BlizzMagic

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Contents

Chapter 1

BlizzMagic

1.1 Welcome

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                  BlizzMagic V3.2

 Kickstart ROM remapper for A1200 & all Blizzard 1230 and 1260

                  F R E E W A R E

                   What's new
                  Introduction
                  Requirements
                      Usage
                    Problems
                  Support Tools
                 Technical info
                     Author
                    History
                    Future
```

1.2 What's new?

Well, seems you are using BlizzMagic already... good! :-)

Here is a list of changes / new features in 3.2:

I borrowed Blizzard 1260 for a weekend, and this is the result:

BlizzMagic now fully supports 1260!!! This one was pretty
hard to achieve, but I did it! For more details, see Tech .

I also added a new option for 1230 IV and 1260 - NOSKIPOFF. When
this is NOT specified, BlizzMagic will skip even the init code for
testing "2" key on startup. That results in huge speedup of reboot
with 1260! It also skips display flashing on 1260... You of course
won't be able to turn Blizzard off using "2" key - you'll have to
turn off computer, wait couple of seconds, then turn it on with
"2" key pressed. But - who uses this anyway? :-)

There are also two other new options: MOVEVBR and PREPAREEMUL.
MOVEVBR (when specified) moves VBR vector table in fastram.
PREPAREEMUL moves start of the chip ram to $2000 to allow some
Macintosh emulators work.

1.3   What it does

   What it does? Well, almost the same as many other #?kick programs –
allows use of different Kickstart ROM than your computer actually has.
But – it has some other features, that make this program more than just
a softkicker. One of the most interesting features is moving exec.library
(which is one of the most heavily used libraries in system) base into
fastram. Because Blizzard's expansion RAM stays on the bus all the time,
the only reason why system doesn't use it from the very start of system
initialization is, that fastram is added into free memory list at "diag
init" time, when "exec.library" is already fully initialized and can't be
easily moved into fastram (although it IS possible – I did such a patch
before). So, BlizzMagic patches loaded ROM (since it's in RAM, and can be
patched easily) and adds Blizzard's memory into free memory list BEFORE the
final initialization of "exec.library". Exec then uses fastram for
everything automatically.

   Another feature of this "fastram" patch is that it changes memory
attributes of Blizzard's RAM to reflect it's real behaviour. This results in
ability to store reset–surviving objects such as "RAD:" devices into this
fastram. You can for example have four RAD: units now! This wasn't possible
before because RAD: disk images had to be stored in chip–ram, which was the
only memory available with required attributes. That's history now!
You may even move CPU interrupt vectors to fastram using MOVEVBR option.
If you need to use "prepareemul" or similar tool, you can stop using it now,
because BlizzMagic can do even this for you :–)

   There are also functions that affect behaviour of Blizzard Turbo board
itself. You can skip that flashing pause on reset when Blizzard says "I'm
here" – this is nice when you reboot often. You can also disable SCSI kit.
This is good when you have SCSI kit with SIMM installed, but no SCSI devices
connected. You can skip "1230scsi.device" initialization, saving few seconds
of searching SCSI bus for devices on every reboot.

   Most attractive use of BlizzMagic will probably be using a new 3.1 ROM
on an old Commodore A1200 with 3.0 ROM. There is a tool for grabbing ROM
image from CD32 or A1200 Magic provided in BlizzMagic distribution archive.
Warning! Don't use A4000 3.1 ROM's – these don't work in A1200! Also note
that using a grabbed rom may be illegal, since it's copyrighted. I warned you.
Maybe when you grab it from your own CD32 and don't use both at once... I'm
not a lawyer but a programmer... do what you want with BlizzMagic, but YOU
are responsible for that. Don't blame me!

   You can even softkick a old–style 256k 1.3 ROM, but BlizzMagic can't
patch such a ROM without having to know it exactly. This is because
"exec.library" is not a real "resident module" in these old–style ROM's.
This means you can't use any of the advanced features of BlizzMagic –
exec–>fast, flash skipping... Maybe I'll support this in future, but who
wants to use 1.3 these days anyway? I deleted all software that doesn't

work on 3.0 years ago... These were poorly programmed and thus weren't
worth it anyway...

   You can use all the features even when you don't want to softkick any
ROM (when you already have 3.1 ROM, for example). Just use "*" as filename
and BlizzMagic will use your original ROM. No problem!

For detailed instructions on usage of BlizzMagic, see Usage chapter.

1.4   What do you need

To be able to use "BlizzMagic", you need an Amiga 1200 with OS 2.0+
equipped with phase5's Blizzard 1230 or 1260 and some FAST memory
installed (4MB should be fine, I have 8MB). Blizzard should be configured
via jumpers to enable its ROM->RAM remapping feature (MAPROM jumper) – see
Blizzard's manual for this.

Of course you need some ROM image too.. If you have an old A1200 with
OS3.0, you can visit your friend who has a newer A1200 with OS3.1, and use
provided "rom grabber" to grab his ROM when he has left for a while :-).
CD32 is a good target for grabbing too. So far I've tested these
Kickstarts:

40.68 (my machine's own ROM)
39.106 (normal old A1200)
37.175 (A500 version? no IDE)   __ these didn't work on 1260
37.350 (A600 one – IDE WORKS!!) /
34.5 (??? I don't know much about this one)

WARNING: DO NOT GRAB ROM on computer with BlizzMagic in use –
BlizzMagic patches the ROM. Such ROM would be unusable! (As it
jumps to RAM address, where resident part of BlizzMagic was
located). This is not a real problem, since one who uses BlizzMagic
already has that ROM in a file :-)

1.5   How to use it

Brief overview of usage:

BlizzMagic <filename> <options>

<filename> is a filename of your ROM file, or * when you don't
want to load any ROM.

<options> is one or more of following:

STARTUP – specify this when you're putting BlizzMagic into
startup-sequence. When this switch is specified, BlizzMagic will only
load a new ROM when there's NO ROM loaded already. This means it will
work only first time after power-on. Technically, BlizzMagic will only
act when the ROM installed is equal to your original ROM.

NOSKIPFLASH – Turns off flash-skipping, which is ON by default.
This has no effect on SCSI.

NOSKIPOFF – Turns off "2" key detection on 1230IV and also
screen flashing on 1260. You won't be able to turn Blizzard off
until power-off.

MOVEVBR – This does the same as similar option in FastExec –
moves VBR vectors into fastram, resulting in slight speedup of interrupts.

PREPAREEMUL – This option replaces "prepareemul" tool from
ShapeShifter. It moves start of chip-ram to $2000, so Mac emulators
can use low memory for their system. This option automatically
implies MOVEVBR.

NOSCSI – Turns off SCSI initialization. This means Z3/1230scsi.device
won't appear at all and SCSI bus won't be searched for devices. Speeds
up booting when no SCSI devices are connected.

NORESIDENT – Turns off resident part of BlizzMagic. This disables
all other features (flash/off skipping, NOSCSI, exec->fastram, fastram
attribute correction). Specified ROM is simply loaded over the currently
installed one without any patching. This is also the case for old-style
(1.3) ROMs, which can't be currently patched by BlizzMagic.

FORCE – Forces ROM replacement, even when both ROMs have
the same version and revision. Mainly for debug purposes, but can be
used for loading patched version of your normal ROM. Note that STARTUP
switch overpowers FORCE – when both are specified, ROM won't be replaced
when there is already some ROM installed, even with FORCE switch.

Using BlizzMagic:

When you want to use a new (maybe 3.1) ROM all the time, you may want
to put BlizzMagic into your startup-sequence. It should be put
as a first command (even before SetPatch) in s:startup-sequence, not
in user-startup! Enter this at start of your s:startup-sequence:

BlizzMagic <filename> STARTUP

This will load a specified ROM when there's no rom installed already.
STARTUP switch enables loading any rom later using BlizzMagic from Shell –
It won't be replaced back when you have BlizzMagic in startup-sequence.

When you don't want to load any ROM but still want to use BlizzMagic's
features, put this at start of startup-sequence:

BlizzMagic * STARTUP

This doesn't load any ROM, but moves exec to fast, fixes fast memory
attributes and skips flashing.

BlizzMagic * STARTUP NOSCSI

This does the same as the previous one, but also disables SCSI.

When you want to restore your original ROM, use this from Shell:

```
BlizzMagic * NORESIDENT
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Note that in this case STARTUP switch won't keep BlizzMagic from loading
ROM when it's in startup-sequence, as it sees there's no ROM installed.
Also, you won't be able to restore ROM this way when you softkicked
1.3, since BlizzMagic requires OS2.0+ for parsing arguments. Maybe
I'll add a functionality on 1.3 for restoring ROM only (* NORESIDENT)
in future.

1.6   Who cares about me, anyway?

Well, seems I've definitely decided to become a famous Amiga programmer,
so take a note of my e-mail address :-)

                            mamlason@bajt.cz

I'll be also reachable at:

                            hlavaty@amiga.cz

Mail from there should be auto-forwarded to me, once it starts to work :-)
Please use mamlason@bajt.cz preferably. This account is (finally) a normal
full-featured POP3 mailbox - no more BBS limits!

The "Real" world address:

                        Jan Hlavaty
                      Tadzicka 1424
                        Praha 10
                          10100
                      Czech Republic
              (It's in central Europe, you dumb :-)

I'm on IRC sometimes as "Mamlason"... I like giving away cookies :-)

I would like to thank the following people:

- Christer Bjarnemo for his ideas, opinions and moral support as well as
other things I didn't mention here :-)

- Stephen Evans ("Mr_Q") for launching suspicious code I DCC'ed him on his
machine to provide me with essential information about Blizzard 1230III
(it was not a virus - this time :-), and for being the first happy user of
BlizzMagic on 1230III

- Helmut Kroeber, Rorderick (? that's all I know about you),
Luke Osbaldeston, Alessandro Zummo and all other people who emailed me
(and will email me) for their comments and showing interest in my work.

- "BillRiker" on IRC for the same as "Mr_Q", but on 1230 II

– Harry Sintonen (author of BlizKick) for cloning BlizzMagic (Yeah! I was
first :-), thus making me believe it's worth it :-). Isn't it nice many
Amiga programs exist in pairs, making each other want to be better than the
other? Well, rivalry is a strong motivation, thanks for that :-) (as this
is the only motivation that works on ME – I'm very lazy otherwise)

– Any other persons/entities I forgot that exist on IRC or in general
cyberspace, that helped me by discussing and/or beta-testing BlizzMagic.

– Michal Suk from Atlantida for borrowing me Blizzard 1260 for a weekend,
thus allowing me to make BlizzMagic work perfectly on 1260.

1.7   Possible trouble with BlizzMagic

There are some tips for using blizzmagic:

– When putting BlizzMagic into startup-sequence, always put it
at the very first line, before SetPatch. Specify STARTUP switch there.

– Do not use conflicting programs at once with BlizzMagic in
startup-sequence. These may be "FastExec", "PrepareEmul" or similar tools
which change something and then reboot. Such programs can get into fight
with BlizzMagic easily and there is NO need to run them now, as BlizzMagic
can do the same :-)

– Check that ROM you're going to use is for A1200. Couple of people reported
problems using A4000's one.

– I had problems with some <3.0 ROMs on 1260. I think these won't
work at all and shouldn't be used.

1.8   What happened since...

V1.0: First public release, for Blizzard 1230 IV only...
       Used overlay trick which confused most programs patching
       LoadSeg(). Not bad, but...

V2.0: Complete rewrite and concept change, now supports 256k ROMs
       and checks for ROM loaded. Still for Blizzard 1230IV only... :-(
       Released on coverdisk of Czech magazine for Amiga users "AMIGA Review"

V2.1: I catched a 1230III owner on IRC finally (hi Mr_Q) and adapted
       BlizzMagic to use 1230III too. Now supports versions III and IV.
       Still no bugs found.

V2.2: Someone wrote to me it could be very nice feature to make BlizzMagic
       copy exec to fast ram, since using "fastexec" and "BlizzMagic"
       together results in two reboots. I was surprised that the first
       attempt I made was successful – one evening work :-). Only 1.3
       seems to dislike my way using romtags, so no fast exec on v34...

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V2.3:   I discovered that Blizzard's RAM (at least on IV) doesn't go
        away after reset - It's only unknown to the system until
        diag init phase adds it to the free memory list.  I changed the
        FASTEXEC mechanism and corrected fastram attributes to reflect
        this - BlizzMagic adds fastram just before exec.library gets
        initialized, thus effectively moves exec and system stack to fastram.
        FASTEXEC doesn't use the KickMemPtr/KickTagPtr/KickCheckSum vectors
        so that RAD: can be used and doesn't have to be in chip-ram.
        Also "boot with no startup-sequence" can be used again.
        Now you can have more than two RAD: units due to large amount
        of suitable memory available.
        Also added a feature to skip the one-second flashing pause
        in Blizzard's initialization - BlizzMagic adds the memory
        on its own and bypasses Blizzard's initialization. If you have
        "scsi kit" installed, disable this using "NOSKIP" option.
        Added a nice effect on reboot.

V2.4:   I got my hands on unguarded 1260. BlizzMagic should work
        on that too! I was surprised that 1260 has the same
        product number as 1230IV... and it works the same way!
        Unfortunately, there is still something wrong - i'll get this

V2.5:   Found someone with 1230 II finally. BlizzMagic now supports
        that too! Now there's only one left... and maybe 1260.
        This is second public release on Aminet.

V3.0:   Complete rewrite. Changed way of patching ROM - now there are
        two patches: "exec.library" and "diag init" init vectors.
        Now supports all models of Blizzard 1230. Added option
        for skipping SCSI initialization. Added support for easy launching
        of BlizzMagic from startup-sequence. Third Aminet release.

V3.1:   BlizzMagic now fully works on 1260. Also added skipping
        of "2" key detection on 1230IV and 1260. Now skips flashing
        on 1260. Added checks of options of currently resident
        BlizzMagic. BlizzMagic WILL reboot now when ROM's are same
        but selected options are different. Should be another Aminet
        release, but progress went too fast this time...

V3.2:   Added option for moving VBR vectors into fastram. Added replacement
        for "prepareemul" tool. Another Aminet release.
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1.9   Back to... no, that was another story.

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My future plans with BlizzMagic

I'll continue to develop BlizzMagic as long as someone wants it.
There are some possible improvements of BlizzMagic:

- Support for rekicking back from 1.3 ROM

- Add patch for 1230 I and II similar to "patch1230scsi"

Other projects
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I got very angry, since I found some bugs in Term v 4.6/4.6a –
I even searched for another terminal but – I didn't found anything
at least half as usable as TERM. All terminals (even commercial)
that I've seen (except TERM, thank God for it) seem to be old,
half-functioning sh*ts!!! I can't stand this, so new project was born:

T.W.I.C.T. – That's What I Call Terminal!

TWICT will be a small, compact terminal written completely in assembly,
that will have these features and requirements:

– OS 3.0+, maybe 68020 required

– Full usage of OS3.0/3.1 features

– meant and optimised for use on stock A1200's, using OCS/ECS/AGA

– 16-color screen, with flash-fast scrolling, BBS ANSI compliant

– Ibm gfx font

– nasty yet system-friendly and compatible tricks to speed-up things

– Smart built-in dialer with phonebook and intelligent automatic login

– XPR 2.001 support for external transfer protocols, maybe ZModem module

– Optional hardware-banging serial device emulation mode to allow higher
  speeds (for internal serial port only)

– Modular design

– Maybe even SLIP and PPP modules, to use it as a dialer/gateway
  for Internet access

– Many ideas that I'll get developing this will be turned into
  mighty, not-seen-before features :-)

– ARexx support, when I finally learn how to make ARexx interface :-)

– Probably SHAREWARE, but with USABLE, unrestricted demo version.

I don't promise I'll finish it, but... It's very likely :-) I already
started working on this.

I also work on other assembly projects, but they're small
(since it's too much work with assembler to make big projects,
and as I said – I'm too lazy) and won't be probably released
on Aminet.

I hope you'll hear of me in the future :-)

1.10   These small usable thingies

There are three little pig- err... tools provided with BlizzMagic:

FixSum – can be used to fix checksum of 512k ROM. Such
(patched) rom can be used with NORESIDENT then.

StealROM – saves ROM of computer it's executed on into
file named "GrabbedROM".

ReconnectModules – run this on ROM file – makes
(very-very-little) speedup of ROM resident modules recognition.

1.11   Hi-tech blobbies for everyone

         Blizzard 1260 and 68060.library

I had hard times figuring out what's going on with 1260, so I'll
explain here what I discovered.

My problem was: I had to (illegally) access certain undocumented
memory regions to keep things going – namely Blizzard ROM->RAM
emulating memory (where ROM gets written to to appear as system
ROM at $00f80000) and second appearance of original system ROM
at $00a80000, which isn't replaced by Blizzard's ROM emulation
(and thus enables restoring original ROM). Both these memory
areas disappeared when setpatch was started, making BlizzMagic
work only from startup-sequence when run before setpatch.
Thus, no loading ROMs from your usual environment (shell/wb).
So, let the world know that 68060.library which is loaded by
setpatch uses MMU to hide these memory regions!

I've found two ways of working this around:

1) I used MOVES opcodes in address space 7 to access required
memory areas. This did work on RAM only. My 1230 also CRASHED
with "bus error" when i tried accessing address space 7.
On 1260, it worked.

2) I turned off MMU for a while – this method was finally used
in BlizzMagic 3.1.

Another prob was with skipping of 1260's startup-code that checks
"2" key - it also set 68060's PCR register. BlizzMagic now does
this itself. As PhxAss V4.32 didn't work on 1260 (*sigh*),
I had to enter some 68060 opcodes as data.

         How it works

For anyone interested, here is how BlizzMagic works:

As you know, Blizzards can remap ROM into RAM. This is because
RAM access is faster than ROM access. When Blizzard's MAPROM
feature is enabled, Blizzard's init code takes 512k of RAM
and copies system ROM there. After the ROM is copied, it activates

special hardware that makes this RAM appear instead of original
system ROM at $00f80000. BlizzMagic is able to modify or even
completely replace this copied ROM with another. It also patches
this ROM to achieve some of it's features. ROM image is currently
patched at three places:

1. Cold entrypoint – the very first routine that is called
after reset. This routine normally checks for extra ROM at
$00f00000 and when it is detected, it gets jumped to. This was
originally for development purposes, when there was a FLASH–ROM at
$00f00000. Blizzards 1230IV and 1260 however use this location
(illegally, but it works :-)) to gain control at the very start of
system reboot. One half of Blizzard's autoconfig ROM appears here,
and it's code is responsible for turning off Blizzard when "2" key
is pressed. On 1260, it also sets some 68060 registers and does
screen flashing. BlizzMagic patches cold init routine so that this
extra ROM never gets called and does necessary stuff itself.

2. Exec resident romtag init code – at this point, there
exists a temporary (and partial) execbase in chip-ram, that only
contains some information – like AttnFlags, last alert,
Cold/Cool/Warm capture and Kick vectors and memory list that
contains only chip-ram and some special RAM added by
expansion.library (this is not the case of Blizzard's RAM).
BlizzMagic takes over at this point and adds Blizzard's FASTRAM into
this memory list, then it passes control back to exec.library
initialization. As fastram is available already at exec.library
initialization, it is used for all stuff that exec.library
allocates. Nice, eh?

3. diag init initialization code – This resident module is
initialized after expansion.library and exec.library are fully ready
to use, before any other libaries/modules get initialized. At this
point, list of expasnion boards from expansion.library is scanned
for devices which contain their own ROM code. This is our case :-)
As this routine couldn't be patched easily to work on any ROM
revision, I completely replaced this module with my own one. Still
does the same, but when it gets to Blizzard's expansion ROM, it
patches it before running it (as expansion ROMs get converted/copied
into RAM for execution). This is the place where flash and SCSI
skipping are done. However, only 2.0+ ROMs have this structure
containing "diag init", so all this can't be done on 1.3 ROM's.
I move VBR to fastram here (as all vectors are set by exec
initialization now).

I also patch the ROM code for installing chip-ram to move its start
to $2000 when PREPAREEMUL is activated.
After ROM image is patched, it's copied to appropriate memory space
and system reboots with the new ROM.