

AmiCDEx

Adil Temel

COLLABORATORS

	<i>TITLE :</i> AmiCDEx		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY	Adil Temel	February 12, 2023	

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Chapter 1

AmiCDEx

1.1 AmiCDEx v1.0 (C) Adil Temel 1995

AmiCDEx v2.1

(C) Adil Temel 1995

v2.10 release

AMICDEX IS A FREWARE PRODUCT

READ THE DISTRIBUTION SECTION FOR INFORMATION ON DISTRIBUTION

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```

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1.2 Introduction to AmiCDEx

Why was AmiCDEx written?

After buying a CD-ROM drive for my Amiga , I searched for an util that would let PC/AT Emulator boards use the same drive from the PC side. Since I couldn't find a program for this specific purpose, I started to search information about how PC uses CD-ROM drives. Looking to the MSCDEX (MS-DOS CD driver software) documentation for programmers, I realized that it should be not hard to implement a CD-ROM driver for PC that directs MS-DOS CD-ROM calls to Amiga CD-ROM drive.

Working hard for 2-3 weeks, I came to the solution, and the AmiCDEx was born. (The name 'AmiCDEx' is shortened from 'Amiga CD Extension to PC').

This software should be of interest to anyone who has an Amiga with a PC/AT emulator board, and an installed Amiga CD-ROM drive.

AmiCDEx allows you to use your CD-ROM Drive , from your PC/AT Emulator board without letting the PC realize that this is infact an Amiga CD-ROM drive. All commands coming from PC is redirected to Amiga CD-ROM drive.

As being a driver program for PC and Amiga , there are two parts of AmiCDEx.

```
AmiCDEx.SYS  --> PC driver program.
AmiCDEx      --> Amiga Executable. (AmiCDEx.020 for 68020 and up)
```

The first part AmiCDEx.SYS , which is installed on PC side, directs requests from MSCDEX to Amiga.

The second part, AmiCDEx, an Amiga executable, runs in background on Amiga, waiting commands from AmiCDEx.SYS and does interfacing function between PC and Amiga CD-ROM drive.

Note that, this software is tested and used successfully on my system which is equipped as follows:

- Amiga 3000 T SCSI Harddisk , SCSI CD-ROM drive.
- AT A2386SX board. IDE Harddisk , Sound card.

This program should work with original PC/AT Emulator boards from Commodore without any problem. It detects such boards using expansion.library and identification of installed boards.

If you own another brand of PC emulator board than C=, then you may configure both driver programs, to be able to run on your system. The only need is that there must be some kind of shared RAM area which can be accessed both by PC and the Amiga. Refer to technical information of your emulator card and
detailed~installation~guide

.

System Requirements

- * An Amiga running Kickstart 2.04 or greater.
(May well work on Kick 1.3 , since no Kick 2.0 specific functions are used).
- * An Amiga CD-ROM drive.
- * A PC/AT Hardware Emulator board installed.

1.3 About the author

AmiCDEx is (C) and was written by Adil Temel.

There are almost certainly bugs in AmiCDEx; if you find one, or have a suggestion to improve AmiCDEx, please contact me, giving as full and *precise* description as you can.

See also the

'to-do'
section to see what
I already plan to implement.

E-mail address:

at01k@servis.net.tr

Valid at least until end of 1995

IRC:

Adil (look for me on #amiga)

Snail-mail address:

Adil Temel,

Kimiz Sk. Ergin Ap. 14-9
Kurtulus,

06600 Ankara
TURKEY

Telephone ++90-312-435 75 81

Registering:

AmiCDEx is in no way a CRIPPLEWARE , I *do not* like crippled programs.

AmiCDEx is released as *FREEWARE*, there is no limitation to the use of it.

Of course providing full functionality of AmicDEx by releasing it as FREEWARE does not mean that I reject small donations/gifts.

A postcard, CD, perhaps CDROM drive (so that I can test the multi-cd support for real ;-)) are wellcome.

If you cannot send anything but have the internet access, just drop me an E-Mail saying what you think about this program.

Remember AmicDEx does a good job, opening the world of multi media to your PC card and saving you to buy a new CD drive with its dedicated controller card, or simply another controller card suitable for your existing drive. In this case you will also need an expensive switching circuitry if you plan to use the CD from Amiga & the PC at the same time. (BTW: Is there such switchers?)

Thanks go to:

After releasing the first version of AmicDEx I received a lot of mails from users saying that this program worked for them and it does its job as expected.

This was the primary motivation that I worked further on the project.

So keep on writing! :-)

BETA TESTERS:

I wish also thank to the users who wished to become a beta tester.

However, because of the problems with the system that I access Internet, I could not send out any beta version. But I will be able to send beta versions for next releases/updates whenever the problems are fixed with the system.

1.4 Version information

History/Version information.

This is AmiCDEx v2.10

NOTE:

Changes with an (*) in front of them may be enabled/disabled.

Changes with an (#) in front of them may be modified.

V1.00 - 15 May 1995 - FIRST PUBLIC RELEASE

V1.10 - 5 June 1995 - Internal work-not released.

- Changes/Fixes

Fixed bug in reporting CD capacity.

Optimized some code.

(*) Now denies CD-ROM read requests falling into the range of an audio-tracks.
(Speeds up PC boot whenever Amiga has an Audio-CD inserted.)

PC driver denies read requests when no disk is inserted.
(Faster than AmiCDEx process reporting that there is no disk.)

First attempt to include audio playing support.

Added reporting of TOC information.

TOC=Table of Contents of a CD (#of tracks,blocks,audio/data tracks etc.)

V1.20 - 8 June 1995 - Internal work-not released.

- Changes/Fixes

Fixed bugs in addressing modes. (HSG/RED-BOOK).

Now TOC information reported correctly.

Added Q-CHANNEL (playing time) report.

Without this many of the players crashed or couldn't display current playing time.

(*) Added Q-CHANNEL (playing time) request limitation.

This effectively decreases CPU usage of AmiCDEx while CD is playing. Especially DOS based PC programs request info all the time without any delay. (The usual side effect of single tasking ha?).

(*) Audio playing support is now fully functional.

Tested with:

Soundblaster	DOS/Windows CD play utils
Windows 3.1	Media player
Windows95	CD Player
Several DOS utils dealing with CD play.	

V1.30 - 12 June 1995 - Internal work-not released.

(*) Added control of volume/output settings of CD-ROM drive.

You may change these settings also from command line. This is useful if a PC program disables all audio output. Volume control of some Amiga CD Players doesn't help here when output settings of CD audio channels are muted.

Added to scan the status of CD-ROM and report this.

(If in CD is playing/paused/stopped while AmiCDEx process was not running this will be reported to PC correctly).

V1.40 - 15 June 1995 - Internal work-not released.

(#) Added reporting of UPC/EAN (Universal product code-BAR code).

This was really easy to implement but the problem is that most of the audio/data CD-ROM's that I have missing this info. So I added the option of reporting self generated (hopefully unique) UPC code depending to the TOC of the CD.

The audio players that I have tested so far never requested this. I think that they use something similar for generating unique ID's to recognize audio CD's, since all TOC information is passed along when requested.

(*) Added RAW read capability.

Well don't know if this is really required but while working on audio support I thought this would enable full usage of a drive from PC side as if it were a *real* PC drive.

But the problem is that since there is no standard way of

reading RAW CD-Audio data (not every drive supports it) this may not function with your drive. Currently supported drives are TOSHIBA and some of the SONY. AmiCDEx detects these.

(*) Optimized block transfer routines.

PC transfers data asynchronously while Amiga is reading it to buffer area. This should increase performance.

Many minor changes that I don't remember of :-)

V1.50 - 16 June 1995 - Internal work-not released.

(*) Added Eject/Close,Lock/Unlock tray functions.

These were not in the first range before audio play functioned and postponed to release version. So now you can eject/close your drive with a CD Player/Util just like you do with an Amiga Player. You can disable this if you don't want the PC to play with your drive all the time opening/closing its tray ;-)

And also beware of that some PC programs lock the tray without telling this to user and you cannot open it by just pressing the eject button. You first have to unlock it and use either software eject or press the button (some Amiga utils also help here).

Added immediate reporting of CD-Drive tray status.

State of the tray (open/closed,locked/unlocked) etc. is reported correctly as far as AmiCDEx can detect this.

MSCDEX never requests this information more than once (it does this at first boot up and asks for MEDIA_CHANGED).

But this feature certainly enhances PC programs (especially those various audio players) ability to guess the state of the drive

V2.00 - 29 June 1995 - SECOND PUBLIC RELEASE

Many minor changes, so the version number jumped to 2.0

Completely rewritten the PC driver to support subunits (for multi-CD installation.)

Now it behaves somewhat more on its own without asking every request to amiga. This is done by creating a special data area for each subunit and caching some of the information coming from Amiga. (Though it invalidates this info immediately whenever any disc change occurs).

Adjusted Amiga driver to the new feature of PC driver.

Detected a problem in RAW read mode. See
Bugs/Limitations

Changed BUFCACHE functions to allow caching of RAW data
in order to reduce the RAW read errors.

Reduced the size of PC driver binary by removing
unnecessary duplicate code.

Added LUN=logical unit support, which may be given
seperately on commandline.

When AmiCDEx is executed without any parameter (& with no run
command) all the available options/commands are listed grouped
according to their function.

Added a Low Memory Handler , if the exec.library version
is suitable (>=v39. i.e. Kick3.0 must be there!). This
informs AmiCDEx to free any memory it can, whenever
the System is out of memory or flushes any libraries
(try in a shell: Avail FLUSH).

Changed commandline options for BUFCACHE & LRUCACHE.
Added file caching using the same method as LRUCACHE.

Total source code of AmiCDEx is now more than 200K of C text
(well documented, modular) and some Intel assembly.

While starting to write the program , I have never thought
that I would write this much of code ;-)

Second release version.

V2.10 - 28 July 1995 - THIRD PUBLIC RELEASE

This release is a minor update to V2.0

Fixed a bug in TOC read function (data read length
was set too high).

Fixed a bug in function which reports playing time.
It forgot to convert track # and index # to BCD form.
(This caused PC CD Players to display 10+ instead of
tracks 16+).

If a diskchange occurs, AmiCDEx.SYS continue to report
media changed , until a data read/audio play command
succeeds. It used to report this once and then cleared
internal flags, which caused some problems with disc
change recognition by MSCDEX, if other programs requested
for media change info (e.g. audio players).

Track checking for sectors caused some problems on
certain drive types. AmiCDEx cannot read TOC info
with certain drives, especially when a pure data

CD is inserted (this might have been due to the bug in TOC read function, see fix of TOC read func. above). To fix this problem NOTRKCHECK option should be used with V2.0. Now, sector checking routines do not fail, if the TOC read function fails for some reason.

NOAUDIO option now sets NOTRKCHECK, which lets AmiCDEx assume all sectors on a CD are data sectors.

Although not described in MSCDEX manual, some audio players request for seek while fast forwarding audio. (They should pause the play & restart with the new location, as far as MSCDEX guides concerned). Since AmiCDEx implemented all seeks as single block data reads, this caused failure with sectors in audio tracks. Now, AmiCDEx decides, whether a seek should be done in audio mode or data mode according to the type of requested sector.

1.5 Installing AmiCDEx

If you own a C= PC/AT Emulator board (A2286, A2386SX etc.) installation is simple.

If you own another PC Emulator than C=, complete the steps below, and then take a look to
detailed~installation~guide
.

If you have more than one CD-ROM drive you may install with multi CD support. After understanding the installation below, skip to

Multi-CD~Installation
of AmiCDEx.

!!! NOTE !!!

There is no builtin version checking of PC & Amiga drivers. Do not use any of the V1.00 or V2.00 drivers with that of V2.10 drivers.

(Things will get worse if you do, since message base structure changes with new versions of AmiCDEx).

Installation on PC Side:

Transfer AmiCDEx.SYS to PC:

Use either C= supplied 'ARead' command or use a PC formatted disk from Amiga to do the transfer.

In case of ARead command don not forget to include /B (binary) switch from command line:
(assuming you extracted AmiCDEx files in RAM:)

```
C>aread RAM:AmiCDEx/AmiCDEx.SYS C:\DOS /B
```

If you use a PC formatted disk then just copy the driver program to a PC directory (e.g. C:\DOS).

After this step you have to insert a line into your CONFIG.SYS file:

```
DEVICE=C:\DOS\AmiCDEx.SYS
```

or

```
DEVICEHIGH=C:\DOS\AmiCDEx.SYS
```

which will load the driver program into upper memory area if available.

Take a look at AmiCDEX.SYS options for more information.

Then insert a line in AUTOEXEC.BAT file:

(Preferably before SMARTDRV which allows caching of CD-ROM drives)

```
MSCDEX /D:MSCD000
```

or

```
LH MSCDEX /D:MSCD000
```

which will load it into upper memory area if available.

This completes installation on PC side.

Installation on Amiga Side:

Copy the Amiga driver program AmiCDEx, to any directory you wish. (Easiest is C:). You may copy AmiCDEx.020 if you have >=68020 and rename it to AmiCDEx (AmiCDEx.020 runs somewhat faster).

Run the program as follows from your startup-sequence file:

(Preferably after 'binddrivers' command)

```
run >NIL: c:AmiCDEx SERVE DEVICE=device.name UNIT=unit_number
```

Insert device name & unit number according to your CD-ROM drive. (Defaults are scsi.device & unit #2).

This will launch the driver program and let it waiting commands from PC. Since this is the simplest form of installation take a look at AmiCDEX options for more information on different command line parameters.

This completes the installation.

At this point you should reset the Amiga or, more conveniently enter the same line above in a shell window, and simply reset the PC.

NOTE:

-A word about synchronization:

Both programs run first without looking for the other is already running, or not. This is the easiest way to avoid lock-up problems.

But whenever the PC tries to access Amiga CD-ROM drive , the Amiga program should be running. If this is not the case, the AmiCDEx.SYS locks PC, waiting for the Amiga to respond to its commands.

Running the AmiCDEx on Amiga side, immediatly resolves PC lock-up and the connection between two programs is established.

(This is why I don't suggest adding a line into user-startup file which may well be run later than the PC tries to access CD-ROM drive).

Running/quitting AmiCDEx always satisfies/suspends the PC request that has already arrived to the message base.

This feature provides that you may quit the Amiga driver any time, and re-run it with new options without caring for a PC hang-up.

(Quitting of AmiCDEx may take time if too many requests arrive from PC side without a delay). See
 serving~options
 .

-AmiCDEx does not take over the CD drive completely.

As with any other amiga device, you may continue to use your drive at the same time on Amiga.

(Again by mounting it and a CD filesystem ,e.g. CD0:).

Audio play feature does not necessarily mean that you cannot use an Amiga player anymore. I wrote this part of AmiCDEx with multitasking capability of Amiga in mind. If you use an Amiga Player for audio operations , the state of the drive (playing/paused/stopped) will be detected and reported to PC correctly.

1.6 Starting AmiCDEx

AmiCDEx can be run currently only from shell.

Install and run the program as described in
 installation
 .

And take a look at:

Amiga~driver~options.

PC~~~~driver~options.

1.7 Configuring AmiCDEx

Since there isn't any Workbench startup option yet,
configuration of AmiCDEx rests on
command~line~options
.

1.8 Things I plan to implement in AmiCDEx

To do

AmiCDEx seems to be complete since most of the MSDOS-CD extension features are supported in this release. But there may be some features missing that I didn't think of. If you have any reasonable suggestions, please mail them to the

author
.

Definite

Recognition of Goldengate PC boards.
If I someone supplies me the information. See
detailed~installation
.

Support for CD drives using non-standard play commands.

Most of the complaints came from owners of NEC drives. But thus far I was not able to find specific SCSI play commands that are suitable to be used by AmiCDEx. The playing commands that use only track # is not enough to realize full playing support.

Probable

A GUI interface. (I know the command line interface is not the best one).

Internal multi-tasking for Multi-CD ROM installation.

Emulate-CD (If you have the harddisk space to copy a CD ;^)

Write-CD REAL/PSEUDO (Huh?, Does anyone need this ?)

(Well, as far as MSCDEX supports this. The write commands are there for direct device access, but I'm not sure about whether it supports writing onto files under DOS or not).

See

Bugs/Limitations
.

1.9 Why should I use AmiCDEx?

Here is a list of the main features of AmiCDEx, to let you see at a glance what it can do for you. More detailed feature list can be found in

version~info

.

Feature list (for version 1.0)

Uses Amiga CD-ROM drive to interface to PC/AT boards.

Simplified installation for C= PC/AT boards.

Distribution includes detailed documentation.

Works with Workbench 2 or 3 (1.3 ?)

User configurable caching of CD-ROM data in Amiga memory.

(Well that's all for version 1.0)

Feature list (for version 2.0)

Recognizing audio CD's and failing requests for data read.

Playing audio on drives that support this.

Now your PC becomes much more multi-media capable, as they call this MPC=Multi Media PC ;-)

Control of CD drive tray from PC (Open/Close/Lock/Unlock).

Control of CD volume settings from PC.

Reading RAW data on certain drives types.

Multi-CD support.

If you have more than one CD drive (or one of those exchangers) attached to Amiga, then this is for you! :-)

Feature list (for version 2.1)

(This release is for some small bug fixes.)

Sector type checking works correct.

Seek requests for audio do not fail anymore.

Changed buffered caching size to 32K (was 64K), which

decreases response time while playing audio/video files from data CD's. If you note a decrease in transfer performance then increase this with
 BUFCACHE~
 option.

1.10 detailed installation guide

If you own a C= PC/AT Emulator board (A2286, A2386SX etc.) refer to
 simple~installation
 .

For the Goldengate PC Emulator:

There were some questions concerning this emulator. Theoretically, AmiCDEx should work with any type of emulator, provided that you supply it a communication address that has sufficient amount free shared RAM. Saying this is easy than done, since most of the users of above PC board have reported that they simply do not have the information of memory mapping. That the manufacturer does not supply such technical information to the end users, is understandable. So, what remains is to wait for a response from someone (or perhaps, directly from the manufacturer).

I would also appreciate the info about the board's manufacturer and product ID, so that I can include it to automatic recognition part of AmiCDEx.

(Hint: To get this info simply use 'showconfig' command of Workbench 2.0).

Below you will find detailed installation guide for AmiCDEx.

Do the steps as described in
 simple~installation
 first.

This part is technical for the ones who own another brand PC/AT Emulator board than C=.

First you have to determine a memory area that can be accessed both by Amiga & PC (so called dual-ram) .

In case of C= boards such addresses are (16K parameter ram area):

For PC: (Hex notation)

0xD000:0000- 0xD000:4000 (PC Addressing segment:offset)

Which is seen directly by Amiga as:

0x218000 - 0x21C000 (If Emulator board's base address is 0x400000 then

0x418000-0x41C000 etc.)

At least $128+2352=2480$ bytes of memory should be available for the driver programs to work correctly with a reasonable speed.

128 bytes are used as message base with various global data and the remaining 2352 (2048) bytes used for CD-ROM block transfers.

NOTE:

- That the default block size has increased to 2352 bytes from v1.0 after the addition of RAW read support. However the drivers never use beyond 2048 bytes if used only in data mode.
- If you install subunits:
 - First become familiar with Multi-CD support.
 - Using multi-CD support increases the memory usage depending on how many subunits you installed. Each subunit requires its own communication base seperately. Thus the amount of the memory that must be free doubles if you install two subunits etc.
 - To prevent corrupted communication structures, the size of memory shift is constant (i.e. $2352+128$ bytes) for each subunit whether you use RAW reads on the previous subunit or not.

Suppose that you have determined the Amiga base address to be 0x218500 and the PC corresponding one to be D000:0500 (this is what the programs use for default, only the amiga base address is adjusted according to info from expansion library).

You should then write CONFIG.SYS line as follows:

```
DEVICE=C:\DOS\AmiCDEx.SYS /A:D0000500
```

or

```
DEVICEHIGH=C:\DOS\AmiCDEx.SYS /A:D0000500
```

(Note that PC segment:offset address is written as a single hex number which may be prefixed with 0x, or 0X , or written as is).

On Amiga you should use:

```
run >NIL: c:AmiCDEx DEVICE=device.name UNIT=unit_number BASEADDR=0x218500
```

If everything is OK, the driver programs should communicate with each other using supplied base address, without trying to detect emulator board etc.

The only problem is that the supplied base address and the following 2480 bytes should not be used by any of the emulator specific programs. If this is the case , the worst thing is that your system starts to be unstable , possibly causing gurus etc.

Remember that you use this option at your own risk, and don't blame me if any data loss or etc. occurs on your system. Playing with direct addresses requires some technical/programming experience and if you are not sure what you are doing, don't do it at all!

For further configuration information read
program~options
.

1.11 IMPORTANT -- DISTRIBUTION

AmiCDEx is (C) Adil Temel 1995.

AmiCDEx is FREeware. It is NOT public domain. The author gives permission for AmiCDEx to be freely distributed providing that no commercial gain is made from its distribution, and no modification is made to the original distribution.

Organisations or people wishing to include AmiCDEx on a coverdisk or CD-ROM should contact me first to sort out the details. This EXCLUDES the AMINET CD-ROM or Fred Fish CD-ROM/AmigaLibDisk collections.

DISCLAIMER

This software is provided "as-is" and the author accepts no responsibility for damage and/or loss of data/equipment resulting from the use of this software. (not that it's very likely! ;-))

AmiCDEx has taken a LOT of my valuable time. Feedback from users of this software will encourage me to continue developing AmiCDEx.

1.12 Index

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~IMPORTANT~---~DISTRIBUTION~

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1.13 command line options

You will find specific options groups below.
Read each group carefully if you wish to increase performance and/or optimize memory usage.

NOTE:

- Keywords requiring an argument are marked with a dditional '=' (equal) sign for options in each group.
- Options new to version 2.00 are marked with an '(*)' sign.

AmiCDEx (Amiga Executable) Options:

INFORMATION~~~~~
- for help/information/debug.

SERVING~OPTIONS~
- Different run modes.

DEVICE~~OPTIONS~
- Adjust your CDROM device/unit number.

BOARD~~~OPTIONS~
- Determine which base address used.

CACHE~~~OPTIONS~
- Type of caching method.

AUDIO~~~OPTIONS~
- Related with audio support.

OTHER~~~OPTIONS~
- Not falling into a group above.

PC driver options are
here
.

1.14 FILES

You should have received following files in v2.10

AmiCDEx V2.10 Distribution files:

AmiCDEx (For any 680xx CPU)
AmiCDEx.020 (For >=68020 CPU)
AMICDEX.SYS
AmiCDEx.guide
AmiCDEx.readme

If your archive does not contain all the files listed above then
you probably have a crippled/changed archive.

If you have internet access look to AMINET archive(s) for the latest

distribution in misc/emu directory.

Sample AMINET sites are listed below:

(Extracted from README.aminet file)

Location	Name	IP Address	Path	Files
USA (MO)	ftp.wustl.edu	128.252.2.0.4	pub/aminet/	ALL
USA (WI)	ftp.netnet.net	198.70.64.3	pub/aminet/	ALL
Scandinavia	ftp.luth.se	130.240.18.2	pub/aminet/	ALL
Switzerland	ftp.eunet.ch	146.228.10.16	pub/aminet/	5500
Germany	ftp.uni-paderborn.de	131.234.2.42	pub/aminet/	ALL
France	ftp.cnam.fr	163.173.128.15	pub/aminet/	8000
UK	ftp.doc.ic.ac.uk	2.0.198.1.40	pub/aminet/	ALL

Contact the

author
to learn about the latest release.

NOTE:

That the frequently mentioned program MSCDEX is part of MSDOS and is supplied with that (beginning from version 6.0 and up).

Without MSCDEX.EXE you will not be able to use any CD from PC, regardless whether you use AmiCDEx, or use a separate real PC CD drive.

1.15 multi cd support

Installation of AmiCDEx on systems with two or more CD-ROM drives ↔

First you have to be familiar with the
installation~of~AmiCDEx

Suppose you have 2 CD-ROM drives known to Amiga as follows:

DEVICE scsi.device UNIT 2 -> 1st CD-ROM drive

DEVICE scsi.device UNIT 3 -> 2nd CD-ROM drive

To install your first drive you should insert a line in startup-sequence:

run >NIL: AmiCDEx SERVE DEVICE=scsi.device UNIT=2

or just

run >NIL: AmiCDEx SERVE

Since scsi.device & unit 2 are the default settings.

To install your second drive you should insert another line in startup-sequence:

```
run >NIL: AmiCDEx SERVE DEVICE=scsi.device UNIT=3 SUBUNIT=1
```

or just

```
run >NIL: AmiCDEx SERVE UNIT=3 SUBUNIT=1
```

Since scsi.device is the default setting.
(For SUBUNIT command see Q-A section below.)

On the PC the installation of two (or more) drives is easy.
Insert a line in CONFIG.SYS file:

```
DEVICE=C:\DOS\AmiCDEx.SYS /U:2
```

or use DEVICEHIGH command.

The /U:2 options reports to MSCDEX that the installed driver has two subunits. (These units are accessed on amiga via different AmiCDEx processes, see Q-A section below).

The last step in installation is then to let MSCDEX register both CD-ROM drivers as follows:

(insert a line in AUTOEXEC.BAT file)

```
MSCDEX /D:MSCD000
```

Note: That giving one driver name doesn't mean that there is only one CD drive. MSCDEX registers two CD drives because AmiCDEx.SYS reports that it has two subunits attached.

As a summary you have following lines in your:

Amiga startup-sequence file:

```
run >NIL: AmiCDEx SERVE  
run >NIL: AmiCDEx SERVE UNIT=3 SUBUNIT=1
```

PC CONFIG.SYS file:

```
DEVICE=C:\DOS\AmiCDEx.SYS /U:2
```

PC AUTOEXEC.BAT:

```
MSCDEX /D:MSCD000
```

As a general procedure if you have N CD Drives (called CD0..CDN-1),
you have to insert following lines in your:

Amiga startup-sequence file:

```

run >NIL: AmiCDEx SERVE DEVICE=device_of_CD0 UNIT=unit#_of_CD0
run >NIL: AmiCDEx SERVE DEVICE=device_of_CD1 UNIT=unit#_of_CD1 SUBUNIT=1
...
...
run >NIL: AmiCDEx SERVE DEVICE=device_of_CDN-1 UNIT=unit#_of_CDN-1
SUBUNIT=N-1

```

PC CONFIG.SYS file:

```
DEVICE=C:\DOS\AmiCDEx.SYS /U:N
```

PC AUTOEXEC.BAT:

```
MSCDEX /D:MSCD000
```

For the unlucky ones who have only one CD-Drive but wish to see that this really works (like me ;^)

Amiga startup-sequence file:

```

run >NIL: AmiCDEx SERVE DEVICE=<samedevice> UNIT=<sameunit>
run >NIL: AmiCDEx SERVE DEVICE=<samedevice> UNIT=<sameunit> SUBUNIT=1

```

PC CONFIG.SYS file:

```
DEVICE=C:\DOS\AmiCDEx.SYS /U:2
```

PC AUTOEXEC.BAT:

```
MSCDEX /D:MSCD000
```

(Give your device & unit for samedevice & sameunit parameters)

Then you'll have seemingly two CD-Drives on MS-DOS which you can access seperately. (Like mounting same device twice)

QUESTIONS AND ANSWERS

Q-How does Multi-CD support work?

A-

Normally if you install a CD-ROM drive the default base addresses are used by both drivers (AmiCDEx & AmiCDEx.SYS).

These are PC_BOARD_ADDRESS+0x18500 for Amiga and D000:0500 for PC.

What the PC driver does is just to increase the base address it uses by a pre-defined value depending on the accessed unit. When installed as a single driver, all references to unit number are zero and thus the driver never increases the base address.

However, if the unit referenced is >=1 then it increases the base address by a pre-defined value multiplied by unit number.

From this point on the PC driver expects another AmiCDEx process serving to new base address.

This is why we have to run two(or more) AmiCDEx processes on amiga.

The second AmiCDEx process is given a SUBUNIT paramater that exactly

increases the default (or supplied) base address to the location that PC driver expects as this unit.

Increasing the base address also provides that two processes of AmiCDEx never interfere with each other.

(NOTE: There is enough free parameter RAM for C= boards to hold about 6 units, so don't use higher SUBUNIT numbers for fun, or you will definitely crash the machine).

I think this explains how the multi-CD feature works, but if you don't understand what's going on here, don't bother and use the given example (supplying your own device drivers and unit numbers).

Q- Why two (or more) AmiCDEx processes should be run ?

A-

Because due to the nature of processing messages between Amiga & PC. Each AmiCDEx process can serve only one drive at the same time.

The disadvantage of this is that every instance of AmiCDEx occupies separate memory. If you make AmiCDEx resident before running (e.g. resident c:AmiCDEx), then this memory usage decreases.

Note that the memory used by each AmiCDEx depends on its specific configuration and doesn't change with making it resident.

The advantage of running different AmiCDEx processes is that you can modify/change all the options freely only specific to the served CD-Drive (e.g. cache size, cache type, audio support, raw support etc.).

Another advantage is that you can access two (or more) CD drives at the same time on PC (well in a multitasking environment of course). If only one AmiCDEx process had to support multiple-CD drives then it should lock the access to subunits whenever the other one was busy doing data transfer, or had to create separate Amiga processes. See
to-do~section
.

Q- I have an exchanger CD-Drive which has only one unit number.

How do I install this multi-cd support.

A-

Use the

LUN~option

to address different exchanger subunits

under the same unit number.

I cannot test this feature since I *do* not have an exchanger.

If this works for someone please

report~to~me
.

Q- What about the specific drive capabilities flags when using multiple units?

A- Each AmiCDEx process responsible from a sub-unit reports its

current flags setting to PC. However, some programs assume that each attached subunit has the same features and only request info for subunit #0. Such programs will not be able to work properly if you have selected different features for other subunits.

1.16 Audio Play

Finally audio support of AmiCDEx is ready to use.

This feature is turned on by default to the maximum extent with no limitation. If you wish to fine tune how AmiCDEx behaves while doing audio operations read the audio specific options section below.

Some words about my experience with playing CD's using AmiCDEx and the PC:

AmiCDEx provides the latest status information of the CD-drive to PC, while it checks for disk changes. This enables accessing the drive also from any Amiga CD Player program at the same time without interfering with AmiCDEx.

For example if you start playing a track on amiga and switch to PC side and start a PC CD Player, the player should know that the drive is playing a track and also will be able to show the playing time.

But some players when started, prefer to reset the drive and the audio will stop in this case (this is not a fault of AmiCDEx).

When the CD is not playing, some of the players show that the CD is currently on track #0 and won't go into play mode if you select the play option. Select the next track option in this case to start the play. (Again this is not a fault of AmiCDEx, since it reports the drive head to be on track #1 00:00 and sets stopped flag, when there is no playing status returned from drive).

Discs mixed with DATA/AUDIO tracks are reported correctly.

If you try to play a DATA track (and the PC program sends a play request for this, although it may get the info for track type and just reject your command) AmiCDEx starts playing on the next available audio track. Of course if the disc does not contain any audio track, this will fail. Another problem is that the player program may get confused since the drive suddenly reports playing the next track although it was not told to do so.

The players of Soundblaster (DOS/Windows versions) work correctly with AmiCDEx.

The fastforward/fastrewind options of some players seems to be not working. But this is due to the fine-tuning of the programs in that they request just a few seconds jump (forwards/backwards). In order to see that the music advances rapidly you will have to

select these options many times.

Some players cannot stop the drive completely if you use the STPCOUNT option (explained below) with a high number. Use the timed stopping option STPFRAME instead.

Obviously the use of some old players that access direct hardware ports of PC to play CD's will fail. (These are mostly outdated programs, written before the audio commands are supplied with MSCDEX).

V2.1 NOTE:

Checked some new players running on Windows:

CDPLAY13, WCD130, MUSICCD, WINCDP13.

Some of them make seek requests while fast forwarding/rewinding which caused, V2.0 to fail due to the implementation of seek command (it assumes always data seeks). Now, with V2.1 this is fixed and all the players above function correctly.

(All the listed options below are new to version 2.00)

(Options new/changed for V2.10 are marked with '*')

AmiCDEx (Amiga Executable) Audio related Options:

NOAUDIO (*)

This will disable all the audio play features and report to any PC program that the CD driver doesn't support audio playing.

Use this if your device driver and/or CD-Drive does not support SCSI-direct commands and/or audio playing. See
Which~CD-ROM~interface

NOTE:

For V2.1 this option also sets NOTRKCHECK, thus disabling audio/data track checking for requested reads.

NOEXTPLAY (*)

Disable extended playing features. Normally AmiCDEx is smart enough not to send play requests for data tracks. It simply skips to next available audio track. If this confuses your player program, then supply this option. However, this time playing requests for data tracks will fail, and the player program should be able to handle this.

STPCOUNT=number

The implementation of CD play feature with MSCDEX does not include any separate pause command. The only commands passed are PLAY/STOP and RESUME. It is assumed that the drive should pause when it receives a STOP command during playing, and stop completely if it was paused. This works fine as far as the programs check for playing/paused status of the drive and act accordingly. But some players send more than one STOP commands in sequence while trying to pause or fast-forward the play. What this makes is the unnecessary stopping and re-starting of the drive which is really annoying.

If you have to use such a program then you may tell AmiCDEx how many STOP commands to receive before actually stopping the drive.

The other problem with this option is that you cannot stop the drive completely sometimes when you really want this. Thus I have added:

STPFRAME=number

Again dealing with same problem I have come to another solution. If you supply this number, AmiCDEx will pause regardless how many stop commands it receives. Then it counts in the VBLANK irq to reach this number before actually stopping the drive. Of course receiving a RESUME or another PLAY command just resets this counter and prevents the actual stop. This way the problem with some players sending lots of STOP commands while scanning music is solved.

But the disadvantage of this is again, if you wish to stop the play completely, AmiCDEx goes first into pause mode, and then stops the drive after a while. This duration is determined by the number you supply e.g. if you give 200 here, then the delay is calculated as $200/50 = 4$ seconds. And of course you cannot 'pause' the drive more than this much!

NOTE:

- Because of certain advantages and disadvantages I left the selection of these options to the user. AmiCDEx runs with defaults of STOPCNT=0, and STPFRAME=0 (i.e. both options are disabled) and behaves as described in MSCDEX driver manual.
- Especially, Windows based players require that you give the STPFRAME.
(e.g. a value of 100-150 would be enough).

QCHCOUNT=number (0-255)

Allows limitation of requests made for QCHANNEL (=playing time) information on the PC side. The PC driver counts this much before requesting true QCHANNEL info from amiga. The requests made during this counting process is returned with the stored last value. (Although this effectively reduces the requests made to Amiga, the timed option below is more effective in doing this).

(Default value 0)

QCHFRAME=number (0-255)

Allows timed limitation of requests made for QCHANNEL (=playing time) information on the AMIGA side. The AMIGA driver counts in a VBLANK interrupt (50 Hz.) and the PC checks for this counter to reach the number given above before requesting true QCHANNEL info. Again the requests made during this process is returned with the stored last value.

Default value 25, which makes $25/50=0.5$ second delay before reading true QCHANNEL info from drive. Any PC CD-Player thus can update its seconds counter just in time.

NOTE:

This option decreases the frequency of SCSI led blinking as well as the CPU usage of AmiCDEx.

That any disk change/audio commands like play/pause/resume resets both counters and always sends true QCHANNEL data at first attempt.

If you wish immediate reporting of QCHANNEL data, give 0 for QCHFRAME (also for QCHCOUNT).

The options listed below were added because having the control of drive volume/output settings, some PC programs wrote weird values that my drive all of a sudden 'muted' although it was playing).

NOVOLUME

Disable changing/reading volume settings of the drive.

PC CD player programs mostly set this to the maximum and use the PC sound card volume settings to adjust the CD volume if available.

SETVOL=0xaabbccdd

This enables you to set the volume of the drive from command line at startup. Since there are four channels each having different volume settings the number entered here is coded.

The given number should be in hex notation (though any base number is accepted hex/dec) the intend was to make it easy to give all volume settings with one command. The channels are marked from left to right as follows:

- channel 0 volume setting: aa
- channel 1 volume setting: bb
- channel 2 volume setting: cc
- channel 3 volume setting: dd

Normally channels 0 & 1 are in use by most of the drives

and the others are muted (vol=0).

The default value of my drive for this is 0xffff0000.
This sets the channel 0 (=left audio data) and channel 1
(right audio data) to maximum volume.

Note: Use hex numbers (default value is easy to give as
dec= -65536). But when you wish to halve the volume
(0x80800000) then I think you have to write -2139095040 ;-)

SETOUT=0xaabbccdd

This enables you to set output channel selection of the
drive from command line at startup.

This is also coded like SETVOL option. This time output
selection scheme is as follows:

```
output 0 channel setting: aa
output 1 channel setting: bb
output 2 channel setting: cc
output 3 channel setting: dd
```

To allow complete muting of outputs the channel numbers
given here are added 1

I have found that output 0 & 1 is connected to the left and
right true audio output of the drive (headphone or back-side).

The default value is channels 0 & 1 for them. But to set this
you have to add 1 and give them as 1 & 2.

The default value of my drive for is 0x01020000.
This sets left & right channels(=audio data) into appropriate
place and enables STEREO playing.

Saying this it is also possible to exchange the left & right
channels if you give 0x02010000. I have never thought that
my drive has such a feature. Well digital world is flexible ;-)
(You have to make a switch for a cassette player to do this).

It is also possible to go into MONO mode if you set both
outputs to same channel either left (0x01010000) or right
(0x02020000). You can also completely mute left/right or both
channels (0x00020000,0x01000000,0x00000000 respectively).

Keep in mind that setting the volume to maximum is not enough
if you have muted both outputs.

I cannot give information on usage of the channels 2 & 3 (i.e 3 & 4)
as well as outputs 2 & 3 since all modifications of default values
are returned with an error from the drive.

RESETVOL

Resets the volume of the drive to the defaults at startup.
(This is same as with SETVOL=0xffff0000)

RESETOUT

Resets the output channels of the drive to the defaults at startup.

(This is same as with SETOUT=0x01020000)

NOTE:

That the RESETVOL,RESETOUT,SETVOL,SETOUT options only writes the supplied/default values once at startup. If you wish that these settings do not change then you should specify the NOVOLUME option disabling the manipulation of audio-channels from PC side.

1.17 Which CD-ROM interface?

Interfacing to CD device driver:

AmiCDEx uses standard block read commands on the supplied CD-ROM device driver. But whenever it has to do special functions that are not provided by standard interface it does this by using SCSI-direct commands on the device.

If your device driver is of SCSI type or can accept SCSI-direct commands (i.e. HD_SCASICMD command) then the special features (play audio/raw reads etc.) should function.

If this is not the case, the only use of this program to you is for DATA mode without those special features. (As mentioned data reads are done via standard device commands, which should work %100 with any device driver).

1.18 AmiCDEx.SYS Options

Here are the detailed options list for PC driver.

AmiCDEx.SYS (PC driver):

As with any other MS-DOS CD-ROM driver software AmiCDEx.SYS knows the following standard options as well as some specific ones:

The command template of PC driver is as follows:

DEVICE=C:\DOS\AmiCDEx.SYS [/D:NAME] [/A:BASEADDR] [/U:Units] [/XT] [/V]

/D:DRIVER_NAME

Limited with 8 chars determines the name MSCDEX finds AmiCDEx in memory.
The default is MSCD000.

If you wish to use another name don't forget to say MSCDEX your
supplied name here.

For Example:

```
DEVICE=C:\DOS\AmiCDEx.SYS /D:MYDRIVE
```

Then call MSCDEX in AUTOEXEC.BAT file as:

```
MSCDEX /D:MYDRIVE
```

Other options specific for AmiCDEx:

`/U:NUMBER_OF_UNITS` (*)

This is for Multi-CD~support. The driver reports MSCDEX that it has
this much subunits (CD-Drives) attached.

This defaults to 1 if not given.

NOTE: That the given number is in hex notation without any preceding
character (e.g. /U:2)

The maximum number allowed here is 6, since the parameter RAM area
of C= boards allows this much, I think this is enough :-)

`/XT` (*)

Added for those people who wish to use this with a C= A2088 XT card.

Since the parameter ram area is different for C= XT card this switch
lets the driver to use F000:0500 address as default.

(Thanks! to Kenneth Fribert for reporting this problem).

There is no need to specify a new address for the amiga driver,
since the address used above exactly mirrors to the same location
on Amiga as with any AT card.

`/A:BASEADDRESS`

Directly specify the base address used by PC driver program.

See detailed installation.

Defaults to D000:0500 for AT, or F000:0500 for XT cards (use /XT)

`/V`

Verbose output of PC driver program.

1.19 Bugs/Limitations

There are bound to be bugs in a program of this kind, and I'd be grateful if you would send detailed reports for any bugs you do find. The DEBUG option of AmiCDEx should be helpful for locating certain problems.

As ever, be careful about backing up your data!

Here are a listing of bugs/limitations that I could detect so far:

Bugs/Limitations

- * Since there is no standard way of reading data in RAW mode (esp. audio data) this feature may not work for you.
- * Detected a problem in RAW read mode.

Here is a statement from the documentation of CDDA program (by Jim McLaughlin) which I used to test RAW reads on the PC:

```
"...
Most every CDROM drive that can read DA frames cannot
accurately return to the exact same location on the disc every
time. It will usually return within a few samples either way.
..."
```

This causes the RAW data to be incorrect when every read request is sent block by block to the drive rather than as a single chunk.

Inorder to overcome this problem to some extent RAW reads are done in chunks(i.e

```
    BUFCACHE~mode
    ) and with a
    PREFETCH
    value
```

to allow more accurate positioning of sectors that are actually requested. Using the adjusted values, I was able to get exactly the same RAW audio data, compared with huge chunky reads done by Amiga.

- * If AmiCDEx does not function with your CD drive, then try to degrade its features by first disabling the track checking option (NOTRKCHECK). If this also does not help, then try using NOAUDIO.

1.20 INFORMATION

Options Related with INFORMATION

HELP , ?, or with no arguments

Gives out a short command/options list.

INFO

Gives further internal information currently used by the program.

DEBUG

Last but not least this option is still here along with debugging information while I used developing the programs. Since I was not sure of such a hardware specific program to function on different platforms I let it there.

When using this command start the server in a separate shell window without 'running' it.

And look to the funny messages given from the server ;-)

NOTE:

That stopping the shell output disables serving temporarily which may help you to locate problems, but locks PC since the PC driver waits in a busy loop until its command finishes).

Pressing CTRL-E turns debugging on/off.

Pressing CTRL-C or CTRL-D in this window quits the server (when it is not busy and waiting commands from PC).

All CTRL-E signals received are ignored by any AmiCDEx process that is not said to do DEBUG'ging.

1.21 SERVING OPTIONS

Options Related with run mode.

NOTE: AmiCDEX expects either SERVE or KILL to be given in order to run!

SERVE

Launch the program starting serving in background.
This is the actual switch that lets the program do its job.
This switch should be used with the run command:

```
run >NIL: AmiCDEx SERVE {OTHER OPTIONS}
```

KILL

Use this command to send a quit request to a already running server. This will wait until the server is free to accept commands. Note that the sam

```
e~BASEAD
```

```
DR and/or SUBUNIT should be passed ,
```

since this command is implemented like a request from PC side.

Another way of quitting the program is to send a CTRL-C to the the process.

For example if Shell #6 is the AmiCDEx process, type in a shell:
break 6 C

This will quit the server immediately after finishing its last job.

FORCE

This was a developing option. I used this whenever the server program stopped responding or crashed in a way. The mechanism is that the driver program sets specific identification into the BASEADDRESS (i.e. allocates it) not allowing further instances of AmiCDEx to run at the same address.

But if for any reason the server program stops doing its job you should be able to FORCE it to run without caring that another one does serving, possibly saving you a reboot. FORCE option must be used in together with SERVE such as (otherwise it has no effect).

```
run >NIL: AmiCDEx SERVE FORCE {OTHER OPTIONS}
```

Use this with care, if both tasks become somehow active trying to do the jobs received from PC , the Amiga would see the GURU soon ;-)

NOTE:

That FORCE option only affects the specified/default SUBUNIT (see below).

SUBUNIT=n (*)

The given number determines as which subunit the AmiCDEx process should run. This increase

```
s~BASEAD
```

DR (default, or given one) by a predefined value multiplied by the SUBUNIT number.

This option is only of use if you have more than one CD drive. Take a look at Multi-CD support for more info.

You cannot run more than one copy of AmiCDEx with same SUBUNIT number (except that you give one of the KILL or FORCE options), if you do it will refuse , and say that SUBUNIT is served by another process.

(Default SUBUNIT number is 0).

TASKPRI=number (Range -128 to 127) (*)

Allows to define AmiCDEx server task priority at startup.

Normally I did not take care of this since the server running at a priority of 0 (as with any other amiga user program) did its job well.

But if you think the server should have more priority over normal amiga user programs then you should give a number of higher than 0. Do not try to use too high numbers since this will certainly lock your amiga during intensive CD-ROM transfers to PC. Also total system lock is possible whenever a PC program tries to read data and you cannot interrupt it. A priority of 1 or 2 is enough to keep the AmiCDEx process running without being affected by any amiga user program.

You can also give a negative number to allow your amiga programs have more priority over the driver and let the PC waiting while amiga CPU is busy doing other tasks.

1.22 DEVICE OPTIONS

Options Related with CDROM Device/Unit/LUN

DEVICE=device.name

Give the name of device driver that serves for Amiga CD-ROM drive. (default scsi.device)

UNIT=unit_number

CD-ROM unit number, (default 2)

LUN=logical_unit_number

This enables you to set the logical unit number of accessed drive.

Again for

Multi-CD~support
, added to address those exchanger type
CD-ROM drives with a single unit number.

This number is multiplied by 10 and added to the unit number above while opening the device. See Multi-CD installation.

When installing for a single CD-ROM drive this is not needed, just give the unit number above.

(Defaults to 0).

NOTE: That

SUBUNIT
option of AmiCDEx

does nothing to do with the TRUE subunit/logical units of a CD-ROM

drive. Look also to
Multi-CD~Support
.

DRIVETYPE=drivetype (Use either TOSHIBA,SONY or UNKNOWN, case in-sensitive)

Normally AmiCDEx detects the drive type by issuing an inquiry command and looking to vendor identification string that comes directly from the CD Drive. This information is used only for RAW reads, since different drive types accept different commands. Currently only SONY & TOSHIBA specific commands are supported. If you think that your drive is compatible with one of them use this command to disable auto-detection.

NOTE: UNKNOWN type uses same command with SONY type drives.

1.23 BOARD OPTIONS

Options Related with BOARD ADDRESS

BOARDADDR=pc_board_address (*)

Normally this is determined by AmiCDEx for C= boards.
If for some reason AmiCDEx cannot detect your C= board,
then give its base address here to skip auto-detection.

BOARDOFFS=pc_board_offset (*)

Normally this is 0x18500 for C= boards (free parameter RAM area).
This value is added to the self detected or supplied BOARDADDR
and a default BASEADDR is obtained (0x218500).

BASEADDR=base_address

Directly determines the PC<->Amiga communication base address.
(Defaults to 0x218500 for C= PC/AT boards if the board address
is 0x200000)

This should be useful for non C= PC/AT emulator owners,
letting them directly specify the base address.

NOTE:

- That giving BASEADDR ignores both BOARDADDR & BOARDOFFS.
- Why such mysterious addressing commands?

First some information:

I do not have C= Janus developer tools. (I think they should supply
it with the Bridgeboard software, well this was not their sole mistake,
hope ESCOM will be better in this regard).

Having said this:

I cannot use the janus.library which handles both the shared memory

of Bridgeboard & other functions.

But having the information about mapping of shared memory I could detect a free memory area (parameter ram) that is never used by any of the Bridgeboard software (including ARead/AWrite/PCDisk etc.)

IMPORTANT!

If you use any other utility that is not supplied with Bridgeboard software and uses the same memory area (an example would be AmigaEMS by A.D. Hagen), may cause improper function of AmiCDEx or the other one.

So disable such utils before testing AmiCDEx.

(The utilities that handle keyboard/mouse events to PC are OK).

1.24 CACHE OPTIONS

Options Related with CACHING methods.

Following options relate to memory caching of CD-ROM data.

There is also a new
 FILE~caching~method
 supported by AmiCDEx.

File caching may be also used on top of any memory caching method described below:

NOCACHE

Slowest mode, but least memory consuming. All read requests from PC sent directly to Amiga CD-ROM, block by block, which definitely will slow down transfers and decrease the performance.

BUFCACHE=cache_size_in_KBytes

This was a switch to turn on "single chunk buffered read caching method" in v1.0 .But for simplicity it has become an option requiring a parameter.

You can directly give how many KBytes read at once for each request from PC side.

Note that this effectively increases transmission rates from Amiga to PC, but it has the adverse effect of increasing response time (seek time), if the given number is too high (e.g. >64)

(default 32, 32K)

NOTE:

That this number is rounded to next 2K boundary.

Default changed from 64K to 32K for V2.1 , which decreases response time while playing audio/video files directly from CD.

PREFETCH=prefetch_size_in_KBytes

Determines, how many KBytes of information previous to the requested one should be read by the BUFCACHE.

For example PC tries to read block #10000 and you give 10 here, then actual read will start at block #9995 (1 CD block=2K). This may increase transmission rates depending on further requests for decreasing block numbers.

(If this option is used, this is added to BUFCACHE size and increases total memory used for caching).

LRUCACHE=cache_size_in_KBytes

This was a switch to turn on "Least Recent Used caching method" in v1.0. But for simplicity it has become an option requiring a parameter.

If you have the required memory, you may turn on this caching method, which is much more effective in caching different block ranges.

The cache size should be a multiple of 64K, because of the used method. Therefore the supplied number will be rounded up to the next 64K boundary.

NOTE:

- LRUCACHE inserts it on top of BUFCACHE (i.e chunky read), and is thus affected by the value you supply for it.
 - If you use
 - file~caching~
 - , then it is inserted on top of
 - any method mentioned above, thus permitting the use of file
 - caching plus memory caching at the same time.
 - Memory allocated whenever need arises, but it is not freed until a CD-Change occurs, or program quits. For the ones using Kickstart 3.0 , AmiCDEx now installs a low memory handler which enables it to free memory when the system requests for this. But if your exec.library version is less than 39, you should be careful on low memory conditions, since AmiCDEx does not specifically try to detect this.
 - This mode does not cache RAW reads, and each request to read RAW blocks is done via switching to BUFCACHE mode. See Bugs/Limitations concerning single RAW block reads.
 - BUFLINES, LRULINES , LRUSETS options (v1.0) are still parsed on
-

command line, but just ignored by AmiCDEx.

- AmiCDEx is smart enough to adjust chunked reads according to maximum sector number that is available on the CD.
- If RAW reads are enabled (i.e you do not give NORAW option and your drive supports this) and a request is made to read RAW data, then AmiCDEx immediately switches to BUFCACHE mode freeing any cache memory that is allocated currently (file caching is also stopped at this point if used).
- If you did give any option that modifies the defaults of BUFCACHE, it will change the defaults and use 147K with a prefetch of 37K.
This change was necessary to allow RAW reads return correct information. Look
 Bugs/Limitations
 for more info on this.

If any normal read request arrives after a RAW read, temporary switching/changing parameters for BUFCACHE will be disabled and the program will continue on with the supplied/default mode & values.

- RAW reads are done in synchronous mode, and with the adjusted prefetch value, the transmission rate to PC is slow but the data that is read is much more accurate. Because of this , it may be impossible to read RAW data , and play this on the PC at the same time (of course if you have installed a soundboard). (Though I did not find such a program to test this.)

1.25 OTHER OPTIONS

Miscellaneous Options

GENUPC (*)

This will enable reporting of self-generated UPC/EAN information for the disc in use when it does not contain this record.

NORAW (*)

Disable RAW read feature when this feature does not work with your drive. The PC driver then denies all RAW read requests and sets drive capabilities flags to COOKED (=DATA) read only.

NOEJECT

Disable Eject/CloseTray functions.
When you give this option all eject/closetray requests will fail.

NOLOCK

Disable Lock/UnlockTray functions.

When you give this option all lock/unlock requests will fail.

NOTE:

- Playing audio is not affected with this command.

CHANGED

Informs MS-DOS that the CD-ROM is changed, whether it was actually changed or not.

This option is useful if you accessed a CD-ROM under MS-DOS and then changed the disk while the driver program was not running for any reason (or if you have a non-SCSI CD-ROM drive).

Normally the driver program recognizes CD changes and reports this to PC , but I could implement this feature only via direct SCSI commands on my CD-ROM drive. I don't know why trackdisk like commands doesn't work on scsi.device.

TRKCHANGE

Enable the recognition of diskchange with trackdisk like commands (TD_CHANGENUM, TD_CHANGESTATE).

Use this option if your CD-ROM doesn't allow SCSI-direct commands to recognize disk changes. As with my experience this didn't work on my SCSI CD-ROM drive , and I used direct SCSI command to implement this feature.

If your CD-ROM drive does not allow SCSI-direct commands, and the TRKCHANGE option also does not work the only way of letting MS-DOS register disk changes is to stop AmiCDEx from serving (send a CTRL-C) and restarting it with same options adding 'CHANGED' keyword to command line, after inserting new disk into the drive.

The program installs a vertical blank IRQ, which it uses for looking to PC requests, as well as for diskchange checking. Of course 50/60 times checking is not logical and it does CD checking every 4 seconds (200 VBLANKS).

If you can change CD's less than this time then this will be a problem to MS-DOS , not clearing its internal buffers ;-)

RESETCD

Issues a full-range SEEK to the CD-ROM. Used while testing the performance of the program. When the server starts, it reads following block sequences from CD: #last-2,#1,#last-1,#0. Since the read request is done for data mode doing this on an audio CD takes a long time before the drive returns with read error. So do not use this if the inserted disc contains audio tracks (as 1st or last).

This command keeps CD motor running for a short while, which I used to create somewhat same conditions before starting CD-ROM performance test programs on PC side.

1.26 FILE caching method

Options Related with FILE CACHING

FLRUCACHE=cache_size_in_KBytes

"File based Least Recent Used caching method"

Here you can specify how big the cached file should be.

(Defaults to 2048K=2 Megs. if you give just FCACHEFILE option)

FCACHEFILE=filename

The complete path & filename must be supplied here.

(Defaults to FCACHE:AmiCDEx.CacheFile_Subunit#).

Assign FCACHE: to any directory you wish, and don't care about file names. Note that each subunit uses different file name. See

Multi-CD~instalaltion

.

NOTE:

- That the file size increases whenever need arises, but it will never decrease so if you are low on harddisk space don't turn on FLRU caching or use lower numbers.
(*I am not responsible for corrupted harddisks!*)
 - Using file caching decreases the performance at first attempt. AmiCDEx reads data from CD , and then stores it immediately to the file before transferring to PC. This will decrease the response time at first, but when again the file cached blocks are read the performance boosts up.
 - File caching method functions seperately in that it inserts itself between data read functions which cache it into memory and functions that read actual data directly from drive.
- This way you will be able to use file cache on top of other memory based caching method.
- That RAW reads again are not cached with this mode, and such reads are done directly from drive.
 - There is no structured writing concerning the cache file.

AmiCDEx never will recognize an old file that has already cached data, it just overwrites.

If you have the necessary space to hold a complete CD data and wish to 'EMULATE' a CD (that is to say copy it to HD) this will function as long as the CD remains in the drive, but will immediately invalidate the sectors written into the file whenever the CD is removed. See

~to-do~section

.

QUESTIONS AND ANSWERS:

- Why is there such a feature?

It was funny to program and really simple.

Since the method used by LRUCACHE was so easy to convert, I changed the algorithm to store data into a file instead of memory. (Well, I like structured programming :-).

- When is this useful?

If you have a *slow* drive, this will increase the performance seen by the PC considerably.

Of course this is determined by the speed of your HD drive and maximum memory throughput~between the Amiga and PC.

It is really funny of PC programs reporting that the CD reads 1.5 Megs/sec :-)
