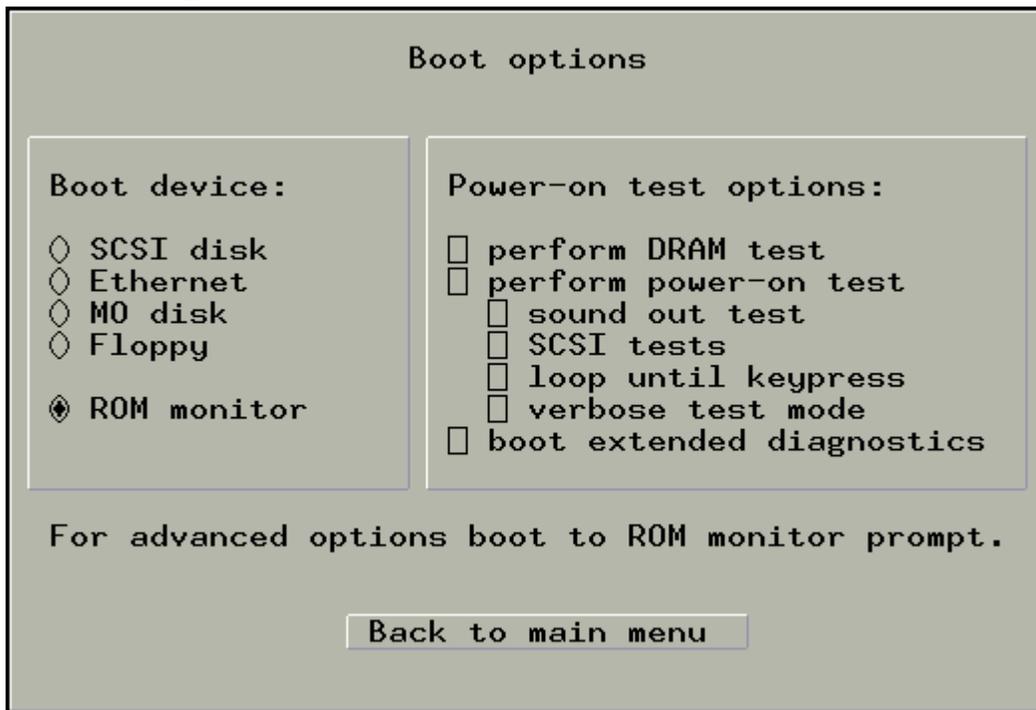
Advanced system options

CPU type <input checked="" type="radio"/> 68030 <input type="radio"/> 68040 <input type="radio"/> 68060	CPU clock <input checked="" type="radio"/> 16 MHz <input type="radio"/> 20 MHz <input type="radio"/> 25 MHz <input type="radio"/> 33 MHz <input type="radio"/> 40 MHz	FPU type <input type="radio"/> 68881 <input checked="" type="radio"/> 68882 <input type="radio"/> 68040 internal
SCSI controller <input checked="" type="radio"/> NCR53C90 <input type="radio"/> NCR53C90A	RTC chip <input checked="" type="radio"/> MC68HC68T1 <input type="radio"/> M CCS1850	ADB <input type="checkbox"/> Emulate ADB

Here you can customize your emulated hardware. You can change:

- CPU Type
- CPU Clock
- FPU Type
- SCSI Controller
- RTC Chip
- ADB

The Boot Dialog



Here you have to select Boot Device.

Click “*SCSI disk*” to boot from first SCSI Disk.

Click “*Ethernet*” to boot from Ethernet.

Click “*MO disk*” to boot from first connected MO Disk.

Click “*Floppy*” to boot from floppy.

Click “*ROM monitor*” to boot to ROM monitor.

Check “*perform DRAM test*” if you want to perform DRAM test.

Check “*perform power-on test*” if you want to perform power on test.

Check “*sound out test*” if you want to perform sound out test.

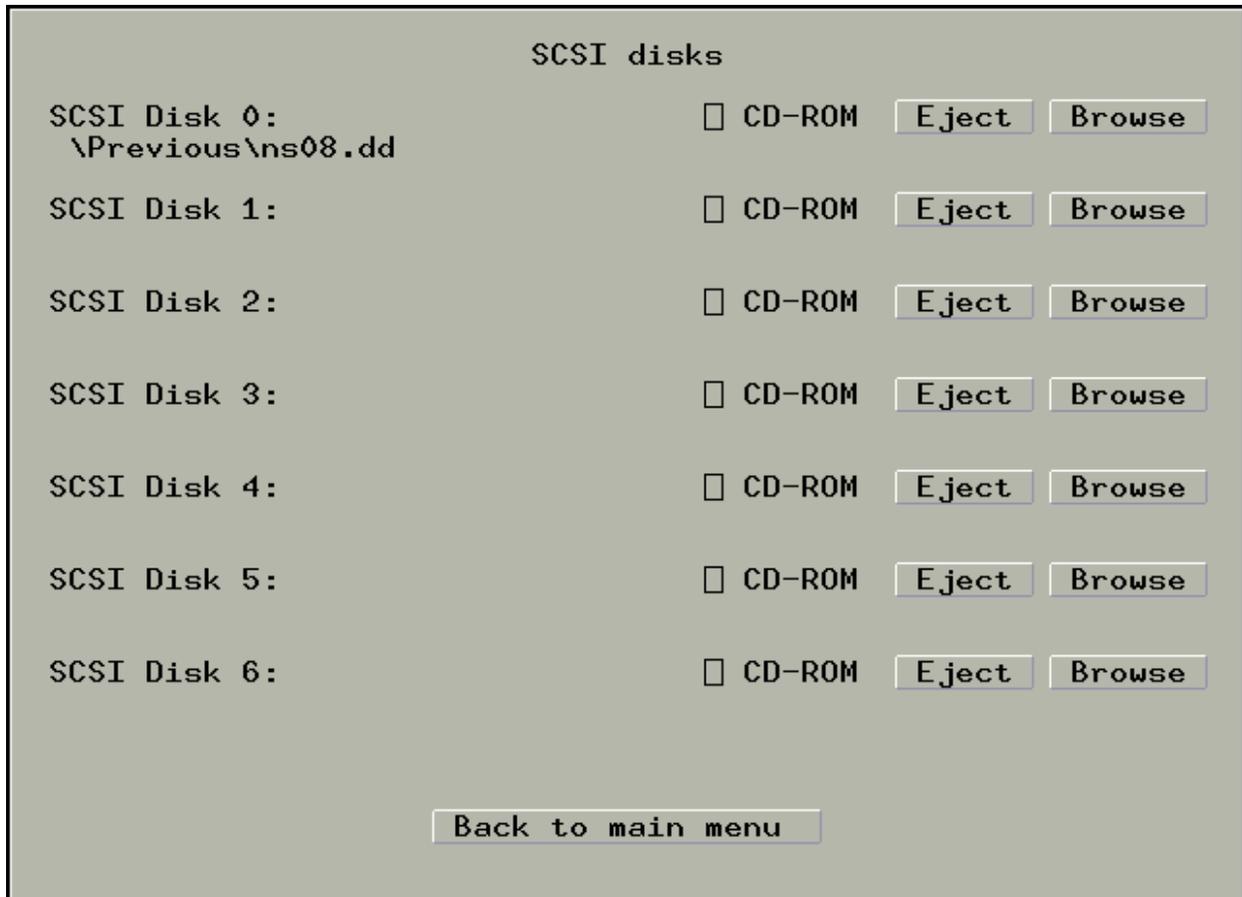
Check “*SCSI tests*” if you want to perform SCSI tests.

Check “*loop until keypress*” if you want to loop until keypress.

Check “*verbose text mode*” if you want to verbose text mode.

Check “*boot extended diagnostics*” if you want boot extended diagnostics.

The SCSI Disk Dialog



Here you can add your disks.

Click “*Eject*” to eject your disk and select another.

Click “*Browse*” to browse your disk.

Check “*CD-ROM*” to use your disk as CD-ROM.

The MO Disk Dialog

The screenshot shows a dialog box titled "Magneto-optical drives". It contains two drive entries, "MO Drive 0" and "MO Drive 1". Each entry has a checkbox for "Connected" and a sub-dialog box for "Optical disk" settings. The "Optical disk" sub-dialog has an "Insert" button and a checkbox for "Write protected". At the bottom of the main dialog is a "Back to main menu" button. A note at the bottom states: "Note: Magneto-optical drives only work with non-turbo Cubes."

Magneto-optical drives

MO Drive 0: Connected

Optical disk: Write protected

MO Drive 1: Connected

Optical disk: Write protected

Note: Magneto-optical drives only work with non-turbo Cubes.

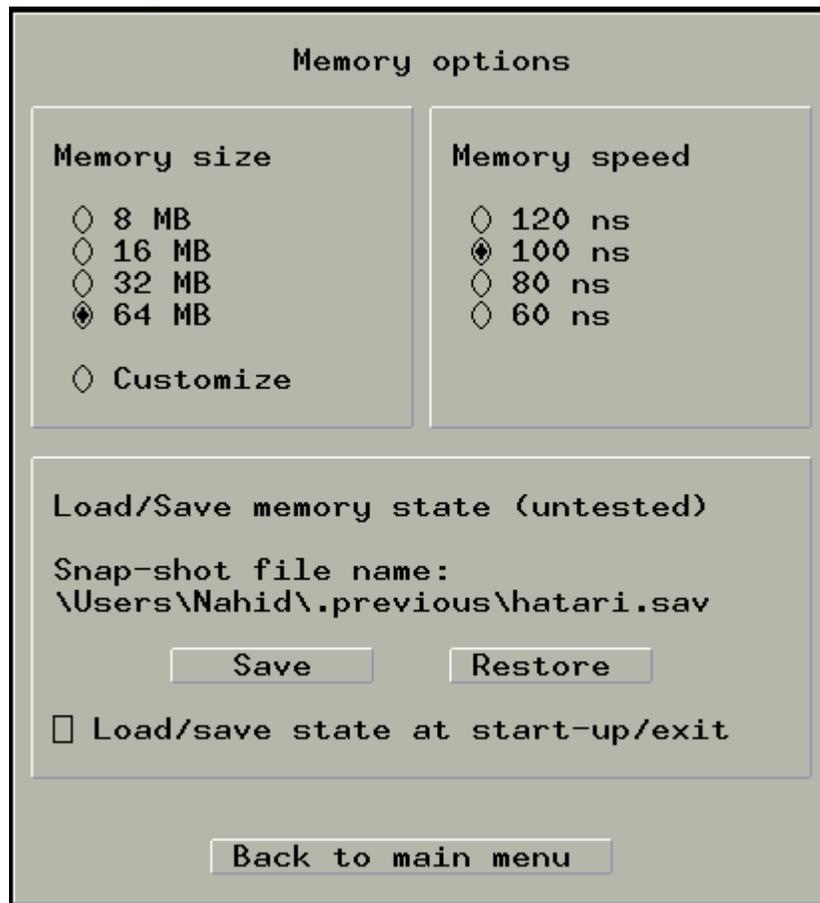
Here you can add your Magneto Optical Disks.

Check "*Connected*" to connect a MO Drive.

Click "*Insert*" to Insert a MO Disk.

Check "*Write protected*" to use the disk as write protected.

The Memory Dialog



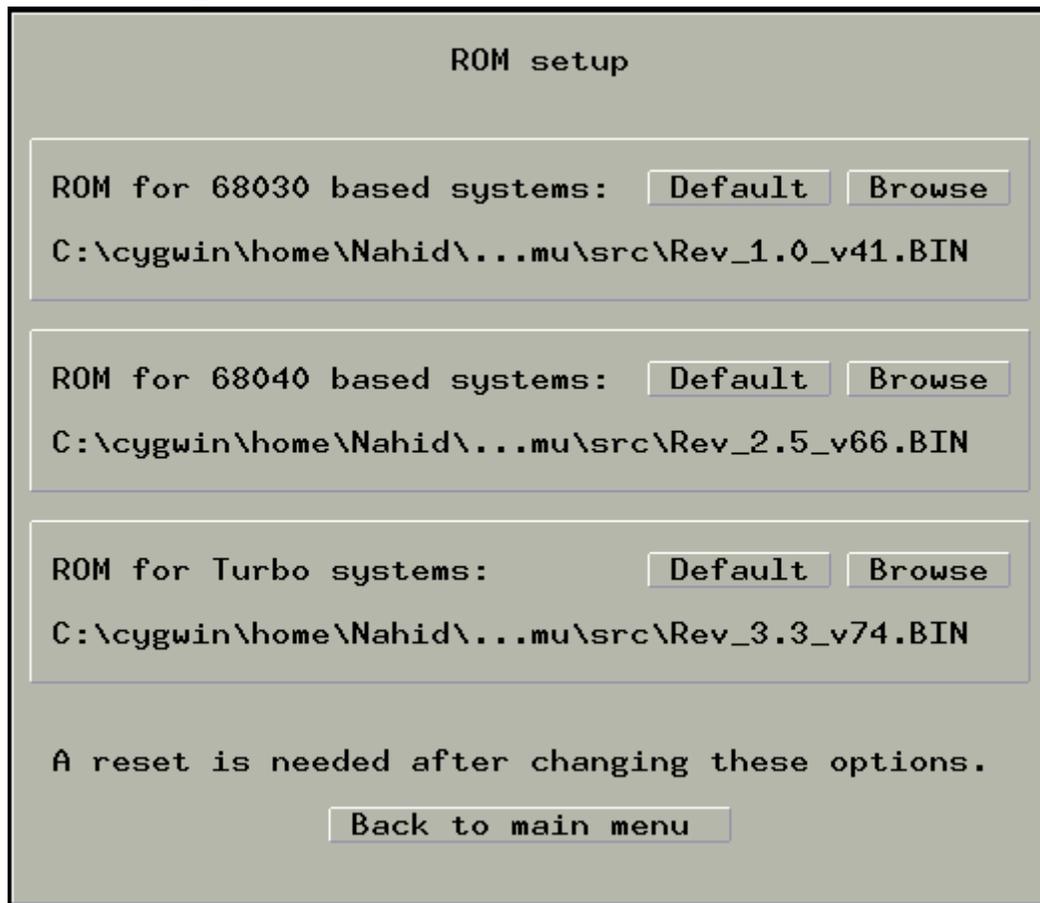
You can select the amount of RAM for the emulated NeXT here.

Here you will find the options to save & load memory snapshots as well.

Click "Save" & "Restore" to save & load memory state.

Note: As version 0.4 Memory Snapshots are untested and may be not work well.

The ROM Dialog



Here you can what ROM to use.

Click "*Default*" to use its defaults.

Click "*Browse*" to browse your ROM.

The Mouse Dialog

Mouse options

Mouse motion speed adjustment:

Linear adjustment (0.1 to 10.0):

Normal mode: 1.0 Locked mode: 1.0

Exponential adjustment (0.50 to 1.00):

Normal mode: 1.00 Locked mode: 1.00

Enable auto-locking

Back to main menu

Here you have to set your Mouse settings.

Set Linear adjustment and Exponential adjustment.

Check “*Enable auto-locking*” if you want to auto-lock the Mouse.

The Status bar



The status bar shows-

- Status of Ethernet
- Status of Magneto Optical Disk Drives
- Status of Hard disks Drives & CD-ROM Drives
- What Machines are emulated
- Status of the RED LED.

Emulated Keyboard & Mouse

Emulation of Keyboard & Mouse is in good stage. But the Mouse has some bugs like – Mouse is buggy & floaty. In Keyboard some special keys are not emulated- Sound Up Key, Sound Down Key, Brightness Up Key, Brightness Down Key, Power Key.

SCSI Disk & MO Disk

Disk image is just only a raw file. The emulator uses a fixed block size in the SCSI Device emulation. You can make this raw file in MacOS X by typing the line in terminal, this will make a 1gb size image file-

```
dd if=/dev/null of=NEXTSTEP_3.3_hard_drive.hd bs=1024 count=0 seek=1024000
```

You can make image files on windows by Bochs's Bximage.

Appendix

Copying

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