ShapeShifter

Christian Bauer

COLLABORATORS			
	TITLE : ShapeShifter		
ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY	Christian Bauer	January 18, 2023	

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

ShapeShifter

1.1   ShapeShifter Manual

                              The ShapeShifter
                    Version 3.0

          What's new?
                              A Macintosh II emulator
              for Commodore-Amiga computers

            © Copyright 1993-1995 Christian Bauer

          Overview
           What is ShapeShifter?

          Registration
           Limitations of the unregistered version
   Support   Call me!

          Installation
           How to install ShapeShifter

          Using ShapeShifter
           The main part

          Notes on the emulation
           Things to pay attention to

          Questions and answers
           Solutions to common problems

          The Mac-Handler
           Mac volumes on your Workbench

          Reference
           For consultation

```
                      Copyright
                       Legal mush

                      Bug reports
                       How to report bugs

                      Credits
                       The author wishes to thank...

                      The author
                       Programmer's address


                      History
                       Revision history of ShapeShifter
```

1.2   What's new?

```
                   The most important changes to version 2.0:
```

· The SCSI routines are more compatible (e.g. SCSIProbe and the HDT
  drivers now run)
· You can select which floppy drives ShapeShifter will use as the
  first and the second Macintosh drive (see
                   here
)
· You can select which volume to boot from (see
                   here
)
· The serial driver has been heavily improved and now supports fully
  asynchronous transmission and has better support for parallel devices
· Removed the bug that could make ShapeShifter crash when using the
  "serial.device" from the Amiga side while the emulation was running
· ShapeShifter now supports MacTCP with Ethernet cards (see
                   here
)
· The "Merlin" graphics card is now supported (see
                   here
)
· ShapeShifter can now display the Macintosh desktop in a window on the
  Workbench (see
                   here
)
· On the 68040, the MMU is used to speed up the graphics refresh
· ShapeShifter runs on the 68060 and with VMM (see
                   here
                    about
   the 68060)

Details are given in the
                   revision history
                   .

Users of older Versions should check the settings as some things have
changed here.

1.3 Overview

ShapeShifter is a multitasking Macintosh II emulator for the Commodore
Amiga. It allows programs written for Apple Macintosh computers to run
on the Amiga without hardware modifications or expansions. The emulation
runs as a normal task under the Amiga operating system, so that Amiga
and Macintosh programs can be used concurrently. With ShapeShifter you
can combine the flexibility of the Amiga with the power of Macintosh
software!

(Note: Almost every mention of "Macintosh" in this manual refers to
the Macintosh emulated by ShapeShifter)

Some of the emulation's features:

 · Color display with up to 256 colors on AA Amigas (1200/4000), up to
   16 colors on older models in all available resolutions

 · Support for Amiga graphics cards with EGS/CyBERgraphics, the
   Picasso-II and the Merlin up to 16,7 million colors

 · Needs no MMU

 · No support for other Macintosh operating systems apart from
   System 7.x, only 32 bit clean programs will run

 · Uses up to two Amiga disk drives. Macintosh HD disks can be used
   directly with an HD drive as in the Amiga 4000, DD disks formatted
   with ShapeShifter can be read by any Macintosh. 800K Macintosh
   DD disks, however, cannot be used.

 · Simulation of up to two Macintosh volumes in AmigaDOS files

 · Can use up to two hard drive partitions directly as Macintosh
   volumes

 · A SCSI interface in the Amiga can be accessed from the Macintosh
   and allows for using CD ROM drives, removable hard disks and
   other devices

 · Access to Ethernet networks with MacTCP

 · Multichannel sound output

 · An Amiga sound digitizer at the parallel port is supported

 · Amiga tablets can be used from the Macintosh side

 · Redirection of the two Macintosh serial ports to the serial/parallel
   ports of the Amiga, even on I/O expansion cards

- Texts can be exchanged via the Macintosh and Amiga clipboard

- An AmigaDOS handler exists to access the files on Macintosh volumes
  from every Amiga program

1.4 Registration

ShapeShifter is shareware. To ease your decision whether to pay,
the unregistered version has two limitations:

- SCSI cannot be used
- ShapeShifter cannot access hard disk partitions (DeviceDisks)

The shareware fee is US$ 40,- or DM 50,-. Registered users will receive
a personalized keyfile which enables the missing functions. This keyfile
will work with all future versions of ShapeShifter, so as a registered
user you can always download the most recent freely distributable
version.

How do you become a registered user?

The simple way is to fill in the file "OrderForm", to print it out,
sign it (in this order, if possible), put it in an envelope together
with the registration fee and send it to
                me
                . I won't accept order
forms which are not signed.

The keyfile will be sent to you either uuencoded via EMail or on floppy
disk (as you like it).

1.5 Support

The Next Generation BBS (Koblenz, Germany) will always have the latest
version of ShapeShifter:

Port 1: +49-261-805012 (Zyx19.2)
Port 2: +49-261-84280   (V.FC)

Board: ShapeShifter-SUPPORT

You can also leave your bug reports there. The author of ShapeShifter can
be reached under the user name "Cebix".

Those with ftp access can also get ShapeShifter from the University Mainz:

ftp://ftp.uni-mainz.de/pub/amiga/misc/

The Frodo/ShapeShifter homepage in the WWW contains some links to the
latest versions and other information related to ShapeShifter:

http://www.uni-mainz.de/~bauec002/

1.6   Installation

                   This section describes the requirements for running ShapeShifter ↩
                    on
your Amiga and explains the installation of the program and the
additional components required for operation.

You should, however, at first read the chapter
                   Using ShapeShifter
                   to become familiar with the usage and settings items of ↩
                       ShapeShifter.

                    System requirements

                    Installing the software

                    Installing PrepareEmul

                    Installing the Macintosh ROM

                    Installing the Mac operating system

1.7   System requirements

Requirements:

· The Amiga must have at least a 68020 processor. ShapeShifter will
  run on every Amiga 1200/3000/4000, but not on stock Amiga 500/2000.
· 4MB of memory are necessary.
· ShapeShifter runs under AmigaOS 2.1 and higher (CrossDOS must be
  installed).
· You need an original Macintosh ROM file or access to a real Macintosh.
· No Macintosh operating system is included with ShapeShifter. It can
  be purchased from every Apple dealer (best and most recent are
  System 7.1 or System 7.5).

Not required but recommended:

· A hard disk, as the Macintosh operating system can be used from
  disk, in principle, but it is very inconvenient. You don't have
  to reformat your hard drive to make the emulator use a part of it.
  But if you plan on working heavily with the emulation, you should
  consider buying a separate hard disk for the Macintosh.
· An HD disk drive as in the Amiga 4000 is necessary to read Macintosh
  HD disks (especially to install the Macintosh system software),

     in other respects only DD disks formatted with ShapeShifter can be
     used for data exchange with real Macintoshes.
· A graphics cards with chunky pixel modes (nearly all available
     models) will speed up color display extremely.
· Macintosh programs are very memory hungry. Your Amiga should have
     at least 8MB of RAM.

1.8   Installing the software

```
                The archive contains the following files:
 README                 - Short description
 ShapeShifter           - Main program
 ShapeShifter PRAM       - Contents of the simulated Mac parameter RAM
 ShapeShifter Prefs      - Settings of the emulator
 ShapeShifter.guide      - This manual (german version)
 ShapeShifter_E.guide    - This manual (english version)
 PrepareEmul            - Small startup utility
 MacMem                 - Required by PrepareEmul on the A1200
 KickShifter            - Utility for patching kickstart files
 ReKick64s.lha          - Adapted softkicker for A2000s
 SaveROM.mbin           - Program for reading the ROM (MacBinary)
 SaveROM.hqx            - Program for reading the ROM (BinHex4)
 Bestellformular        - Order form (german version)
 OrderForm              - Order form (english version)
 Catalogs/#?            - Language files
 MacHandler/Mac-Handler - Mac file handler
 MacHandler/MAC         - Mountlist for the Mac-Handler
 MacHandler/MacControl  - Control program for the Mac-Handler
```

To install, simply create a new drawer for ShapeShifter on your hard
disk and unpack the archive into it. The files in "Catalogs" don't
have to be copied to LOCALE:, they can stay where they are. ShapeShifter
needs no assigns.

For the file "ShapeShifter ROM", only the icon is present. This file
must contain an original Macintosh 512K/1MB ROM which, for legal reasons,
is not included in the archive. Please follow the instructions under

        Installing the Macintosh ROM
         to read the ROM from a real Macintosh and
prepare it for ShapeShifter.

1.9   Installing PrepareEmul

The program "PrepareEmul" reserves the lower 8K of Chip memory for
ShapeShifter and must be installed in the Startup-Sequence. Copy
"PrepareEmul" to the C: directory of your hard disk and insert the line
"PrepareEmul" into the file "S:Startup-Sequence" directly at the
beginning. Now every Amiga cold reboot will be executed twice while
PrepareEmul installs itself. In case of any problems: PrepareEmul
disables itself when the Caps Lock key is pressed on startup (i.e. the

red/green light is on). Then, however, you cannot start ShapeShifter.

A1200 users must also copy the small program "MacMem" to C: and start
it BEFORE PrepareEmul in S:Startup-Sequence.

Owners of "Emplant" can leave "RsrvMem" installed as usual instead of
"PrepareEmul", owners of "A-MAX IV" must insert "PrepareEmul" after
"A-MaxInit" in the Startup-Sequence. Owners of a Fusion Forty accelerator
may try "SetFF" with the option "AMAXIV" or the "MoveMH" utility instead
of PrepareEmul.

If you start the developer tool "Enforcer" in your Startup-Sequence,
you should remove it as it doesn't work with ShapeShifter.

PrepareEmul doesn't work with programs that reload a Kickstart file from
disk (softkick), except the A3000 with BootROMs. If you use such a
program, you have to modify the Kickstart file. To do so, the program
"KickShifter" is provided. KickShifter can only be started from the Shell
and expects the name of a Kickstart file as argument. This file will be
modified and written back under the same name. Therefore, you should make
a backup copy of the Kickstart file in case anything goes wrong. Moreover,
A2000 users should use the included program "ReKick" to load the Kickstart
file.

For the technically interested: "PrepareEmul" only performs two functions.
First, it sets the first usable Chip RAM address to $2000 (instead of
$0400/$1000 as the Kickstart ROM does), second, it moves the VBR to
Fast RAM. For reserving the Chip RAM, it uses a KickTag.

ShapeShifter only checks the position of the first Chip RAM MemChunk
and the VBR to see if PrepareEmul is installed. All other methods giving
the same results (Chip RAM at $2000, VBR in Fast RAM) will also work
with ShapeShifter.

1.10   Installing the Macintosh ROM

ShapeShifter requires the contents of an original Macintosh ROM as
an Amiga file for operation. ShapeShifter can only use 512K or 1MB ROMs
version 124. The version 124 ROMs are subdivided into different sub
versions. ShapeShifter tries to work with all sub versions (tested with
sub version 17, 19, 21, 34, and 39). If your ROM should not be suitable
for some reason, ShapeShifter will display an appropriate message. If
there is no message, but it nevertheless doesn't work, then try another
ROM. The ROMs of PowerMacs cannot be used.

If your Amiga is fitted with a 68040 processor, you should use a 1MB ROM,
as under the other sub versions, the performance of the system will drop
notably. With a 68020/030 processor, a 1MB ROM is not necessary (and a
pure waste of memory).

To get the ROM file you can use the program "SaveROM" from the archive
which will read a Mac's ROM and save it to disk. In addition, you can check
with this program whether the ROM version is suitable for ShapeShifter.
"SaveROM" is a Macintosh program in MacBinary/BinHex4 format. It has to be
converted before it can be run on a Macintosh.

Note: Reading out and using a ROM is only legal if you have acquired the
rights for using, either by owning a real Macintosh or a real ROM chip.
In any other case, the use is illegal. Under no circumstance will I
send away ROM files.

The following step-by-step instructions explain how to get the needed
ROM file:

1. Format an MS-DOS disk on your Amiga (using CrossDOS) and copy the files
   "SaveROM.mbin" and "SaveROM.hqx" on it.

2. Look for a real Macintosh with 512K or 1MB ROM (e.g. a Macintosh
   LC/LC II, Performa, Quadra or a PowerBook) on which "AccessPC" or
   "PC Exchange" for reading MS-DOS disks is installed.

3. Start the Macintosh and insert the MS-DOS disk.

4. Use "StuffIt Expander" or one of the numerous other Macintosh utilities
   to convert "SaveROM.mbin" from MacBinary format or "SaveROM.hqx" from
   BinHex4 format to an executable Macintosh program. Repeat: SaveROM must
   be converted, a simple copy won't do!

5. Start the program "Save ROM". You will see some data about the ROM and
   you are be told if this ROM is suitable for ShapeShifter (the message
   "Dieses ROM is für ShapeShifter geeignet" will appear). If the ROM is
   not suitable (message "Dieses ROM ist NICHT für ShapeShifter geeignet")
   click on "Abbrechen" and look for another Macintosh.

6. If the ROM is suitable, click on "Speichern" and save the ROM with
   the default name "ROM Image" to the MS-DOS disk.

7. Eject the ShapeShifter disk and insert it into the Amiga.

8. Copy the file "ROMIMAGE.BIN" (or whatever it is named now) to the
   ShapeShifter directory.

9. Rename the file to "ShapeShifter ROM".

10. Done. Please note that for legal reasons ShapeShifter and the
    Macintosh the ROM was read from may not be used at the same time
    from now on.

1.11   Installing the Mac operating system

                If you start the emulator without making further settings, you'll ←
                be
prompted with a flashing question mark to insert a Macintosh system
disk. ShapeShifter needs System 7 (System 7.0.1 with System 7 Tuner,
System 7.1 or System 7.5). If you own such a system disk, you may
start the Macintosh directly with this disk. System 7.0.1 is freely
available via ftp.support.apple.com (directory /pub/apple_sw_updates/US/
Macintosh/System Software/System 7.0.1/).

However, it's better if you first create one or more (simulated)

volumes for the Macintosh (as described
                here
                ), format them from
the Macintosh and then install System 7 from installation disks on the
Mac volume. (Note: In the following description, "hard disk" always
refers to a FileDisk or a dedicated Mac partition on a hard disk).

For this, two passes are necessary: The first one to format the hard
disk, the second one to install the System. This is because the
System 7 installation program expects the hard disk to be formatted
already, which of course isn't the case on the first bootup of the
emulation. If you have acquired System 7.1 or 7.5, proceed as follows:

1. Create a FileDisk or a Mac partition on you hard disk (see
                here
)
   and save the settings.

2. Start the emulation. After a short while you should see an empty
   Macintosh screen and a disk icon with a flashing question mark will
   prompt you to insert a system disk.

3. Insert the System-7-Disk "Disk Tools". The emulator should boot
   from it.

4. After a while, a dialog box should appear: "Not a Macintosh disk"
   with the icon of the FileDisk or DeviceDisk next to it. Now click
   on "Initialize", then on "Erase", enter a name for the hard disk and
   click on "OK". The Macintosh volume will now be formatted.

5. When the formatting is done, please wait until the startup process
   is complete, quit ShapeShifter with the menu item "Special/Shut down"
   and remove the "Disk Tools" disk.

6. The hard disk is now formatted and the proper installation can begin.
   Start ShapeShifter again and start the emulation. Then insert the
   Disk "Installation 1".

7. After a while, the window of the installation program appears. First
   click on "Volume" to select the volume you want the system to be
   installed onto, then click on "Custom". Here you can select which
   components you want to be installed. Please choose "System software
   for every Macintosh", "Ethertalk software" and "Software for
   ImageWriter" and click on "Install". Now follow the instructions of
   the installation program.

8. When the installation is done, click on "Quit", wait until the
   shut down screen appears, eject the installation disk and select
   "Restart". The Macintosh should now boot from the hard disk.

9. Now the installation is finished and you can use the control panels
   to set up your system, select the sound volume, or switch on the
   color display (if present).

If you own a CD-ROM drive, you may of course install System 7.5 from
CD. Activate the gadget
                Apple CD300 emulation

```
             in the window
            SCSI
            for this and start from the disk that came with the CD. After the
formatting, you may insert the CD and start the installation.
```

1.12   Using ShapeShifter

```
            This section describes the usage of ShapeShifter and explains the
many settings items that will have an effect on the emulation.
```

```
            Starting and quitting ShapeShifter

            Arguments/Tool Types

            Selecting the graphics display

            Creating volumes for the Macintosh

            Using SCSI devices

            Using Amiga ports from the Macintosh

            Linking into Ethernet networks

            Allocating memory for the Macintosh

            Saving the settings

            Starting and quitting the emulation

            Switching between Amiga and Mac side

            Using keyboard and mouse

            Data exchange with the clipboard

            Sound input and output
```

1.13   Starting and quitting ShapeShifter

```
            If PrepareEmul was
            installed
            correctly, you can start ShapeShifter
by double-clicking its icon after rebooting your Amiga. Then the

            Main window
            for the emulation settings will appear. A click on one of
the eight big gadgets will open additional windows where you can adjust
the settings. All windows can be used simultaneously and the settings
```

are used immediately.

If you enter the tool type "QUICKSTART" in ShapeShifter's icon, or
give "QUICKSTART" as an argument when starting it from the shell, the
settings window doesn't appear and ShapeShifter will start through to
the emulation directly. If you use ShapeShifter from the Workbench, you
won't be able to access the settings window any more unless you remove
the "QUICKSTART" tool type (e.g. by putting it in round brackets).

To quit ShapeShifter, click on the gadget "Quit" in the main window or
select the menu item "Quit" (shortcut Amiga-Q). Please note that you'll
lose you settings unless you
                saved
                 them.

To quit the running emulation, select the menu item "Shut down" in the
Macintosh Finder's "Special" menu. ShapeShifter will close the screen,
save the Macintosh PRAM to the file "ShapeShifter PRAM" and quit.

In case of emergency, there is a way to quit ShapeShifter "the hard way",
e.g. if the Macintosh doesn't boot or a program has crashed and you cannot
reach the "Shut down" menu item. In this case, press the key combination
<Ctrl><Shift left><Alt left><Esc>. ShapeShifter should then quit itself.
However, you shouldn't use this key command as a quick way to quit the
emulation. Please always use the "Shut down" menu item if possible, as
this will leave the Macintosh system in a secure state.

1.14   Arguments/Tool Types

ShapeShifter understands the following arguments/tool types when being
called from the Shell resp. the Workbench:

QUICKSTART – Prevents the opening of the settings window and directly
  starts through to the emulation when starting ShapeShifter

ENFORCER – Allows using "Enforcer" and ShapeShifter at the same time on
  a 68040 machine

DEBUG – Hands off! I really mean it!

NOCOPYBACK – Disables the 68040's CopyBack cache while the emulation is
  running (not possible on all 68040 machines)

720KKLUDGE – Allows formatting 720K Macintosh disks under System 7.5
  without the 720K Disk Formatter extension

1.15   Selecting the graphics display

                In this section, you'll learn how to use your Amiga's built-in ←
                    graphics
capabilities or a graphics card to display the Macintosh screen and

how to set properties like color depth, resolution and graphics speed.
These settings are done in the window "Graphics Settings" which can be
opened by a click on the gadget "Grafik..." in the
                  main window
                    .

                    Macintosh graphics basics

                    Display with built-in Amiga graphics

                    Display on EGS graphics cards

                    Display on CyBERgraphics cards

                    Display on the Picasso graphics card

                    Display on the Merlin graphics card

                    Display in a window on the Workbench

                    Using video display modes

                    Changing the screen size

                    Setting the refresh

1.16   Macintosh graphics basics

                  ShapeShifter allows using the built-in Amiga graphics hardware as ←
                     well
as stock graphics cards for displaying the Macintosh screen.

But the organization of the display memory is very different from the
Amiga to the Macintosh. The Amiga uses the planar format, where the
single bits of a color information are arranged in multiple bit planes
one "behind" the other, the Macintosh uses the so-called chunky pixel
format, where the bits of a pixel are arranged next to each other in
memory.

QuickDraw (the Macintosh graphics routines) expect the Mac's display
memory to be organized in chunky pixel format. With the built-in Amiga
graphics, this is only the case for a color depth of 1 bit (2 colors)
and e.g. with a VGA based graphics cards only for 8 bit (256 colors).

Otherwise, the whole graphics memory must be periodically converted
("refreshed") from the Macintosh to the Amiga format, thereby slowing
down the speed of the emulator significantly.

Under
                  Setting the Refresh
                   you'll learn how to adjust the refresh
settings in an optimal way and what configuration to use to avoid the
need for refreshing completely and achieving the maximum graphics speed.

Generally, it can be said that you should use a graphics card for color
display.

In case you have misadjusted the graphics in a way that the display
is completely corrupted, you should wait for the hard drive to stop
and quit ShapeShifter with <Ctrl><Shift left><Alt left><Esc>.

1.17   Display with built-in Amiga graphics

                  If you don't own a graphics card or want to use the built-in ←
                    graphics
capabilities of your Amiga for other reasons for the ShapeShifter
display, please proceed as follows:

1. Open the window "Graphics Settings" if you haven't done already.

2. Set the screen type to "Amiga Bitplanes".

3. Set the color depth to "1 bit (2 colors)" if you want the highest
   possible speed, or to one of the other possibilities (the more colors,
   the slower). The depths "15 bit" and "24 bit" cannot be used, however.

4. To select the screen mode, click on "Choose..." and choose a mode
   that fits your needs. The best choice is a mode with an aspect ratio
   of 1:1, e.g. "PAL Hires Lace" (if you have a video monitor) or
   "MULTISCAN Productivity" (for a VGA monitor). If you have selected
   more than two colors, you should not use big screen sizes.

5. The values in the "Size" gadgets are set automatically. You may input
   smaller values if you want to speed up the graphics in higher color
   depths. See
                  changing the screen size
                  .

6. If you have selected a color depth of more than 1 bit, please see
   under
                  refresh
                   how to select the "Refresh rate" the best way.

7. With the field "Black border" you can choose if the border around
   the Macintosh display should be black. This setting is a matter of
   personal taste.

8. In the
                  main window
                  , click on "Save" to make your settings permanent.

1.18   Display on EGS graphics cards

If you have a graphics card that uses the "Enhanced Graphics ←
                System"
(EGS) by Viona Development, please proceed as follows to set up
ShapeShifter in an optimal way for your card:

1. Open the window "Graphics Settings" if you haven't done already.

2. Set the screen type to "EGS".

3. For the color depth, you may choose between 8, 15 and 24 bit. You
   should try "8 bit (256 colors)" at first, as the depths "15 bit"
   and "24 bit" require a
                conversion
                .

4. To select the screen mode, click on "Choose..." and choose a mode
   of your card that fits your needs.

5. The values in the "Size" gadgets are set automatically. You should not
   change them.

6. If you have selected a color depth other than 8 bit, please see under

                refresh
                 how to select the "Refresh rate" the best way.

7. The field "Black border" has no meaning for graphics cards.

8. In the
                main window
                , click on "Save" to make your settings permanent.

1.19   Display on CyBERgraphics cards

If you have a graphics card with CyBERgraphics driver, please ←
                proceed
as follows to set up ShapeShifter in an optimal way for your card:

1. Open the window "Graphics Settings" if you haven't done already.

2. Set the screen type to "CyBERgraphics".

3. To select the screen mode, click on "Choose..." and choose a mode
   of your card that fits your needs. The color depth setting is
   automatically adapted to the selected screen mode. For 15 and 24 bit
   modes, however, it may be that a
                refresh
                 is necessary.

4. The values in the "Size" gadgets are set automatically. You should not
   change them.

5. If you have selected a color depth other than 8 bit, please see under

```
                        refresh
                         how to select the "Refresh rate" the best way. Depending on
        the graphics card, however, it may be that no conversion is needed at
        all. Especially the "CyberVision 64" can display 15 and 24 bit in full
        speed.
```

6. The field "Black border" has no meaning for graphics cards.

7. In the
```
                        main window
                        , click on "Save" to make your settings permanent.
```

1.20   Display on the Picasso graphics card

```
                        If you use the "Picasso" graphics card by Village Tronic without  ←
                         the
CyBERgraphics driver (it must not be in segmented mode), please proceed
as follows to set up ShapeShifter in an optimal way for your card:
```

1. Open the window "Graphics Settings" if you haven't done already.

2. Set the screen type to "Picasso".

3. For the color depth, you may choose between 8, 15 and 24 bit. You
   should try "8 bit (256 colors)" at first, as the depths "15 bit"
   and "24 bit" require a
```
                        conversion
                        .
```

4. To select the screen mode, click on "Choose..." and choose a mode
   of your card that fits your needs.

5. The values in the "Size" gadgets are set automatically. You should not
   change them.

6. If you have selected a color depth other than 8 bit, please see under
```
                        refresh
                         how to select the "Refresh rate" the best way.
```

7. The field "Black border" has no meaning for graphics cards.

8. In the
```
                        main window
                        , click on "Save" to make your settings permanent.
```

1.21   Display on the Merlin graphics card

If you use the "Merlin" graphics card by XPert/ProDev, please ←
proceed
as follows to set up ShapeShifter in an optimal way for your card:

1. Open the window "Graphics Settings" if you haven't done already.

2. Set the screen type to "Merlin".

3. For the color depth, you may choose between 8, 15 and 24 bit. You
   should try "8 bit (256 colors)" at first, as the depths "15 bit"
   and "24 bit" require a
                conversion
                .

4. To select the screen mode, click on "Choose..." and choose a mode
   of your card that fits your needs.

5. The values in the "Size" gadgets are set automatically. You should not
   change them.

6. If you have selected a color depth other than 8 bit, please see under

                refresh
                 how to select the "Refresh rate" the best way.

7. The field "Black border" has no meaning for graphics cards.

8. In the
                main window
                , click on "Save" to make your settings permanent.

1.22   Display in a window on the Workbench

You can make ShapeShifter display the Macintosh desktop in a ←
window on
the Workbench. Then the Amiga mouse pointer will be used to control the
gagdets and menus of the Macintosh. Sadly, the display is only monochrome
at the moment. Please proceed as follows to set up ShapeShifter for this:

1. Open the window "Graphics Settings" if you haven't done already.

2. Set the screen type to "Amiga window".

3. Enter the desired window size in the "Size" gadgets. This will also
   be the size of the Macintosh desktop.

4. Select "1" or "2" as the "Refresh rate".

5. In the
                main window
                , click on "Save" to make your settings permanent.

1.23   Using video display modes

In contrast to most Macintosh models, with ShapeShifter you can record
Mac graphics to video tape or display it on a TV set without problems.
Things to take care for are:

1. You must select a screen mode that is compatible to video, that is
   one that has a beam frequency of 15kHz horizontally and 50Hz (NTSC: 60Hz)
   vertically, e.g. one of the "PAL ..." modes.

2. If you want to use the complete screen without disturbing borders,
   you have to set the overscan in the display mode requester to
   "Graphics size", "Extreme size" or "Maximum size". You can use the
   Overscan preferences editor to see and change the sizes of these
   regions.

3. Many graphics are not video compatible. If your graphics cards cannot
   handle video resolutions (see the manual for details) you have to use
   the built-in Amiga graphics.

1.24   Changing the screen size

                 The values in the "Size" fields are set automatically when you ←
                    select
a screen mode.

You can change the size (in pixels) manually by entering other numbers
there. By setting a smaller size you can, for instance, speed up the
graphics
                 refresh
                    .

1.25   Setting the refresh

                 With the field "Refresh rate", you adjust how much processing time
should be left free when the display mode you selected requires a periodical
refresh (conversion of the screen memory). The refresh rate is given in
1/50th of a second. For example, a setting of "5" will leave 1/10ths of
a second between two refreshes.

Sensible Values for an Amiga 4000/030 are 5 (2 bit), 20 (4 bit) and
60 (8 bit), but the 8 bit resolution is far too slow for serious work.
If you plan on using more than 2 colors most of the time, you should
use a graphics card with "chunky" modes (that are, for instance, all
graphics cards based on a VGA chipset in 256 colors). Then the conversion
is not necessary and the speed will go up extremely.

If you have a 68040 processor and enabled the
                 ROM write protection
                    ,
ShapeShifter will try to use the MMU to only update the portions of the

screen that have actually changed. In this case, you can set the refresh
rate to "1".

If you don't own a graphics card, you should select "Amiga bitplanes" and
1 bit color depth, otherwise "CyBERgraphics"/"Merlin"/"EGS"/"Picasso" and
8 bit color depth. These settings give the best results in most cases.

By entering a smaller size in the "Size" fields (e.g. 512$\times$384 instead of
640$\times$480) the refresh speed will be raised a lot.

Another hint: If you use a graphics mode with refresh, you should switch
of the "Largest free block" option in the
                 Memory Settings
                  window,
and not set the amount of allocated Mac memory to the maximum possible,
as parts of the screen memory could end up in slow Chip or 16 bit memory,
thereby slowing down the refresh speed.

Here is a list that shows you for which color depth/screen type
combinations a refresh is necessary:

```
          Color depth
Screen type   1 bit 2 bit 4 bit 8 bit 15 bit  24 bit
-----------------------------------------------------------------
Amiga Bitplanes   no  yes yes yes – –
Amiga window    yes – – – – –
CyBERgraphics   – – – no  (yes) (yes)
Merlin      – – – no  yes yes
EGS    – – – no  yes yes
Picasso    – – – no  yes yes
```


1.26   Creating volumes for the Macintosh

                Here, you'll learn how to use your floppy disk drives with the ←
                 Macintosh,
how to create simulated Macintosh hard disks (so-called FileDisks)
without having to repartition your hard disk, how to place a real hard
disk partition or a whole hard disk at the Mac's disposal (so-called
DeviceDisks) and how to use SCSI devices like removable hard disks and
CD-ROM drives with ShapeShifter. The necessery settings are done in the
windows "Volumes", "Floppys" and "SCSI Settings" which can be opened by
selecting the gadgets "Volumes/Disks...", "Floppys..." or "SCSI..." in
the
                main window
                 .

                Using floppy disks

                Creating a simulated hard disk

                Creating a dedicated Macintosh partition

Using SCSI devices

Formatting the volumes on the Mac side

Choosing the boot volume

1.27   Using floppy disks

ShapeShifter can use up to two floppy disk driver from the   ←
                Macintosh side.
With the emulation running, you can work with Macintosh as well as with
Amiga disks as usual. The only difference between ShapeShifter and a real
Macintosh concerning disk handling is when ejecting disks. What disk
formats ShapeShifter will understand depends on the type of drive
installed in your Amiga.

With a simple DD disk drive you can use two formats with ShapeShifter:
720K MS-DOS disks (with "PC Exchange", "Access PC" or "Exchange Files")
and 720K Macintosh disks. Normal Macintosh DD disks are recorded in a
different format that is not directly readable on Amiga drives. So you
cannot read 800K DD disks formatted on a real Macintosh. The DD disks
formatted with ShapeShifter, however, can be used with any Macintosh
(these conform to the "720K Exchange Format" that can be formatted on
Macintoshes with the "720K Disk Formatter" system extension).

But with an HD drive as in the Amiga 4000 you may read normal Macintosh
HD disks as Apple uses the MFM format on HD disks (like the Amiga and
the PC do) and not the old GCR format. Moreover, 1.44MB PC disks are
recognized by "PC Exchange" or "Access PC".

When inserting an Amiga disk while the emulation is running, the Macintosh
will show a dialog box with the message "Unreadable disk". But you may
read from and write to the disk as usual from the Amiga side.

Which floppy driver ShapeShifter should use as the first and the second
Macintosh drive can be selected in the "Floppy Settings" window that will
open after a click on "Floppys..." in the
                main window
                 with "Floppy 1"
and "Floppy 2". With a click on "Search", ShapeShifter will automatically
detect the first two drives connected to your Amiga.

A real Macintosh ejects disks electrically when picking the corresponding
menu item or a disk icon is being dragged onto the trash can. This will
prevent the user from ejecting a disk too early as the Macintosh caches
some important data in RAM which is written back to disk only just before
the disk is ejected.

As the Amiga has only drives with manual ejection, ShapeShifter uses a
different method: The drive light will be constantly on while a Macintosh
disk is inserted, to remind you that you may not yet eject the disk.
Only if all data has been written and the disk is ready for ejection
(after you selected the Eject Disk menu item), the light will go off
and a flashing digit in the top right corner of the screen will indicate

that the corresponding disk may be ejected. A '1' stands for the first
floppy disk drive and a '2' for the second one.

So the normal procedure to eject a Macintosh disk will be as follows:

1. Drag the disk icon onto the trash can.

2. Wait for the flashing digit to appear and the drive light goes off
   (sometimes, the digit will not appeat, but then the light is off,
   everything is OK)

3. Eject the disk.

When inserting a Macintosh disk, there is usually a delay until it is
recognized as the AmigaDOS first tries to access it. This can be
prevented by activating the gadget "Inhibit AmigaDOS" in the "Floppy
Settings" window. This will completely inhibit this drive for AmigaDOS
as long as ShapeShifter is running. If you want to read Amiga disks
with it, you first have to quit ShapeShifter.

1.28   Creating a simulated hard disk

ShapeShifter allows the simulation of up to two Macintosh hard disks in
Amiga fies on your hard disk. These simulated hard disks are called
FileDisks. You may use FileDisks if you don't want to repartition your
hard disk or buy a dedicated Macintosh hard disk. However, the speed of
a FileDisk is far below that of a real hard disk, especially with higher
capacities (10MB+).

For creating a FileDisk, click on the "Create..." gadget of the
corresponding FileDisk in the "Volumes" window. ShapeShifter will ask you
how large the FileDisk should be (in KB). Enter a size that fits your
needs and that fits on your hard disk and click on "Choose file...".
A file requester will appear in which you must enter the name of the
FileDisk file to be created. If you select an existing file, it will be
overwritten. After a click on "OK" the file is created and the name is
entered into the text gadget in the settings window. If you already have
created one or more FileDisks, you can enter the name into the text
gadget directly or select an existing file with the symbol to the right
of the text gadget.

1.29   Creating a dedicated Macintosh partition

               [Note: This function is not available in the unregistered version]

If you want to do serious work with ShapeShifter you should place an
own hard disk partition or even a whole hard disk at the Mac's disposal.
ShapeShifter allows using up to two such partitions, called DeviceDisks.

First, use "HDToolbox" or a similar hard disk installation program to
create an Amiga partition on your Amiga hard disk or on a new hard disk

you acquired for the Macintosh, with a size of your choice (if you are
using a proper hard disk, you should create one partition that covers the
whole disk). Please note that you will lose all saved data if you
repartition a hard disk. So you should first backup your hard disk,
then repartition it and finally restore the backup.

If the Partition is recognized by the Amiga, you may click on "Choose..."
near the corresponding DeviceDisk in the window "Volumes" and choose
the partition by its name. When clicking "OK", ShapeShifter will analyze
the partition and enter the data required for the emulation in the text
gadgets. Expert users may change the values manually, but doing so may
cause severe data losses on Amiga and Macintosh partitions. You may also
enter the Amiga partition name (including the ":") into the DeviceDisk
string gadget. ShapeShifter will then analyze the partition on run-time.

Now you should click on
                    Save
                     to make your settings permanent. When you
have formatted the DeviceDisk from the Macintosh side, you may set the
partition to "NoMount" with "HDToolbox", so the Amiga operating system
will no longer worry about this partition (as it is only used by the
Macintosh from now on).

1.30   Formatting the volumes on the Mac side

After the successful creation of a FileDisk or DeviceDisk, these have to
be formatted by the Mac after starting the emulator. If the volume is
recognized, a dialog box with the message "Damaged volume" or "Volume
unreadable" and the icon of the volume will appear immedately after the
Finder has started. The icon of the FileDisk is a sheet of paper with
an Amiga checkmark and the number 1 or 2, the DeviceDisks use the icon
of a disk, also with an Amiga checkmark and the number 1 or 2. After
clicking on "Initialize" and entering a name for the volume, the volume
gets formatted. Then the FileDisk or DeviceDIsk is available to be used
as a Macintosh volume.

1.31   Choosing the boot volume

If you have installed multiple bootable volumes for the Macintosh, you
can select which one to boot from. To do this, you have two alternatives:
1. The "Startup volume" control panel on the Mac, 2. the "Boot from"
gadget in the volumes window.

The control panel only works with real SCSI devices, the "Boot from"
gadget only with File-/DeviceDisks. The setting in ShapeShifter has
priority over the control panel. Unless you set the gadget to "Last
selection", the control panel setting is ignored. If you set the gadget
to "Any", the Mac will start from the first bootable volume found (in the
order floppy -> SCSI device -> DeviceDisk -> FileDisk).

To put it in other words: The setting "Last selection" of the "Boot from"

gadget doesn't explicitly change the startup volume (this corresponds to
the old behaviour of ShapeShifter). If you, for example, select "FileDisk 1"
as the startup volume, it will boot from the first FileDisk. If you then
choose "Last selection", it will still boot from the first FileDisk.
Selecting "Any" then will make it boot again from the first bootable
volume found. If you then set it to "Last selection", it will continue
to start from the first volume found.

1.32   Using SCSI devices

                    [Note: This function is not available in the unregistered version]

If your Amiga is fitted with a SCSI port (built-in into the Amiga 3000/
4000T, otherwise you may use a stock SCSI adapter), ShapeShifter will allow
using SCSI devices like removable hard disks and CD-ROM drives from the
Macintosh. The necessary settings are done in the Window "SCSI Settings"
which can be opened by a click on the gadget "SCSI..." in the

                main window
                .

                 Selecting the SCSI driver

                 Using multiple SCSI ports

                 Disabling individual SCSI IDs

                 Emulating an Apple CD300 drive

                 Using SCSI hard drives

                 Optimizing the speed

1.33   Selecting the SCSI driver

                    You have to inform ShapeShifter, what driver to use for accessing ←
                        the
SCSI port.

To do this, enter the name of the Amiga SCSI driver into the text gadget
"SCSI Device" in the SCSI window. On the Amiga 3000/4000T or when using
the Commodore SCSI cards A2091 or A4091, this is "scsi.device", and for
a GVP SCSI adapter, for instance, this would be "gvpscsi.device". Consult
your SCSI adapter's manual about what the driver's name is. If the driver
is on disk (very rare), it can be selected by a click on "Choose...".

If you use an Amiga 1200/4000, you should not enter "scsi.device" in
"SCSI Device", as this will access the IDE interface that won't work
properly with ShapeShifter. If you want to use an IDE hard disk with
ShapeShifter, you should configure it as a

```
DeviceDisk
.
```

1.34   Using multiple SCSI ports

ShapeShifter can only use one SCSI port at a time. If you have installed
multiple SCSI adapters in your computer, it depends on the adapter how to
choose the one that should be used by ShapeShifter.

Some SCSI adapters are accessing the different cards by multiple, separate
drivers, e.g. "scsi.device" for the first card, "2nd.scsi.device" for the
second one, etc. In this case, please enter the name of the driver that
belongs to your preferred port in the text gadget "SCSI Device".

Other SCSI adapters are using the same driver for all cards of the same
type, but assign different driver units for the different ports, e.g.
unit 0..7 for the first card, unit 100..107 for the second one, etc.
In this case, you must enter in the gadget "Unit number of first SCSI
device" the unit number, the units connected to the preferred port start
from, i.e. "0" for the first port, "100" for the second one, etc.

1.35   Disabling individual SCSI IDs

The checkboxes with the numbers "0" to "6" at the bottom of the window
may be used to turn on and off individual SCSI IDs. So you can, for
example, prevent long waits for devices you don't want to use but that
have a long initialization phase, or you can switch off devices that
don't work with certain programs.

1.36   Optimizing the speed

ShapeShifter is using buffers allocated in memory for transferring SCSI
data. The speed of the transfer may vary heavily, depending of the memory
area used for the buffers.

With the gadget "Memory Type", you can select the memory area to be used
for the SCSI buffers. For a properly designed and configured SCSI adapter,
this setting will only affect the speed and not the reliability of the
transfer. If you use a PIO adapter, you may select "any", for a Zorro-II
adapter capable of DMA (e.g. GVP Series II) you should select "24 bit DMA"
on an Amiga 2000/3000 and "Chip RAM" on the Amiga 4000, for a Zorro-III
adapter (e.g. A4091 or Fastlane Z3), "Any" is the best setting. If you
only understood half of the last sentence, don't bother. Simply set it to
"Any" or experiment a bit (you may use a Macintosh SCSI benchmark program
to find the best setting).

1.37   Emulating an Apple CD300 drive

If you own a CD-ROM drive that conforms to the SCSI-2 standard, you may
use it under ShapeShifter with the AppleCD driver that comes for instance,
with System 7.5 and is originally intended for Apple CD-ROM drives only.

To do this, activate the gadget "Apple CD300 emulation". The drive will
then behave like an Apple CD300 drive from the Macintosh side and you
won't need special driver software. If you have connected a real Apple
CD300 or have a special Macintosh driver for your drive, you should not
select this option.

1.38   Using SCSI hard drives

                 SCSI hard disks should be configured as
                 DeviceDisks
                  if possible, as this
will give you a higher performance. If you nevertheless want to configure
a hard disk as a real Mac SCSI hard disk (with Mac partitions, SCSI driver
and all), you can do this as usual with a suitable installation program.
Please note, however, that the Apple installation program on the "Disk
Tools" disk that comes with the System, will only work with Apple OEM
drives. But this can be bypassed by selecting the gadget "Apple hard disk
emulation" in the "SCSI Settings" window. After formatting and partitioning
the drive, you can and should turn this option off again.

1.39   Using Amiga ports from the Macintosh

                 The modem and printer ports of the Maintosh are redirected to ←
                  Amiga ports
by ShapeShifter. In the serial settings of ShapeShifter, you specify
which port should be mapped to which driver. ShapeShifter supports all
drivers that are compatible to the "serial.device" or the "parallel.device"
by Commodore, i.e. even most I/O expansion card drivers.

All necessary settings are done in the window "Serial Settings" that will
open after a click on the gadget "Serial..." in the
                 main window
                  . There are
two sets of gadgets, one for the modem port and one for the printer port.

In the big text gadget, you enter the name of the driver (e.g.
"serial.device"). When the driver is on disk, it may be selected with
the gadget "Choose...".

If you are using an I/O expansion card with multiple ports, you can enter
the unit number of the desired port into the gadget "Device unit". Please
consult your card's manual about which number belongs to which port. For
standard Amigas with only one serial and one parallel port, please enter
"0" here.

Now, you have to tell ShapeShifter whether the selected port is a serial
or a parallel one, as these have different properties (e.g. a parallel
port doesn't have a baud rate setting). Activate or deactivate the gadget
"Parallel device" for this.

E.g. if you want to redirect the modem port to the built-in serial port
of the Amiga and the printer port to the parallel port, please enter the
following:

 · For the modem port: "serial.device", Unit 0, not a parallel device
 · For the printer port: "parallel.device", Unit 0, parallel device

Macintosh computers are using round 8-pin connectors for the port, so
you cannot connect Macintosh devices to normal Amigas (the Commodore
serial card, however, has these connectors). There is the following
solution: The very first Macintoshes didn't have these 8-pin connectors,
but 9-pin DSUB connectors, as PCs use today. By using an adapter from a
25-pin DSUB female to a 9-pin male connector (available in every PC store)
and an adapter from a 9-pin female to the round 8-pin connector (available
from Apple and some third-party suppliers) the Amiga can be fitted with
a Macintosh-conforming port.

Another word about parallel devices: As these appear to be serial to
the Macintosh, you can make all the settings typical for serial ports
there, e.g. baud rate, parity etc. For parallel devices, all these
settings are ignored, except for "hardware (CTS) handshake" which is
mapped to the parallel "ACK handshake". With this, you can avoid data
losses when transferring data to parallel printers.

1.40   Linking into Ethernet networks

                ShapeShifte supports Ethernet cards with SANA-II driver (e.g. ←
                  A2065 or
Ariadne) for use with MacTCP. AppleTalk and other network protocols
are not supported at the moment, as are different types of network
hardware (e.g. Arcnet).

All necessary settings are done in the window "Network settings" that
will open after a click on the gadget "Network..." in the
                main window
                of ShapeShifter.

In the gadget "Network driver", you specify the complete path to the
SANA-II driver to be used (e.g. "DEVS:Networks/a2065.device"). You may
also select the driver with a file requester by clicking on "Choose...".
The setting "Device unit" is used to select the network card if you have
several, all controlled by the same driver.

Important things to care for:
 - Using MacTCP with Ethernet requires a correct installation of the
   Macintosh System software (including the EtherTalk software!) and
   of MacTCP. Using System 7.0.1 is strongly discouraged.
 - Neither AmiTCP nor Envoy may run concurrently on the Amiga side on
   the same Ethernet card.

- AppleTalk must be activated in the "Chooser" and "EtherTalk" must
  be selected in the MacTCP control panel.
- If you have problems setting up MacTCP, please don't ask me, ask
  a TCP/IP guru.

1.41   Allocating memory for the Macintosh

                  ShapeShifter needs for the emulation a memory area with selectable ←
                     size
that is used as the main memory by the Macintosh. If you, e.g., select
4MB of memory, the emulator will allocate 4MB of the Amiga's memory on
startup. The Macintosh operating system will then believe that it ran on
a Macintosh with 4MB installed main memory. All Macintosh programs will
only use these 4MB of memory for their data and when you start a Mac
program, it will be assigned a part of these 4MB, no matter how many free
memory is available in your Amiga beyond that. As a result of a lack of
flexibility of the Macintosh operating system, the emulator is only able
to use one contiguous block of memory.

All settings concerning memory are done in the window "Memory Settings"
that will open after a click on the gadget "Memory..." in the
                  main window
                     .

You can either use the "Mac memory (KB)" gadget to type in the size of the
memory block to be used for the Macintosh or activate "Largest free block"
so ShapeShifter will use the largest available block. Please note that
the absolute minimum for System 7 is 1.5 MB. The maximum amount of memory
available for ShapeShifter is displayed under "Maximum (KB)".

Please do not wonder why the memory display in the Workbench screen title
is displaying a far greater amount of free memory than you can set in
ShapeShifter. As I said before, the memory for the Macintosh must be
available in one block, which is not the case if your memory is fragmented.
Restarting your Amiga or entering the command "avail flush" may help.

When the gadget "Mac ROM in fast memory" is checked, ShapeShifter will try
to place the
                  Macintosh ROM
                    in the fastest memory installed in your Amiga,
thus speeding up the Macintosh operating system, but at the cost of less
free Macintosh memory.

With the setting "Write-protect ROM" in the "Misc" window, ShapeShifter
tries to prevent write accesses to the Macintosh ROM. This will make the
emulation more stable and better protected against buggy programs. However,
the write protection only works with a 68040 processor. If you have a
68040 and problems starting ShapeShifter you can try if switching off the
write protection helps. On the 68060, the write protection has to be
turned off. Disabling the write protection will also disable the use of
the MMU for the graphics refresh.

To get the maximum amount of memory for the Macintosh, you should activate
the options "Largest free block" and disable "Mac ROM in fast memory". If

you want the highest speed, then turn on "Mac ROM in fast memory". The
setting with the highest compatibility is achieved by turning off both
options and entering in "Mac memory" the value of "Maximum" minus the size
of the ROM (e.g. maximum amount displayed: 3120KB, Macintosh ROM size:
512KB -> enter "2608" in "Mac memory (KB)").

Another word about the memory reports of some Macintosh programs. The
window that will open after selecting "About this Macintosh" in the Finder,
the amount of memory selected (or the size of the "largest block") will be
displayed. If a macintosh utility wanted you to believe that you have
127MB and more memory installed in your Amiga, this is because these
utilities depend on the Macintosh memory beginning at the address zero,
which is not the case on the Amiga.

1.42   Saving the settings

                 By clicking on "Save" in the
                 main window
                  of ShapeShifter or by selecting
the menu item "Save settings" (shortcut Amiga-S), your settings will be
saved to the file "ShapeShifter Prefs" and will be available on the next
start of ShapeShifter.

1.43   Starting and quitting the emulation

                 To start the Macintosh emulation, click on the gadget "Start" in ←
                  the

                 main window
                  of ShapeShifter or select the menu item of the same name
(shortcut Amiga-R). ShapeShifter will then close all its windows and
open a screen for the Macintosh system. Mouse and keyboard inputs will
now go to the Macintosh.

If you specify the tool type "QUICKSTART" in the icon of ShapeShifter or
give "QUICKSTART" as an argument when starting from the shell, ShapeShifter
will immediately start through to the emulation without displaying the
settings window. This can be used if you only occasionally change the
emulation settings.

If you want to quit the emulation, select the menu item "Shut down" in
the Macintosh Finder from the menu "Special". ShapeShifter will close the
screen, save the Macintosh PRAM into the file "ShapeShifter PRAM" and
quit itself.

Please note that you will lose all your settings for the next time when
starting the emulation unless they have been
                    saved
                      .

1.44   Switching between Amiga and Mac side

By pressing <Ctrl><Tab>, you can turn off and on the Macintosh mouse
and keyboard query. As long as the Macintosh query is turned off, the
Amiga mouse pointer will be invisible until you select a window on another
screen or press <Ctrl><Tab>. Moreover, no graphics refreshes will take
place when the Amiga mouse pointer is visible.

For instance, if you want to switch to another Amiga program while the
emulator is running, you should first press <Ctrl><Tab> which will bring
up the Amiga mouse pointer and then press Amiga-M to bring the screen of
the Amiga program to the front. If you want to continue working on the
Macintosh side, get the ShapeShifter screen to the front, click into it
and press <Ctrl><Tab> again. The Amiga mouse pointer will disappear and
the Macintosh will accept input again.

The Macintosh screen can be used as any other Amiga screen. You may send
it to the back with Amiga-M and move it by holding an <Amiga> key and
dragging it with the mouse.

1.45   Using keyboard and mouse

                 The mapping of the Macintosh special keys to the Amiga keyboard is ←
                    as
follows:

Option   -> <Alt>
Command   -> <Amiga>
Shift   -> <Shift>
Ctrl   -> <Ctrl>
Caps Lock   -> <Caps Lock>
F1-F10   -> <F1>-<F10>
Help   -> <Help>
Backspace   -> <Backspace> (<-)
Delete   -> <Del>

By pressing

                 <Ctrl><Tab>
                  you can turn off and on the Macintosh mouse and
keyboard query and the graphics refresh.

The right mouse button has the same function as the <Alt> (option) key,
if you are using a three-button mouse, the middle button will act like
the <Shift> key.

Please note that all Amiga system key combinations will remain active.
E.g. if you want to hold down the option and command keys to rebuild the
desktop file of a volume, you have to press an <Amiga> key and the right
mouse button, as the Amiga will interpret the combination <Alt><Amiga>
as a replacement for the left mouse button. Likewise, the combination
<Amiga left>-N will not create a new folder, but bring the Workbench
screen to the front. To create a new folder, you have to press
<Amiga right>-N.

The key combination <Ctrl><Shift left><Alt left><Esc> severs as a kind
of emergency shut down option to quit ShapeShifter when the Finder menu
item "Shut down" is not available (e.g. the Mac is not booting, garbage
on the screen etc.). But this key command is only intended for emergencies.

With the key combination <Ctrl><Shift left><Alt left><Help>, you can
activate
                    Macintosh debuggers
                    . If you don't have "MacsBug" installed, the
ROM debugger will come up. If you happen to press these keys by mistake,
you can quit the debugger by entering "G".

You may use graphics tablets or touchscreens instead of the mouse, if
these appear like a mouse to the Amiga and are usable with all programs.

With the gadget "Direct mouse polling" in the "ShapeShifter Misc" window,
you specify whether ShapeShifter should poll the mouse directly by itself
or use the Amiga operating system to do so. The direct polling is more
compatible with some Macintosh programs, but you cannot use graphics
tablets or touchscreens with it.

1.46   Data exchange with the clipboard

Using the clipboard, you can exchange texts between the Amiga and the
Macintosh side, i.e. if you select and cut text in a Macintosh program
you can paste this text into an Amiga program and vice versa. An automatic
conversion between the Mac and Amiga character sets will take place.

1.47   Sound input and output

ShapeShifter will use the built-in audio functions of your Amiga for
sound output. If your speaker stays dead, please check if the sound
volume is set to "0" in the Sound control panel.

And please note that some Macintosh programs, especially games, are
accessing the Macintosh sound chips directly. This will not result in
a crash under ShapeShifter, but there will be no sound.

If you own a sound digitizer that is connected to the Amiga parallel port,
you may also use it from the Macintosh side and, e.g. record your own
alert sound with the Sound control panel. Please note that ShapeShifter
will only record in mono at the moment.

1.48   Notes on the emulation

                    Here, you will learn what to observe when using ShapeShifter and ←↩
                        what
problems you may encounter with the Macintosh emulation.

1.49   Restart, shut down etc.

                  After selecting the Finder menut item "Restart", only the ←
                     Macintosh side
will be restarted, all Amiga programs and data will remain in memory.

The menu item
                  Shut down
                   will quit ShapeShifter and close the Macintosh
emulation.

The "Restart"/"Shut down" buttons in some system error dialog boxes are
not always working in the desired manner, however.

The "forced" quitting of a program with Command-Shift-Escape is not
supported by ShapeShifter.

If you want to quit ShapeShifter, but the Finder menu item "Shut down"
is not accesible (e.g. because of a crash/problems on startup), you may
leave ShapeShifter with the key combination <Ctrl><Shift left><Alt left><Esc>.
This command should only be used in case of emergency, however.

1.50   Macintosh debuggers

The key combination <Ctrl><Shift left><Alt left><Help> will simulate an
NMI on the Macintosh side and can be used to activate debuggers. Unless
you have installed "MacsBug", the debugger built into the Macintosh ROM
will appear. Both can be quit by entering "G".

The ROM debugger (recognizable by the ">" prompt) understands the folowing
commands ([] marks an optional argument):

```
G  [xxxxxxxx]               : Start program at given address,
                              "G" without argument will quit the debugger
DM [xxxxxxxx]               : Display memory
SM [xxxxxxxx] [yy yy...]    : Change memory
TD                         : Display memory at $0C30 (this is where the
                             processor registers are stored)
D0..D7 [xxxxxxxx]          : Show/set data register
A0..A7 [xxxxxxxx]          : Show/set address register
PC [xxxxxxxx]              : Show/set program counter
SR [xxxx]                 : Show/set status register
```

"xxxxxxxx" stands for a hexadecimal expression which may contain the
following special symbols, that can be linked with '+' and '-' as well:

```
RD0..RD7  : Contents of a data register
RA0..RA7  : Contents of an address register
.         : The "current" address from which memory is being displayed
@xxxxxxxx : The contents of address xxxxxxxx
```

Pressing the return key only will repeat the last command and display the
next memory area for "DM".

1.51   What ShapeShifter cannot do

                    The following Macintosh properties are not (yet) emulated by ←
                        ShapeShifter:

· Virtual memory. Even on Amigas with MMU, you should not switch on the
  virtual memory.

· AppleTalk. Though the emulator contains an
              ethernet driver
              , it only
  works with MacTCP at the moment. You can activate AppleTalk, but not
  use it. Moreover, you should never select LocalTalk in the Network
  control panel as this will result in a crash.

· Multiple monitors. You can only use one monitor at a time with
  ShapeShifter.

· 24 bit addressing. You can only use 32 bit clean programs.

· Programs accessing the Macintosh hardware direcly won't necessarily
  crash under ShapeShifter, but are limited in their usability. E.g.
  the game "Lemmings" is missing the sound (the Amiga version is nicer,
  anyway).

· The sound input of the emulator doesn't yet have all the features of
  the Apple sound input driver. Some programs may have problems when
  recording.

· Quitting a program with Command-Shift-Escape doesn't work.

· The serial drivers don't support hardware hangup with DTR.

The following Macintosh programs/utilities don't work with ShapeShifter
or behave erratically:

· Peace of Mind, a hardware diagnostic program

· Snooper, another diagnostic program

· SoundEdit 16

· Apeiron

· Super Wind Commander

1.52 When nothing is working

In rare cases, it may happen that the Macintosh won't boot or might crash
on startup. Then you should try the following:

· Turn the option "Mac ROM in fast memory" on.

· Turn the option "Write-protect ROM" off.

· Switch off the CPU cache (command "CPU NODATACACHE" from the Shell).

· Start ShapeShifter with the tool type "NOCOPYBACK".

· Change the graphics settings to "Amiga Bitplanes", "1 Bit" or try the
  "Amiga window" mode.

· Hold down the left shift key on startup (first wait for the dithered
  Mac background pattern to apprear). This will disable all system
  extensions.

· Delete the file "ShapeShifter PRAM" and start ShapeShifter again.

· When you have problems with File-/DeviceDisks/SCSI then make sure that
  the maximum transfer sizes (MaxTransfer) are set correctly on the
  Amiga side as well as in the ShapeShifter settings. SCSI devices must
  be correctly terminated.

· Boot the Macintosh from disk and use "First Aid" or the Norton Disk
  Doctor to check the integrity of the start volume and the system file.

· Re-install the Macintosh System, "for every Macintosh", including the
  EtherTalk software.

1.53 Possible problems on the Amiga side

                    Some properties of ShapeShifter may lead to problems on the Amiga ←
                         side
or may disturb concurrently running Amiga programs:

- PrepareEmul will move the processor's vector base register (VBR).
  This may break some, very very few Amiga programs. Those of you who
  have already installed a tool for moving the VBR in the Startup-
  Sequence, should not use it together with PrepareEmul as this will
  usually reset the VBR to address zero and ShapeShifter won't work.

- The
             FileDisks
             won't work with automatically (de)compressing file
  systems like XFH. If you use such a file system, you must create
  the FileDisk files using the name of the original (uncompressed)
  volume (e.g. "DH1:MacFileDisk" and not "XH1:MacFileDisk" if "XH1:"
  is an XFH mirror of "DH1:").

- The debugging tool "Enforcer" is not compatible with ShapeShifter
  on principle. You have to turn it off.

1.54 Questions and answers

             Question:
  How do I rebuild the desktop file when starting the Macintosh?

Answer:
  You have to hold down the left Amiga key and the right mouse button
  on startup. The key combination <Alt left><Amiga left> doesn't work
  because this combination is intercepted by the Amiga operating system
  as a replacement for the left mouse button.

Question:
  I have xx MB of memory in my Amiga, but ShapeShifter is using only
  a small part of it.

Answer:
  ShapeShifter can only use a contiguous memory block. E.g. if you have
  2MB of Chip RAM, 8MB of 32 bit Fast RAM and 4MB of 16 bit Fast RAM,
  the theoretically available amount of memory for ShapeShifter is 8MB
  (and not 14MB). The Amiga operating system will, of course, use some
  of these 8MB for itself.

Question:
  The Macintosh doesn't boot. How can I now quit ShapeShifter? The Finder
  is not loaded.

Answer:
  Press <Ctrl><Shift left><Alt left><Esc>. ShapeShifter should then quit
  itself.

Question:
  I have changed the graphics settings and now there is only garbage on
  the screen. How can I now quit ShapeShifter?

Answer:
  Press <Ctrl><Shift left><Alt left><Esc> (eventually hold it down).
  ShapeShifter should then quit itself.

Question:
  In spite of my 68040, the Macintosh emulation is slower than on an
  Amiga 3000. How can that be?

Answer:
  You are probably using a 512K ROM. This ROM is not completely 68040
  compatible and ShapeShifter has to turn off the data cache to make it
  run. If you use a 1MB ROM (e.g. from a Quadra) the speed should increase
  notably.

Question:
  PrepareEmul fails to work, it just reboots and reboots. My Amiga is
  softkicked.

Answer:
  PrepareEmul doesn't work with softkickers. The only solution is to
  patch the Kickstart file as shown
                  here
                    .

Question:
  PrepareEmul fails to work on my A1200.

Answer:
  Copy the program "MacMem" to C: and insert the line "MacMem" into the
  file S:Startup-Sequence just before the invocation of PrepareEmul.

Question:
  When I switch from the running emulation to my workbench screen,
  parts of the screen get overwritten with Macintosh graphics.

Answer:
  Sadly, there is no solution for this. Press <Ctrl><Tab> before switching
  screens and take care that no Macintosh program is drawing on the screen
  as long as the Workbench screen is in the front to minimize the effect.
  If you can live with a graphics slowdown, you may also activate the
  gadget "Refresh always" in the graphics settings.

Question:
  ShapeShifter crashes on my 68060.

Answer:
  Turn off the ROM write protection and enable the "Do not use FPU" option.

Question:
  I cannot use DeviceDisks with my "Oktagon" controller.

Answer:
  This seems to be a bug in the "oktagon.device". Sadly, there is no
  solution at the moment.

Question:
  The screen refresh is as slow as ever. I thought that ShapeShifter
  will now use the MMU to speed things up?

Answer:
  The MMU is used for the refresh only when
   · A 68040 processor is present
   · The MMU is active and set to 4K page size
   · The option "Write-protect ROM" is enabled
  The mode "Amiga Bitplanes" with 256 colors will not use the MMU at
  the moment.

Question:
  How can I install the Macintosh System without HD floppy drives?

Answer:
  (According to Mike Carlson <carlson@kaiwan.com>):
  · Use a program called DiskDup+ on a real Mac to read in a Mac System
    disk. I used the Disk Tools (or whatever it's called) disk from
    System 7.5 as a test. It doesn't matter that the disk is 1.44 Mb.
  · After DiskDup+ reads the disk, have it save the image to a file.
  · Get it to your Amiga. I used a null-modem. But you can also use
    "Splitz" and "Jointz" to split the file into smaller parts that can
    be transferred with DD disks.
  · Tell ShapeShifter that this image is a FileDisk.
  · Start ShapeShifter.

Question:
  How do I print under ShapeShifter?

Answer:
  There is a public domain Epson printer driver for the Mac called
  "Chuck's Printer Driver". It can also be used with all Epson-compatible
  parallel printers for the Amiga. Simply configure the Mac printer port
  for the parallel port and choose it from the Mac printer driver. The
  serial settings don't matter but you should turn on "Hardware Handshake".

Question:
  I can no longer format 720K disks under System 7.5. With 7.1 it worked.

Answer:
  Due to a brain-damaged modification to the Disk Initialization Package,
  System 7.5 refuses to format 720K disks unless the "720K Disk Formatter"
  extension is present. If you give ShapeShifter the tool type "720KKLUDGE",
  it will format these disks with 719.5K. Apart from losing 512 bytes
  disk space, it doesn't make any difference. 719.5K disks can be read
  on a real Mac as can 720K disks under ShapeShifter with System 7.5.

Question:
  After starting ShapeShifter, I only get a white/gray/dithered gray
  screen. What am I doing wrong?

Answer:
  Try a different ROM. If that doesn't help, then I don't know.

1.55 The Mac-Handler

The Mac-Handler allows you to exchange files between the Amiga and the
Mac side: With it, you can access Macintosh volumes like Amiga volumes
while the emulation is running, and e.g. copy files from the Workbench.

To install, please copy the file "Mac-Handler" into the "L:" directory.
The file "MAC" should not be copied to DEVS:DOSDrivers, as you might
expect. This would mount the Mac-Handler at every restart automatically.
But as it depends on ShapeShifter running, it doesn't work this way.
You should copy "MAC" to SYS:Storage or wherever, instead.

To use it, first start ShapeShifter, wait until the Macintosh has
finished the startup process and then double-click the "MAC" icon. Now,
an icon for the Mac start volume should appear on the Workbench. You may
access it from any Amiga program as if it was an Amiga volume.

To access other volumes than the start volume, you have to change the
tool type "STARTUP" in the "MAC" icon. There, you give the number of the
Macintosh volume to be used. 1 is always the start volume, the other
volumes are counted up from 2.

All files on the Mac volume have a comment like "xxxx/yyyy". "xxxx" is
the Macintosh file type and "yyyy" the signature of the creating program,
e.g. "TEXT/ttxt" for a TeachText text file. Changing the comment will
change type and creator of the corresponding Mac file. All folders have
the number of contained objects (files or additional folders) as a comment.

The Mac-Handler can access only either the data or the resource fork of
the Mac volume at a time, the file lengths are displayed accordingly.
By default, it will use the data fork. The small program "MacControl"
serves as a switch. It can only be used from the Shell and expects the
device name of the Mac-Handler (e.g. "MAC") and one of the keywords
"DATA" or "RESOURCE" as arguments. If you have, for instance, mounted
a Mac volume as "MAC:", the command to switch to the resource forks is:

  MacControl MAC: RESOURCE

And to switch back to the data forks, you use:

  MacControl MAC: DATA

1.56 Reference

This section describes ShapeShifters window gadgets one by one in ←
their
function. You should use this reference for consultation if you want to
learn more about the function of a single setting. How the settings
interact and how to configure ShapeShifter for certain things is covered

here
.

Main window

Graphics

Volumes

Memory

SCSI

Serial

Network

Miscellaneous

1.57   Main window reference

The main window appears directly after starting ShapeShifter.

By selecting one of the eight big gadgets
Graphics...
,
Volumes/Disks...
,

Floppys...
,
Memory...
,
SCSI...
,
Serial...
,
Network...
 and

Miscellaneous...
 you can open the windows in which you do the
settings.

A click on "Start" closes the settings windows of ShapeShifter and
starts the Macintosh emulation.

With "Save", your settings are saved in the file "ShapeShifter Prefs",
so they are available at the next start of ShapeShifter.

By selecting "Exit" you can quit ShapeShifter while discarding any
unsaved settings.

ShapeShifter has only one menu, "Project", that offers three items:

"About ShapeShifter..." displays some information about the version of
ShapeShifter used and the author of the program.

"Save settings" (shortcut Amiga-S) does the same as the gadget "Save".
The settings are saved in the file "ShapeShifter Prefs".

With "Quit" (shortcut Amiga-Q), you quit ShapeShifter without saving
the settings.

1.58   Graphics settings reference

                Color depth: Here you set the number of colors to be used by the
Macintosh. This setting is done here and not in the Monitors control panel,
as it gives you the chance to switch to a lower color depth without
problems when the speed in higher depth becomes too slow.

Screen type: Here you choose how the screen memory should be handled
by ShapeShifter. This setting is closely connected to the selected screen
mode. The options are now discussed in detail:

"Amiga bitplanes" is the setting for the normal Amiga graphics modes. You
can use 2 to 256 colors. When using more than 2 colors, the graphics have
to be
                refreshed
                 periodically, which has an impact on the speed. Only
at 2 colors the graphics is running at full speed.

"CyBERgraphics" is for graphics cards with a CyBERgraphics driver. Only
color depths of 8, 15 and 24 bit are selectable, while most grapics cards
require a
                refresh
                 at 15 and 24 bit.

"Merlin" must be used for the Merlin graphics card by XPert/ProDev. The
only possible color depths are 8, 15 and 24 bit, while 15 and 24 bit
require a
                refresh
                 .

"EGS": If your graphics card works with the "EGS" (Enhanced Graphics
System) by Viona Development, you must use this setting. Only color depths
of 8, 15 and 24 bit are possible, while 15 and 24 bit require a
                refresh
                 .

"Picasso" is intended for the Picasso graphics card by Village Tronic.
Only color depths of 8, 15 and 24 bit are possible, while 15 and 24 bit
require a
                    refresh
                    .

"Amiga window" displays the Macintosh desktop in 2 colors in a window
on the Workbench. The Amiga mouse pointer will be used to control symbols
and menus of the Macintosh.

Screen mode: After a click on "Choose...", the screen mode requester
will open and allow the selection of any Amiga graphics mode to display
the Macintosh screen, and the selection of the overscan region to be used.
A high resolution, flicker-free mode like "Productivity" or a mode of a
graphics card is recommended. For
                    video applications
                    , you can use the
whole available screen for the display. When you have chosen a screen mode,
the "Size" gadgets are set automatically to the normal values for this
mode.

Size: Here you can manually set the size of the screen in pixels. By
entering a smaller size (e.g. 512$\times$384), you can, for instance, increase
the speed in higher color depths. For the screen mode "Amiga window", the
size of the window is specified here.

Refresh rate: Here you can specify how many 1/50ths of a second should
pass between the
                    refreshes
                    . A value of 5 will, for instance, leave a tenth
of a second of computing time for the emulator between the refreshes. For
the optimal choice of this value, please read the chapter

                    Setting the refresh
                    .

Black border: When this gadget is selected, the border around the
Macintosh screen is displayed in black (requires ECS/AA), as on the real
Macintosh. For graphics cards, this is mostly without effect, they always
display a black border.

Always refresh: In the 8 bit graphics card modes, the Macintosh
graphics will always go to the front screen of the graphics card, even if
it is the Workbench screen, for example. By activating this gadget, a
refresh is done also in 8 bit, thereby preventing this annoying effect,
but slowing down the graphics speed.

1.59   Volumes reference

                    FileDisk 1/2: In these two gadgets, you give the name of the files ←
                        that
ShapeShifter should use for the first resp. the second
                    FileDisk
                    . Instead

of entering the name by hand, you may as well click on the symbol to the
right of the text gadgets that will open a file requester. The gadget
"Create..." is used to create a new FileDisk file. First, you have to
enter the size in KB and, after a click on "Choose file...", set the name
of the file in the file requester (you can also select an existing file,
it will then be overwritten).

DeviceDisk 1/2: Here you enter the name of the Amiga driver to be used
for the first resp. the second
                    DeviceDisk
                    . For SCSI devices, this is
usually the name of the SCSI driver, but you may use any other "trackdisk"
compatible driver. With a click on "Choose...", a file requester will
appear that allows the selection of an existing volume (e.g. a hard drive
partition). ShapeShifter will then check if this volume is suitable as a
DeviceDisk and will then enter the name of the driver and all the other
data into the gadgets automatically. In the string gadget, you may also
directly enter the device name of a Macintosh partition (including ":").
The data will then be inquired at run-time.

Unit: Specifies the number of the driver's unit to be used. For SCSI
devices, this is the ID of the SCSI device.

First sector/Number of sectors: These values define the section of the
volume that is used by ShapeShifter. This is extremely important if you
have created proper partitions for the Amiga operating system and
ShapeShifter on a shared hard disk. Should the sector values be wrong,
ShapeShifter might overwrite data on Amiga partitions. If you don't know
about the logical structure of volumes, you should only create a DeviceDisk
by using the "Choose..." symbol and not change the automatically entered
sector values afterwards.

Maximum transfer size: Some IDE and older SCSI drivers don't like it
when the amount of data transfered in one block exceeds a certain size
(e.g. 64KB). In this case, you can set the maximum block size with this
setting. The setting corresponds directly to the value "MaxTransfer" in
the MountList and the Rigid Disk Block and is set right automatically when
using "Choose...". When the hard disk has no limitation for the transfer
size, you can set this to "-1" or "0".

Boot from: is used to select the startup volume. "Last selection"
leaves the setting as it is (or as it has been set in the "Startup volume"
control panel from the Mac), "Any" will make ShapeShifter boot from the
first found bootable volume and "FileDisk 1" resp. "DeviceDisk 1" force
it to boot from the first File-/DeviceDisk.

1.60   Floppy settings reference

Floppy 1/2: Here you select which Amiga floppy drives are to be used
as the first and second Macintosh drives. With a click on "Search",
ShapeShifter will automatically detect the first two connected drives.

Inhibit AmigaDOS: If this option is selected, AmigaDOS is inhibited
from accessing the corresponding drive as long as the emulation runs.

This will speed up the recognition of inserted Macintosh disks.

1.61   Memory settings reference

Mac memory: Here you enter the amount of
memory
to be reserved for
the Macintosh (in KB, 1MB=1024KB). For System 7, this must be at last
1.5MB. ShapeShifter requires additional memory for the ROM and the
graphics memory. When you receive the message "There is not enough memory
available" on starting the emulation, then please lower the value.

Maximum (KB): The maximum amount of memory available for ShapeShifter
is displayed here.

Largest free block: With this setting, ShapeShifter will use the largest
available memory block as Macintosh memory. The value entered in
"Mac memory", the emulator gets all the memory it can.

Mac ROM in fast memory: When this gadget is checked, ShapeShifter tries
to place the Macintosh ROM in the fastest available memory, speeding up
the emulation. Otherwise, it could happen that the ROM ends up in Chip
RAM or slow 16 bit memory.

1.62   SCSI settings reference

SCSI driver: Here your give the name of the
Amiga SCSI driver
that
ShapeShifter will use to access the SCSI port. For Amigas with built-in
SCSI port or the Commodore SCSI cards, this is "scsi.device". If you use
a different SCSI adapter, please consult its documentation about the name
of the driver. If the driver is in a file on disk or hard drive, you can
select it by clicking on "Choose..." with a file requester.

Unit number of first SCSI device: This setting determines from what Amiga
driver unit the ID numbers of the SCSI devices should start. Setting it to
"100", for instance, will access the SCSI device with the ID 2 with the
driver unit 102. You should only enter a value not equal to "0" if you have
installed
multiple SCSI adapters
in you Amiga, as the hundreds digit of
the driver unit is commonly used to select the adapter.

Memory type: Here you set the type of memory to be used for the SCSI
transfer buffers. "Chip RAM" will use the Chip RAM, "24 bit DMA" allocates
memory in the 24 bit address space (important for DMA Zorro-II cards) and
"Any" will get any (but not always the fastest) free memory. Please also
read the chapter
Optimizing the speed
.

Apple CD300 emulation: When this field is checked, you can use SCSI-2
conforming CD-ROM drives with the
                    AppleCD
                     driver. If you have connected a
real Apple CD300 or are not using the AppleCD driver but a special one for
your drive, you should disable this setting.

Apple hard disk emulation: This setting is only required to make Apple's
hard disk installation program believe that an Apple hard drive is
connected. Otherwise, it should be left switched off.

0..6: With these checkboxes, individual SCSI IDs can be turned on and off
for the Mac.

1.63   Serial settings reference

                    Modem port/Printer port: Here you give the name of the Amiga   ←
                       driver
(e.g. "serial.device") to be used for input and output over the Macintosh

                    modem
                     resp.
                    printer
                     ports. When the driver is on disk, it can be selected
with a click on "Choose...".

Device unit: For drivers that support multiple ports of one type, this
selects the port. Please consult your I/O cards manual about this. For
standard Amigas with one serial and one parallel port, enter "0".

Parallel device: Here you have to specify whether the selected driver is
compatible to the "serial.device" or the "parallel.device", i.e. if it
drives a serial or a parallel port. A wrong setting may result in
malfunctions or even in crashes when accessing the ports.

1.64   Network settings reference

Network driver: Here you give the complete path of the SANA-II
ethernet driver to be used for MacTCP (e.g. "DEVS:Networks/a2065.device").
Other network hardware like Arcnet is not supported (however, you can run
MacTCP with InterSLIP or MacPPP over a serial connection). EtherTalk is
also not possible.

Device unit: For drivers supporting multiple cards of one type,
you select the card with this setting. Please consult the manual of your
Ethernet card about this. Normally, the setting "0" refers to the first/
only card.

1.65   Miscellaneous settings reference

Direct mouse polling: With this, you specify whether ShapeShifter should
poll the mouse directly by itself or use the Amiga operating system to do
this. The direct polling is more compatible to some Macintosh programs.
However, you cannot use graphics tablets or touchscreens with it.

Write-protect ROM: When this option is enabled, ShapeShifter will try to
write-protect the Macintosh ROM and to use the MMU for the screen refresh.
This will only work on 68040s with default MMU setup and has no effect on
other processors. For the 68060 processor, this option must be turned off.

Do not use FPU: With this option, the access to the FPU of the Amiga
from the Macintosh can be prevented. For the 68060 processor, this option
has to be turned on.

1.66   Copyright

              The programs "ShapeShifter", "PrepareEmul", "Mac-Handler", " ←
                 MacControl",
"Save ROM" and this manual are © Copyright 1993-1995 Christian Bauer. They
may be freely distributed as long as they remain unchanged (archiving and
packing are allowed).

Chris J. Schnurr <cjs@icbl.heriott-watt.ac.uk> is hereby granted to place
this manual on his WWW page http://www.icbl.hw.ac.uk/~cjs/shape/.

No profit must be made by distributing ShapeShifter, especially the
price of a disk containing ShapeShifter may not exceed US$ 5,- (or
equivalent amounts in other currencies). Please feel free to distribute
ShapeShifter over bulletin board systems and networks and as part of
shareware/freeware CD-ROMs. All rights for commercial use remain at the

              author
                 .

The keyfile that registered users will receive, must only be installed
one one computer and in no case passed on to others. Offences will
result in penal prosecution by me. With your signature on the order form,
you accept these conditions.

The program is presented to the users as it is, without any warranty
of any kind, be it expressed or implicit. Anyone using this program
agrees to incur the risk of using it for himself. In no way
can the author be made responsible for any damage directly or indirectly
caused by the use or misuse of the program.

The Macintosh ROM files necessary for using ShapeShifter are not part
of ShapeShifter and copyrighted by Apple. The author will not
take upon himself the responsibility for the legal consequences, an

illegal use of such a ROM file can have.

Names of hardware and software items mentioned in this manual and in
program texts are registered trade marks of the respective companies
and not marked as such. So the lack of such a note may not be used as
an indication that these names are free.

The user interface of the program was designed with GadToolsBox
© Copyright 1991–1993 Jaba Development.

Parts of the program are © Copyright 1992–1993 Jaba Development.

1.67 Bug reports

                If you find a bug or a misfeature in ShapeShifter, or have an idea ←
                   how
to make some things better, then please drop me a note so I'll be able
to improve ShapeShifter in the future. My address can be found
                here
                .

Important for a bug report is the following information:

 · Version of ShapeShifter (can be found in the 'About ShapeShifter...'
   requester)
 · Used AmigaOS version (e.g. 2.1, 3.0 etc.)
 · Used MacOS version (e.g. System 7.0.1, System 7.1 etc.)
 · Installed hardware, if of interest for the problem
 · Information about installed startup programs on the Amiga or INITs
   on the Macintosh
 · ShapeShifter settings
 · Detailed description what program produces the bug and how it can
   be reproduced

And please consider: Even Macintosh software has bugs! So it is not
always the emulator's fault when something is not working.

1.68 Credits

The following persons/companies deserve special thanks from me as they
made a significant contribution to the development of ShapeShifter:

 · Daniel Bobbert <dabo@hermes.rz.uni-sb.de>, my first beta tester,
   who printed dozens of pages from the "THINK Reference" for me
 · Markus Winklbauer <sysop@ng-box.wwbnet.de>, my second beta tester,
   and the first who managed to make ShapeShifter run apart from me
 · Bernd Limbach <beli@darkness.gun.de> for the "NetBSD" session,
   after which the Picasso graphics were working finally

- All other beta testers for constructive criticism
- Frank Wille <frank@phoenix.owl.de>, whose PhxAss was used for developing ShapeShifter
- Jaba Development, whose GadToolsBox developed ShapeShifter's user interface
- Frank Mariak <fmariak@chaosengine.ping.de> for his help with the CyBERgraphics support and many other things
- Martin Berndt <m_berndt@wanderer.gun.de> for "KickShifter"
- Thomas Kessler <kessler@fim.uni-erlangen.de> for "ReKick"
- Lord Prayer for the Merlin docs
- Gary Goldberg <gg0012@epfl2.epflbalto.org> for proof-reading the english manual
- Giovanni Gentile <gentile@dsi.unimi.it> and Bruno Vella (Vobarno (BS) Italia) for the italian catalog files
- Tattoo Mabonzo <tmk@nbre.nfe.be> for the french catalog files
- Jens Kristian Jensen <32jkj@but.auc.dk> and Claus Østergaard <cos@dator.dk> for the danish catalog files
- Thomas Andersson <steiner@algonet.se> and Patrik Nordvall <patrik_nordvall@p52.anet.bbs.bad.se> for the swedish catalog files
- Paul van der Heu <pvdh@motship.xs4all.nl> for the dutch catalog files
- Pawel Hernik <spi-ph@srv1.tu.kielce.pl> for the polish catalog files
- Apple Computer Inc. who made writing a Macintosh emulator a child's play
- Ace of Base, whose music kept me up during hardcore debugging sessions when "nothing" was working

1.69 The author

               No one wanted to develop a software Macintosh emulator.
So I had to do it. :-)

My address is:

  Christian Bauer
  Langenaustr. 65
  56070 Koblenz
  Germany

EMail:
  bauec002@goofy.zdv.uni-mainz.de
  cbauer@mzdmza.zdv.uni-mainz.de
  cebix@ng-box.wwbnet.de

WWW:
  http://www.uni-mainz.de/~bauec002/

Questions, criticism, suggestions and
               bug reports
                are always
welcome. EMail is preferred.

Under no circumstance will I send you ROM files, not even "under friends"! No chance!

1.70 History

```
V1.14 29.Mar.95
  - First public release

V2.0  11.Apr.95
  - Pre-emptive multitasking
  - Quickstart now works reliably
  - Bug in stack handling corrected
  - Graphics cards in 24 bit address space work with ROM 34
  - CyBERgraphics 15 and 24 bit modes now work, selecting a CyBERgraphics
    mode will automatically set the color depth
  - Needs no special ROM sub versions any more
  - Setting for task priority removed
  - Macintosh reset routine revamped
  - Italian catalog files
  - When the selected amount of Mac memory is not available, you can
    choose to use the largest free block
  - Numerous internal corrections and improvements
  - SCSI IDs individually switchable, an error when accessing ID 0 will
    no longer cause the other IDs to be skipped
  - The graphics refresh is now done by a subtask, enabling the Amiga
    mouse pointer will prevent any refreshes
  - ROM write-protection is now choosable
  - The FileDisk driver will no longer open files with empty names

V3.0  11.Jun.95
  - Multitasking behavior improved, no more deadlocks when waiting for
    I/O operations

  - Ethernet support for MacTCP
  - Serial driver now capable of asynchronous full-duplex operation
  - Using serial.device while ShapeShifter is running is now safe
  - Removed a bug when opening parallel devices in the serial driver
  - The serial hardware handshake flag is now mapped to ACK handshake
    on parallel devices
  - Serial devices are now always closed on shutdown

  - More compatible SCSI routines
  - Added a boot drive selector in the volumes window
  - Separate window for floppy disk settings
  - Macintosh-to-Amiga floppy drive assignment selectable
  - Option to inhibit AmigaDOS from accessing floppy drives while the
    Mac is running
  - Under "DeviceDisk 1/2" you may directly enter the name of a partition
  - DeviceDisks are now always fixed disks
  - Improved disk change detection
  - More compatible to mfm.device V41
  - Tooltype "720KKLUDGE" to allow 720K disks to be formatted
    under System 7.5 without the 720K Disk Formatter extension
  - Booting from the System 7.0.1 Disk Tools disk is now possible
    (LocalTalk will no longer crash)

  - On the 68040, the MMU is now used to only refresh the parts of the
    screen that have changed (as long as the ROM write-protection is
    switched on) except the 8 bit Amiga mode
```

– Support for Merlin graphics card
– Distinction between EGS Chunky and EGS VGA removed
– New screen type "Amiga window" that will display the Macintosh
  desktop in a window on the Amiga workbench using the Amiga
  mouse pointer. The size gadgets specifiy the window dimensions.
– The screen width is rounded to a multiple of 16
– Refreshed modes read the screen base at every refresh, no more
  screen trashing
– Option "Refresh always" to force a refresh even in 8 bit chunky
  modes to prevent screen trashing
– The BytesPerRow of the "Amiga bitplane" mode are read from the BitMap
– Selecting a CyBERgraphics mode will set the "Color depth" gadget
  automatically
– The CyBERgraphics mode will respect the screen size settings
– The CyberGfx code loops ScreenToFront until ib_FirstScreen is
  ShapeShifter's screen before calling GetCyberMapAttr/DISPADR
– Now complains when there's not enough free memory for a CyBERgraphics
  screen instead of crashing
– Background refresh rate removed, a refresh rate of 0 is intercepted
  and changed to 1
– Removed a screen closing bug

– New option to prevent the Macintosh from accessing the FPU (for 68060)
– 68060 compatible when FPU and ROM write-protection are disabled
– Control of 68040 copyback cache improved
– When quitting ShapeShifter, the original state of the cache is restored
– Option NOCOPYBACK to switch off the copyback cache
– Bus error handling revamped, VMM now runs if the ROM write-protection
  is switched off

– Dynamic memory handling removed
– Memory setting now with an integer gadget
– ROM checksum is tested

– Danish, french, swedish, dutch, and polish catalog files
– PrepareEmul can now use Olaf Barthel's "shutdown.library"