

ADescent

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	<i>TITLE :</i> ADescent		
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Chapter 1

ADescent

1.1 Welcome to ADescent

Hello and Welcome to the 0.6 release of ADescent.
Here's a list of what is available in this database:

A short Introduction	The essential reading
What's New	For those that can't wait
Requirements	What you'll need
Features	What it offers
Starting ADescent	How to get it going
The ViRGE Version	About the CV64/3D version
Bugs	What is broken
Hints'n'Tips	Things you might try
History	What has been done before
Future	What might be done
Author and Copyright	Who's done this
ADescent Mini-FAQ	Frequently asked questions

Just a quick note: I tend to say "I did" and "I added" and stuff all over this document. This is because I am typing this right now. But that is really wrong, ADescent is and was a team effort. So please forgive me, brother ;-)

1.2 ADescent Mini-FAQ

Here, we want to give answers to some questions and solutions to some problems that we know of.

I try to run ADescent, but it won't work:

You may want to try with a clean system, e.g. break into startup-sequence and run all drivers you must have (e.g. Monitors, p96/cgx stuff, ahi). Then try it. You may also try the -noicon switch, or check which options are reported after starting (You may have FPU enabled even though you don't have one). Also, check if you've got the latest ixemul.library. If you still don't get it to run, contact us.

When will you make a PPC version:

I don't have a PPC. There will possibly be a PPC version, but not from us.

Steffen Haeuser has agreed to do one, but it won't be possible until the normal version is finished, due to the amount of assembler in it. Plus, Steffen is busy right now...

What's this not enough strings message:

If you get this message when you start up ADescent, it means that you have a pre-1.5 .HOG file. The newer versions all had some more messages in the game, and these are missing from the 1.0 version. The only solution to this is to upgrade your 1.0 files to 1.5. This is normally done on a PC. There are reports that it can be done on a PC emulator.

I get a "Couldn't open descent.sng", but my .HOG is 1.5:

You've probably got a Macintosh version of the .HOG . The Mac had no MIDI sounds, it played it's music directly from CD. The only possible solution is to try the -nosongs switch, and proceed with fingers crossed. Another possibility is to touch descent.sng in your ADescent directory (or somehow create an empty file).

I get no sound when playing ADescent:

There are several possibilities: First, make sure that you have the newest version of AHI installed. You may also check if you've installed sound drivers for soundcards you do not have. Another possibility is to check your volume level in the options menu. For more information, look in Hints'n'Tips.

I can't save, or some keys do not seem to work:

You may have a commodity that eats up keystrokes. Try to remove that.

I run ADescent, but it's too slow, even on my 060:

On an 060, you may want to try the -fpu switch. The integer math functions all use instructions that are not available on the 060, so they are implemented with illegal instruction exceptions. This makes it around two to three times slower on the 060. For reference: When starting the first level, I get 17 fps, on an 060 with CyberVision3d, -fpu and -vdirect. Your figures may vary, but it should be around this.

Ok, but what about the 040:

We've got reports from users who tried with and without the -fpu switch on the 040, with different results. For some, it was faster, others said it was slower. Just try for yourself.

I got Picasso96, and -vdirect doesn't seem to work:

Yup. It doesn't. I don't know why. We are working on it. As some sort of consolidation, the -wbmode switch does not work on CyberGraphX, only on Picasso96, due to a bug in CyberGraphX's WriteLUTPixelFormat. Expect both of these bugs to be fixed in later version.

Is ADescent faster on CyberGraphX:

Yes, we've got some reports about this. It seems that it's sometimes faster on CyberGraphX than on Picasso96. I can't confirm this yet, but it has been reported.

1.3 A Short Introduction

In the beginning there was Doom. Next came Descent. Parallax has finally released the source code to their great game that was in the top ten of the most frequently downloaded games of all times. As soon as the source code became available, we started our port. It is based on the linux source code as done by Patrik McCarthy. This version had all assembly removed, and compiled without too much work with GCC. To get it to actually do something was a completely different story. At present we compile with EGCS. This gives much better code.

For those that never played the game, you take the role of the Material Defender, a person responsible for cleaning up the solar system mines of the PTMC corporation. For this purpose, you are equipped with a small one-man spacecraft small enough to navigate through the narrow corridors of the mine.

In each mine, you'll have to gain access and destroy the main reactor core of the mine. To make things a bit more tasty, there's someone there that is trying to stop you.

1.4 What's new

(For older news, look in the History section.)

New for release 0.6 is the ability to use ExtraHalfBrite mode. Now, all you ECS owners with upgraded 2000 and 500 can play, too.

Another new feature is the workbench mode. You can now (theoretically) play ADescent in a window on the Workbench. Your Workbench must be in direct color mode (15/16/24 bit). Unfortunately, this option doesn't work yet on CyberGraphX, due to a possible bug. On Picasso96, it should work, although we have not yet tested it.

Always important, the new version features yet more speed. Some more math is now done in assembler. You should now get from 15 to 25 fps on an 060. The highest rate I ever got was 39 fps (in an empty room, facing a wall ;)

Another thing that's new is the keyboard configuration. I changed the default keyboard configuration to that mentioned in the manual (the original keymap). Back before version 0.0, we changed this because we thought the original was broken (it was, in fact, an endian problem).

The debugging stuff (fps counter, memory and mission time) are now off by default. The frame counter can still be toggled with DEL+f.

Last not least, a bug in mission loading was fixed. In older versions, *.MSN files were not detected, only *.msn. So, if you just unzipped a DOS archive, the level and mission file were called BLAH.MSN and BLAH.HOG. These were not found by ADescent. Now, they are...

New for the ViRGE version:

ALT-F1 used to toggle filtering. Since there's now new options, this has been replaced with an options menu especially for the ViRGE version. You can also

find this in the main options menu (obtained with F2 during the game, with the Options... item in the main menu). See the ViRGE part for details about this menu

Also available is a new sub-pixel mode that provides smoother display. This requires and FPU, though.

A new option `-virge200` is also available, check the Options section for a description.

A new option `-nofilter` is available to turn off bilinear filtering.

A new option `-mapper` is available to choose a different texture mapper.

NOTE: Due to the synchronization required between the ViRGE part and the standard part of the port, some features might not show up in the ViRGE version. Notably, the ECS part is omitted due to the fact that the ViRGE version requires a CV64/3D.

1.5 Requirements

Descent is not the game for the weak processor. You should at least have a 030/50, but a 040 or 060 would be better. PowerPC is currently not supported, but you'll never know...

ADescent supports AGA, ECS or CyberGraphX. Picasso96 should also work, but we have reports that the `-vdirect` option (see Starting ADescent) might not work with Picasso96. We are currently investigating.

You'll also need a commercial Descent I HOG and PIG file, which should be at least version 1.5 (1.4 might also work), and it should be a PC version. If you have a MAC version, try the `-nosongs` command line switch. See Obtaining the files for infos on how to obtain these files.

You must have AHI V4 installed, ADescent won't work without.

Your OS version must be 3.0 or better.

You will need about 10 MB of memory, slightly more for the ViRGE version. Might work with VMM, but will obviously slow if it does.

1.6 Obtaining the data files

There are numerous ways for obtaining the HOG and PIG files. The most obvious (and the only legal way) is buying the game. It is still available on collections, and might

have been on some cover CD from a magazine.

In Germany, there's the possibility to buy it on the blackmarket label.

You might also convince a PC friend to part with the CD/disks, since there's
Descent II
and Forsaken available there...

1.7 Features

ADescent supports the following features:

- o Variable graphics modes, including AGA/ECS and CyberGraphX/P96 cards. To get a screen mode requester, start with -smr. Custom C2P code for AGA. Correct aspect even on non-square screen mode (320x400). You may even play in a window on the workbench (well, sort of, at least).
- o Digital Sound Effects, with full volume and stereo panning. Music isn't yet in it, as I have problems finding info about the HMP/HMQ music format. Also see the Hints'n'Tips section on how to configure ADescent for AHI.
- o Fully multitasking.
- o Support for Analog Joysticks. This includes normal two-button sticks, four-button sticks and CH FlightStick compatible devices. For the latter two, a special adaptor is required (see our web page). With FlighStick, ADescent supports all four buttons as well as the "hat", but no thrust lever (might come in the future).
- o Mouse support (not available in the ViRGE version, sorry). All three buttons are supported.
- o Amiga'ized Keyboard. Knows almost all keys, including Amiga keys. Pause key is mapped to HELP. Pressing CTRL-ALT-PAD* makes a screen shot (screenxx.pcx). 'PAD*' means that this is the star on the numerical pad (sorry, A600 users).
- o Fully customizable controls. Controls are saved with your pilot record.
- o FPU support, 64 bit arithmetics for 040, and much inline assembly now. The texture mapper is assembly now, too. No perspective correction yet, expect this for 0.6^H^H^H0.7
- o Workbench startup and icon tooltype parsing. ToolTypes are specified like the command line options without the leading dash, for example -verbose becomes VERBOSE. Options like -option <n> become OPTION=<n>. Icon tooltypes are parsed even when started from shell (ADescent prints the options in effect), using -noicon as the very first argument inhibits tooltype parsing. Tooltypes may be commented out with '*', '(', '<' or '«', i.e the entries (VERBOSE), *VERBOSE, <VERBOSE> or «NewIcon by... are not parsed.

NOTE: IMG1 and IMG2 from the NewIcon system are also not parsed. This caused EMT ←
Trap
errors on the first release of the ViRGE version.

- o Hardware-Accelerated automapper in the ViRGE version. Hardware-assisted texture ←
mapping
on CyberVision/3D cards via the ViRGE chip (available in a special archive).
- o Experimental IPX support, using AmIPX library. This is in no way tested, and ←
might
or might not work. We'd like to hear if someone got this to work correctly.

1.8 Starting ADescent

ADescent might be started either from the Shell or from its icon. In either case, Command line options are parsed first, then icon tooltypes. ToolTypes are always parsed, even when started from Shell...

Arguments on the shell command line are specified with a leading dash character, like "-verbose", and if they have an optional parameter, this is specified as "-texcache 50".

The same options in the icon would look like:

```
VERBOSE  
TEXCACHE=50
```

Capitalization does not really matter, and is done purely for Amiga conventions. Tool types might be commented with '*', '(', '<' or '«'.

```
Installation  
Command line Options  
Configuration file
```

1.9 Command line options

The following options are supported:

noicon

Ignore settings from the icon. This must appear as the first argument after the program name on the command line, or it has no effect.

320x400
640x480

Select a different screen size for the game. Not really recommended on the native version, but 320x400 is playable on the ViRGE version.

WBMode

Do not open a new screen, open ADescent's window on the workbench screen. This option is only available in direct color modes, i.e. 16/24 bit. Please note that at the moment, this option only works on Picasso96, not on CyberGraphX.

AutoDemo

Directly goes into demo mode and plays every available demo in the current directory.

FPU

Use FPU for math functions. Normally, ADescent uses 64 bit operations suitable for 68030 use as a default. The -fpu switch replaces those with optimized version for 68040/68060 CPU's

LargeMap

Opens the automapper in 640x480-Mode. This will result in a bigger display, but will be slower. Useful for those that don't have, or don't want to define, a 320x400 screenmode.

NOTE: When the game asks you for a 320x400-Mode, you should still select this. Using LargeMap specifically requests a 640x480 mode.

Mapper

Selects the texture mapper to use. Currently only applicable for the ViRGE version. Three modes are available:

- FPU - Uses Sub-Pixel linear texture mapping. Use this for optimal results. Requires an FPU
- INT - Uses normal integer coordinates and linear mapping. (Default)
- FPUP - Uses Sub-Pixel perspective-corrected mapping. This is the best mapping you would be able to get if it would work. See the section ViRGE In-Game options for an explanation why this does not work as expected.

Network

Enables experimental IPX support. This used to be the NoNetwork options, but we changed this, since the code is still experimental.

NoConfig

Do not save the config file at the end of the game. Not really useful, but might be if/when other Descent ports start adding own config items.

NoFilter

Do not turn on bilinear filtering in the ViRGE version by default. If omitted, filtering is active, but still can be disabled in the game.

NoMouse

Disables the mouse support. This is the default on the ViRGE version.

NoScreens

Disables the briefing screens

NoSongs

Experimental. If ADescent exits with "can't open SONGS.SNG", you might try this option. Untested, so might not help...

NoSound

Disables digital sound effects (and would disable music, too, if this was already implemented :-)

NoTitles

Do not show the title screens (Interplay&Parallax Logo)

NOTE: Credit where credit's due

This option was originally intended as debugging aid only, and should be removed in the final release. This option might go away in the final release of ADescent too.

Piggy

Use an alternative PIG file. Not very useful if you don't have one...

Shareware

Highly Experimental!!!

Try to use the shareware .hog/.pig file. This is still untested, as we could not find a 1.4 or 1.5 shareware hog, if such a thing even exists.

SMR

Open a screen mode requester for the in-game screen modes. This option is disabled if there are valid screen mode entries in the config file, otherwise it defaults to on.

TexCache <n>

Raises the internal cache size for mixed textures to <n>. This normally defaults to 10, and may go up to 50.

The use of this option is not so obvious. Internally, Descent generates temporary textures like the monitors on the walls by mixing a monitor and a wall :-). Those are stored in a cache for later retrieval. The TexCache option increases the size of this cache, making the game a bit faster. It is mainly used for the ViRGE version of ADescent, where this can make a dramatic speedup.

VDirect

Only usable with CyberGraphX/Picasso96. Makes direct access to the video ram. Depending on your system, this might or might not be faster than offscreen rendering. Try it out and see for yourself.

NOTE: Reports have it that this does not work with Picasso96. Should be fixed...

Verbose

Intended for testing use. Makes ADescent a bit more talkative. When you send bug reports, it would be a good idea to redirect this output to a file and send it along with your report.

Virge200

Only usable with the ViRGE version. Specifies that you actually have a 320x200 16bpp mode. If you only have 320x240, there might be problem with the ViRGE library's double buffering. To use this option, define a 320x200x16 screen mode with CGXMode.

1.10 Configuration file

We have added a few custom items to the configuration file DESCENT.CFG. This file is saved when you leave the game, unless you specify the NoConfig option. Besides the standard entries, ADescent supports the following:

Mode320x200

Mode320x400

Mode640x480

These store the (decimal) ModeID's of the appropriate screen modes. There should not be any need to edit them by hand, since they are set when you first start the game, and reset when you start using the SMR option

AHIAudioMode

Part of the Audio subsystem. This is the (hexadecimal) Audio ModeID to use. If left at zero, or not specified, it will use the default AudioMode from the AHI Prefs program.

See Hints'n'Tips for configuration hints.

AHIMixFreq

Part of the Audio subsystem. Specifies the Mixing frequency used by the AHI mode. No sanity check is made on this. If zero, uses the default frequency.

See Hints'n'Tips for configuration hints.

AHIMaxChannels

Part of the (you guessed it) Audio subsystem. Specifies how many channels the audio system should allocate.

See Hints'n'Tips for configuration hints.

AHIVolumeBoost

Part of the... Audio subsystem (!). Specifies a boost factor for the audio volume.

Some people have reported that the volume was too low. 1 is the default setting. Setting this too high distorts the sound and causes ugly noises...

See Hints'n'Tips for configuration hints.

VirgeNumTextures

Only available/sensible in the ViRGE version. Specifies how many textures you want to allocate on the CV64/3D. The number depends on the Bus system you are using. See the notes on the Virge version for a description of this.

1.11 Installation

Really simple, this one. Create a directory somewhere on your harddisk and copy everything there, including the HOG and PIG files. Now start the game by either entering "ADescent" from the shell (without the quotes - yes, you must say things like that) or double-click the icon. If there is no configuration file, the game will ask for screen modes for 320x200, 320x400 and 640x480. If you don't need or have one of those mode, choose anyone you want.

After the main menu appears, select QUIT. Back in AmigaOS, load the configuration file into a text editor and edit the appropriate fields.

For more info on that one, see Hints'n'Tips.

1.12 The ViRGE version

This part is only for the ViRGE version. Please read through all this before trying to run it, or you might have a really bad day...

Requirements	What you need for the ViRGE
Overview	Features and stuff
Speed	Speed's what matters, not size
ViRGE bugs	ViRGE-Specific bugs
In-game options	ViRGE in-game options

1.13 Special Requirements

In addition to the stuff mentioned in the normal requirements section, you will need the following:

- o A ViRGE chip. It would be a bonus if this chip is connected to a CyberVision64/3 D, which in turn should be active in your Amiga :-)
- o CyberGraphX V3. Picasso96 will not work with the current release, this might change later, but if it does, this day is still a while off...
- o cgx3dvirgin.library V2.10 must be installed on your system. It will be included in later releases, but currently you'll have to get it elsewhere (for example, the ViRGE page on www.vgr.com, in the V1.3 ViRGE demos).
- o 320x240, 320x400 and 640x480 15 bpp screen modes. Create them with CGXMode.

1.14 Overview of Features

Features

- o Hardware-accelerated texture mapping in 15 bpp.
- o Hardware-Gouraud-Shading.
- o Everything looks much better than the original 8 bit version
- o AND IT'S FASTER... :-)

The new entry in the config file, VirgeNumTextures, is used to tell the program how many textures to allocate on the graphics board. Currently this is limited to 64 on the Zorro II version of the CV64/3D, and 128 on the Zorro III version. You should, however, use only 60 and 124 respectively for safety. I should really build some detection code for this and adjust the value...

Each texture map needs 8192 bytes of memory on the card. Each pixel has 16 bits, 1 bit alpha channel (transparency), and 5 bits of red, green and blue each. It would have been easy to add colored light if Descent supported it (there's some stuff in

the source, but it is not used).

By default, textures are filtered (Bilinear filtering, mode 4TPP, for the pro's). This can be toggled with ALT-F1 during the game... Go ahead and position your ship directly in front of a wall or grate, and press ALT-F1... Filtering is so fast ←
that
it can be left on, it does not make it notably slower (in 320x400/640x480, the difference is bigger).

UPDATE ALT-F1 is now something different. See In-Game Options for a description.

The Automapper is drawn with accelerated 3D-Line routines from the chip, resulting in a major speedup here. I also changed the layout a bit, hope you like it.

No MIPMapping. The memory is a bit too low for this, especially on the ZII boards. Might show up later, but don't hold your breath.

No perspective mapping yet, either. The virgin library does not support this ←
directly,
so I will have to use the Blit functions to program the Chip directly. I have ←
already
figured out how to do this, so the perspective mapping should be ready in the next release.

Fogging is off-limits, sorry. Alpha Blending and Fogging does not work ←
simultaneously
on the ViRGE, but I need alpha blending for the transparency of grates and doors ←
...

Starting with release 0.5v there is an additional options menu for the ViRGE version. To get the menu, you can either select it from the Options menu in the main menu, or during the game with the combination ALT-F1. See In-Game ←
Options
for a description

1.15 Speed of the ViRGE version

I guess this is what all of you want to read...

The speed is higher than on the normal version, although it might not be what you expected. It does an honest 15-20 FPS on my Z2-Blizzard 2060 machine. Sometimes it is faster (peaks at around 44 FPS when close to a wall), sometimes slower. The speedups of the main version will almost all have impact on the ViRGE version...

- The ViRGE chip does not accelerate 3D Calculations. This means that although texture mapping is faster, the underlying math is still as slow as ever. This ←
means
that to get the most out of this version, you still need a fast processor.
- The game's 15 bpp now. More stuff has to be moved to the display for things that ←
are
not handled by the chip, like text, and explosions etc. Especially the bitmap scaler is quite slow, and will be replaced with assembler functions later.
- I have not figured out everything the game draws, and some stuff might still go

on in the background. Given some time, I will eventually remove this...

Textures are cached on the card using and LRU (least recently used) strategy. This works reasonably well, and it currently gives hit rates of 98% and higher. For ↵ optimal performance, set the TexCache option to 50. When the game exits, it prints cache hit statistics.

1.16 Bugs in the ViRGE version

Most hangups can be cured by sending a break signal...

Bugs currently known:

- Textures distort. This is because the texture mapper is linear, but the U/V correction is perspective. Since the ViRGE version draws triangles and not scanlines, the problem is much more obvious in this version than in the normal version.

This will be fixed with perspective correct mapping

UPDATE

Sadly, this will not be fixed. The problem is that the ViRGE's perspective texture mapping seems to have problem with wrapping textures. Since Descent uses them extensively, the only hope would be to subdivide polygons so that the texture no longer wrap. I might include something like this, but only after everything else is done. In the meantime, I'm going to adjust the clipper to interpolate linear u/v coordinates, so that the distortion will not be so severe.

- Powerups, explosions and Headup-Display stuff might occasionally vanish. This is because I directly write into the ViRGE display buffer while the chip is still texture mapping (it can do this in parallel to the processor).

This will vanish as soon as I have a fix for it, hopefully soon...

1.17 ViRGE In-Game Options

The ViRGE version has an additional menu that can be either optain via the "ViRGE options..." entry in the options dialog (from the main menu), or in-game via the ALT-F1 combination. The Menu will look something like this (warning: ASCII-Art!):

ViRGE Options...

x Bilinear Filtering

Texture Mapper:

- o SubPixel mapper (req. FPU)
 - o FullPixel mapper
 - o SubPixel persp. (req. FPU)
-

Bilinear Filtering

Normally, when you fly close to a wall, you will only see a large cluster of pixels. With filtering, the ViRGE chip will "melt" those pixels so that they blend into each other. The result is a much smoother look.

Since filtering normally has virtually no impact on speed, it is enabled by default.

Texture Mapper

ADescent ViRGE now features two selectable texture mappers. The FullPixel mapper is what you know from previous releases. It rounds the coordinates to integers and then draws the polygons.

With the SubPixel mapper, coordinates are not rounded but rather passed directly to the triangle renderer. This results in a much smoother display and polygons don't seem to jump anymore. The SubPixel mapper now uses the direct-access feature of the cgx3dvirgin.library. The SubPixel mapper currently requires an FPU, but this might change in future releases.

The SubPixel Perpsective-corrected mapper is only experimental, since it does not work. You might turn it on for a glimpse what the game would look like with it, but you'll see it's shortcomings. Requires and FPU, too.

I tried to implement the SubPixel mapper with fix point arithmetics, but there ←
where
problems with the accuracy, resulting in over- and underflows. This might be fixed in a later release.

A note about perspective-correction

Sadly, it seems to be difficult to include this. The problem is that when the ViRGE draws with perspective-correction, it cannot wrap textures. But Descent makes use of this feature very often, e.g. for the floors in big rooms, so this means that there's currently no perspective correction.

I have a perspective-correct mapper running, with the above limitations. It looks absolutely brilliant, no more warping and stuff, and frame rates are only a few ticks below the usual rates (about 2-3 FPS lower). Right after the start of the game I got around 12 FPS, not the usual 16 FPS.

The only obvious solution would be to subdivide the polygons so that textures no longer wrap. While this is quite easy to implement, it means additional overhead, and I don't expect this to perform well. I'm currently investigating if there's any chance of making the texture wrap.

1.18 Known bugs

There's probably quite a lot left. Here are the bugs we know of:

- The -wbmode switch doesn't work on CyberGraphX. It's not our fault, though, but CyberGraphX'.
 - Mouse and Keyboard used together result in jerky movements.
 - Sometimes the game hangs. This is because the object sorter sometimes keeps swapping two adjacent objects in an endless loop. Send a break
-

to quit. Sorry 'bout this. Might be fixed soon.

Should you discover more, please send them to us. See the section about contacting us for addresses and email

1.19 Hints'n'Tips

Debug Keys

There are a few debugging keys active in the game. If you want to play in earnest, don't use them. Debugging Keys must be pressed together with DEL.

- a - Get all weapons
- c - The WIMP menu
- f - FPS counter toggle
- y - Explode the reactor
- L - Toggle headlights.

And others... Play a bit...

Pressing Right Shift zooms the view...

Audio

There's currently no AudioMode requester in the game (I know we should add one). To get an AudioMode, use the GetAudioID program from the AHI distribution to get an audio mode and mixing frequency.

A word about the volume boost: AHI volume gets lower with each channel you add. So if the sound is too soft, you can either

- o Reduce the number of channels
- o Use AHIVolumeBoost

The AHIVolumeBoost level should not be too high, you'll have to experiment. With 16 channels, you should use 2 or 3.

Joystick

ADescent supports all analog joysticks and Flightsticks. Support for digital joystick will come soon. You can get cheap fligh sticks in almost all computer stores. For those living in Germany, I recently bought a Medion Erazer at ALDI for 30 german marks, and this stick works great. You'll need a special adaptor for Analog joysticks, see our web page for that.

Using other Descent ports

As you probably know, there's another excellent Descent port on Aminet, by Christian Sauer. You might run into problems with this one if you use your pilot files, since it might not correctly write joystick configuration. So it's best to use a different pilot. Also, the keyboard layout is different.

Faster Loading

For faster loading, increase buffers of the partition ADescent is on. For example, I always do an "AddBuffers Work2: 4000" before starting ADescent for the first time, and this dramatically decreases loading times.

1.20 History

- 0.0 First release. First ever Descent port on Amiga!!!
- 0.1 AHI Support added
- 0.2 26-Feb-98 Mouse Support added.
Preliminary AGA support.
- 0.3 Custom C2P added.
Cleaned up CyberGraphX code to use WritePixelArray.
CV64 should now display correctly.
Added '-smr' switch
Added '-nosongs' switch
Added Analog Joystick support.
'-numaxis' switch added, but still broken. Do not use
- 0.4 26-Mar-98 Added various stuff.
including FPU, some speedups and bug fixes.
First ever Amiga game to use the ViRGE chip on the CV64/3D...
- 0.5 30-Mar-98 Assmbler speedups, including texture mapper.
"Not enough strings" message extended to warn about wrong
version, to prevent further usenet postings ;-)
Automapper now works correctly, alas no background
ViRGE fixes.
ViRGE automapper speed up.
Various bug fixes.
Minor additions.
- 0.6 05-Apr.98 ECS support
Workbench mode
Original keymap
Speed
-virge200 option added
new ViRGE-specific options menu
new sub-pixel interpolation mode

1.21 Future features

Those might be implemented/will be implemented in the future:

- o Networking is high on our list: TCP and serial/Modem
- o More speedups
- o Digital Joysticks and Pads
- ...

1.22 Authors and Copyrights

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ADescent
Amiga Port by
Thomas Frieden
Hans-Jörg Frieden

C2P code by
Peter McGavin, based on James McCoull's work
IPX stuff by
Philip Grossviler, based on AmIPX
Joystick code by
David Kinzer, with slight modifications

ADescent uses the AHI Audio System by Martin Blom.
ADescent_VIRGE uses the cgx3dvirgin.library by Frank Mariak. Many thanks to you, ←
Frank,
for the help with the virge stuff and for the library.

ADescent uses CyberGraphX and Picasso96 in selected Cinemas.

Many thanks to Mike and Matt at Parallax for releasing the source code and for funny comments in the source code...

This port is freeware. We cannot be held responsible for any damage that arises from the use or abuse of this port.

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Thank you, and good night.
