2B

MagiC

The ultimate multitasking system for ATARI computers

2B

MagiC 4

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Introduction

Whenever a new computer is introduced nowadays (and it does not have to be a "compatible"), the manufacturer cannot afford to release it without providing some degree of multitasking. No operating systems for any computers are being developed without the ability to run several programs at once. There are many uses for multitasking, starting with the ability to keep both a word-processor and a graphics program in memory so that the user can build up documents without quitting the programs. Another use involves getting one program to carry out time-consuming tasks like printing or even rendering a picture while the user gets on with writing a text.

The original GEM concept implemented in the Atari ST was a single tasking operating system with some primitive elements of cooperative multitasking. MagiC replaces this with its own high-speed operating system, giving the Atari ST/STE/TT and Falcon 030 series all the advantages of preemptive multitasking.

MagiC's preemptive multitasking allows the user to start several programs, switch between them at will and, while another program is calculating in the background, carry on working with yet another in the foreground.

In contrast to other solutions, the primary objective during the development of MagiC was to implement this without any pay-off in speed. You don't have to buy a new 66 MHz computer to enjoy the benefits of "real" multitasking - your old 8 MHz Atari ST is quite capable of running MagiC 4.

Features of MagiC

The following list is just a brief selection of possibilities offered by MagiC. Its scope can only be realized after reading the handbook thoroughly.

- Both applications and accessories run in a preemptive multitasking environment.
- Tasks can be switched either from the keyboard or by using the mouse.
- Up to 64 windows can be open at the same time.
- The desktop MAGXDESK has been developed especially for use in a multitasking environment. It supports parallel copying, deleting and formatting, a non-blocking search function for files as well as many other comprehensive functions.
- Text-mode applications (so-called TOS or TTP programs) run in windows.
- Extended dialog functions, additional system calls for flying dialogs, pop-up menus, dialog-windows, scroll boxes etc.
- A new file selector and font selector are available throughout the system.
- MagiC supports symbolic links (aliases) and Piping (useful for Drag and Drop). There is also an interface for loading file systems and device drivers.
- Close compatibility with TOS; critical programs can be run in single tasking mode.
- Programs are executed much faster than under the original system - all system functions have been optimized for speed.

The Package

The MagiC package contains the following:

- MAGIC.RAM - the system kernel. MAGIC.RAM is copied to the root directory of your boot drive during installeation. The monitor driver belonging to the system kernel are copied to a GEMSYS folder on the same drive.
- MAGXBOOT.PRG is the starter program. It is copied to the AUTO folder and ensures that MagiC is installed reset-resident. MAGXBO32.PRG is a special version for users of the virtual memory management OUTSIDE (version 3 or higher). This prevents the kernel from being overwritten.
- MAGXDESK.APP is the Desktop. MAGXDESK makes use of the modules MGCOPY (file copier), MGFORMAT (disk copier and formatter) and MGSEARCH (file search). All these modules will run at the same time.
- MAGICICN.RSC contains the color icons for MAGXDESK.
- APPLIKAT.APP helps MAGXDESK by managing all information about the registered programs and their designated files and icons.
- MAGXCONF.CPX and TSLICE.CPX are two Extended Control Panel modules (for XCONTROL from Atari).
- MAGX.INF is the configuration file. The disk also contains a fully documented example for users who wish to change settings at this level.
- VT52.APP. This program causes the output of TOS and TTP applications to be routed into a window.
- MCMD.TOS is an MSDOS-compatible command line interpreter.
- WBDAEMON.PRG is a write-back cache. This will be explained further in the section on "Tuning".
- ROMDRVR.PRG is a driver for the ROM port so that ROM modules can be accessed. This program is copied to the AUTO folder. The ROM module is always drive R:, which should be installed in the desktop.
- AES_LUPE.PRG is a program by Laurenz Pruessner - try it and see!
- CLOCK.APP is a neat little shareware program by Stefan Hinz.

Hardware Requirements

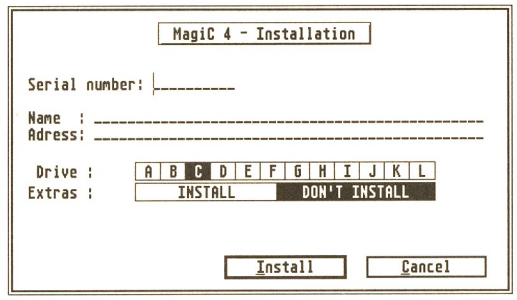
MagiC will run on any of the following Atari computers: ST, Mega-ST, STE, Mega-STE, TT or Falcon 030. TOS must be in ROM, but this applies to all Ataris since 1986.

A hard disk is not essential, but is highly recommended because of the grave limitations in speed and capacity of floppy disks. Theoretically, MagiC will run with only 512 Kb main memory, but at least 2Mb is recommended for a good working environment. The graphic system accelerator NVDI is highly recommended to improve the speed at which the screen is drawn. It also provides your Atari with new printer drivers and vector fonts.

Installation

First of all, you will have to fill in the registration form and send it to your MagiC distributor. Only then will you be eligible for our update service.

Place the original disk in drive A: and start the program INSTMAGC.PRG. The following dialog box will appear:



Enter the serial-number EXACTLY as it appears on the disk-label - if you make a mistake the installation will not work. Write in your name and address.

Drive is used to select where you want MagiC to be installed. This should usually be drive "C:" for owners of hard disks. If you want to install to floppy disk you should choose "B:" instead.

If you select *INSTALL Extras* the install program copies further files and programs in the directory EXTRAS which could interest advanced users.

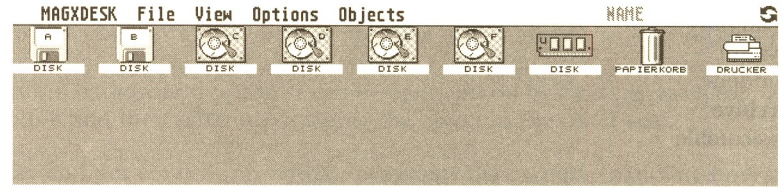
Check again that the serial number is written correctly and confirm the *Install* button. Installation proceeds automatically - all the necessary files will be copied to the chosen partition.

Starting MagiC

MagiC will be loaded automatically whenever you press the reset button or use the warm-start key combination - MagiC is "reset resident". Cold-starts (e.g. switching on the computer) will load MAGXBOOT.PRG first. This in turn loads MagiC and then calls a warm-start. MAGXBOOT should be one of the first programs in your AUTO folder to be loaded (i.e. the running order should be something like MAGXBOOT, NVDI, ...). If you do not own a boot-selector you may have to copy programs into a fresh AUTO folder to get the order right. Holding down both **Shift** keys while booting will prevent MagiC from being loaded. The combination **Ctrl-Alt-RShift-Delete** will cause a cold-start so that you can boot from another drive or use both **Shift** keys to skip MagiC.

First Steps - Using MAGXDESK

A freshly installed MAGXDESK will present you with the standard icons:

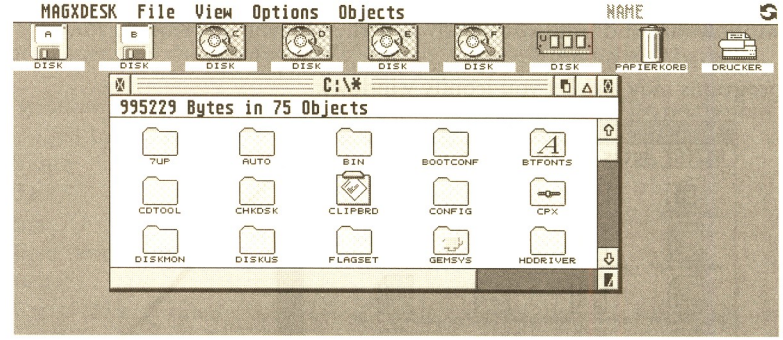


You will see an icon for every disk drive currently installed and one each for printer and trashcan. Drives A and B are depicted as floppy disks and all the other partitions as hard disks. You can change these icons by clicking on them and selecting *Define Icon* from the *Options* menu.

Single-clicking an Icon will select it. Clicking and holding will let you move it, double-clicking will open anything but the trashcan or printer. All disk drive icons are named after the corresponding partition. Unnamed disks will be given a default name, e.g. "DISK".

The Desktop Windows

A double-click on a disk drive icon will open a window showing the contents of the chosen drive:



The information bar shows the number of objects in the window and also how much memory all the files use. The vertical scrollbar can be moved either with the mouse in the usual GEM manner or by holding down the cursor keys; **Shift** together with a cursor key will scroll pagewise - **Home** and **Shift-Home** will scroll to the top and bottom respectively.

The horizontal scrollbar has a different function altogether in MAGXDESK. This has been made possible because, whatever the width of a window, MAGXDESK will show as many files as possible, resorting them whenever necessary. So, instead of its usual scroll-function, this bar displays the amount of used/free space on the partition, whereby the white part means used. Clicking anywhere on the horizontal scrollbar will open an alert box showing the amount of free space in bytes.

If you click on an object in a window, the information bar will show the size, date and attributes of the selected file. The abbreviations for file attributes have the following meanings:

R read only
S system
H hidden
A archive
E executable

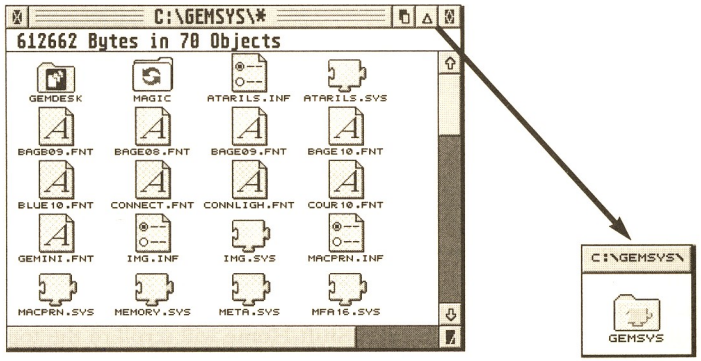
If you select several objects at once, the sum total of their sizes will be shown (e.g. so you can easily find out whether they will all fit onto a single floppy disk). If you insert a different disk and update the window (by pressing **Esc**), all directories will be updated and any invalid ones will be quitted so that you will not be left with a blank window (unless of course the disk is empty!).

New Elements

Besides the usual window elements, you may have noticed an extra button next to the fuller:

This is the Backdrop Button which sends the window to the back of the pile. Another will become topped. There are many situations where use of this button is much faster than either cycling through the windows by pressing **Ctrl-W** or tediously moving several windows around until you finally find the one you are looking for.

Newer programs may also let you iconify windows:



This button (the *Iconifier*) is used to reduce the size of the window to a minimum and place it at the bottom of the screen. If you hold the **Ctrl** key at the same time, all the windows belonging to the program will be iconified. Double-clicking the minimized window restores its original size. Unlike the Backdrop button, this feature must be actively supported by a program, so you should expect it not to appear when you are running older applications.

Operation of Background Windows

A very practical feature of good window-based multitasking systems is that even windows in the background are able to react to mouse clicks. Fuller, sizer, scrollbars etc. of background windows are all directly operable under MagiC, which can save you quite a lot of time compared to poorer systems where you have to top the window first. Objects within background windows can be operated on by holding down the right mouse button and then selecting/dragging the object in the usual way.

Some older and not very cleanly-written programs have trouble handling operations on background windows (especially scrolling). If a background window doesn't react you will have to top the window first.

The Appearance of Files in Windows

Would you prefer files to be shown as Text instead of icons? DOS fans (and others) should take a look at *View* in the menu bar. If *as Text* is selected, the settings for system font size and additional file information such as the date, size and time will apply. As long as the window is wide enough, MAGXDESK will display more than one column - this feature can be defeated by ticking *View: Single Column*.

It may be difficult to find a particular file when a large number are displayed at once. MAGXDESK helps out by letting you set a mask for each window - this determines which files will be visible. Select *View: Set Mask* from the menu bar and enter the mask "*.ACC" for instance. Any files which don't have the extension "ACC" will be filtered out of the window. The mask accepts normal GEM wildcards i.e. "*" means any number of unspecified characters and "?" means a single unspecified character.

Files in a window are always sorted according to certain criteria. The method of sorting can be changed by setting one of the following (in the menu bar under *View*):

- by Name
- by Date
- by Size
- by Type (extension)
- unsorted

The entry *unsorted* may need explanation. If this is ticked, the files will be shown in the order in which they *physically* appear on the partition. This feature can be very helpful as it shows you the order of files in the AUTO folder (which are loaded in this order). The current setting is also displayed in grey capitals in the menu bar.

Placing File Icons on the Desktop

As well as the standard desktop icons, any file or folder icons can be dragged out of a window onto the desktop. This lets you start programs or open folders immediately without having to click your way through several directories first.

If a window icon is dragged onto the desktop and the mouse button is released, a copy of the icon will appear in that position. You can then treat it almost exactly as if it were the one in the window (i.e copy, start a program, send a file name as parameter to a program etc.), with two notable exceptions: Firstly, all desktop icons can be

repositioned within the desktop. Secondly, you can't delete a file by dragging a desktop icon onto the trashcan - only the icon referencing the file will be removed.

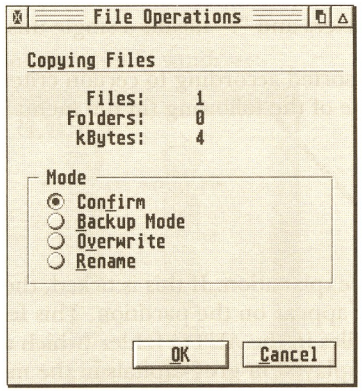
The maximum number of icons on the desktop is unlimited. However, experience will teach you that it is not very sensible to plaster the whole desktop with file icons. The desktop becomes cluttered and the whole purpose of this feature (speed through recognition) would be lost. File icons shouldn't cover more than about a sixth of the desktop area.

Copying, Moving and Deleting Files

Copying

Dragging a window icon into another window, onto a folder or drive icon will copy it to that destination. You can even drag it to another position within the same window if you need a backup copy - an alert will appear in which you can rename the copy. If you wish to copy the complete contents of a window to another, you can activate *Select All* from "File" in the menu bar and then drag as usual.

The complete contents of a drive are more easily copied by dragging the drive icon to the required destination than by selecting all files from the root window. Note that this is still a "file copy" and not a "disk copy" (see "Copying Floppy Disks" below). MAGXDESK opens a dialog box showing the number of files and folders and also the approximate number of kilobytes to be copied.



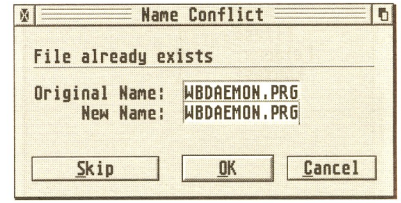
Below this information you can set the required mode:

- ❖ Confirm: The user will be warned before a file of the same name is overwritten.
- ❖ Backup: All files of the same name but with an *earlier* date stamp will be overwritten without warning. Those with a later date will be skipped over or deleted (whilst moving). Note that, even if the target directory is full. this mode will not display warnings!
- ❖ Overwrite: All files of the same name will be overwritten without warning.
- ❖ Rename: All files and folders can be renamed before they are copied or moved.

Moving

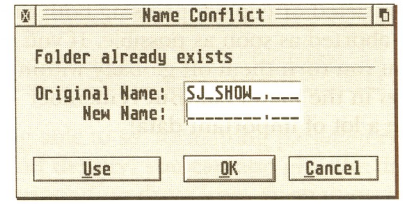
Moving one or more files is effectively the same as copying and then deleting the originals. The motions are also the same as copying except that the **Ctrl** key is held down *first*.

MAGXDESK displays what it is doing while it is copying, moving or deleting, i.e. which file or folder from which drive etc. If there is already a file of the same name in the target directory, the following dialog box will appear:



This gives you the chance to rename the copied file, to overwrite the original file or to skip the copy.

The following dialog box will appear if the names of folders conflict:

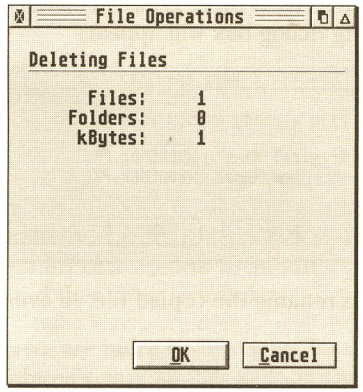


In this case you have the choice of either using the existing folder (files in the source are all copied into the target folder), changing the name of the new folder or aborting the action altogether.

MAGXDESK uses a very refined algorithm to find out whether there will be enough space on the target drive to accomodate the copy - *before* copying begins. The irritating message "Not enough room on disk A:" after 37 files with four files to go is a thing of the past. MAGXDESK warns you beforehand - you should only ignore the warning if you're sure that enough of the original files will be overwritten by new ones of the same name.

Deleting

Files and folders are deleted by dragging icons onto the trashcan or by selecting *File: Delete* from the menu bar. A dialog box appears before MAGXDESK starts deleting, informing you of the number of files and folders to be deleted and their total size in kilobytes (which indicates how much space you will save on the medium after carrying out the operation).



Even while files are being deleted or copied, pressing both **Shift** keys at the same time will cause the action to be aborted as soon as possible. If you find the warnings during these actions irritating, you can turn them off globally within the dialog box called by selecting *Options: Preferences* in the menu bar. But remember - without these warnings you could accidentally lose a lot of important data!

Creating a Symbolic Link (Alias)

The MagiC file system includes the ability to create references to programs, data, folders or drives which actually exist in other directories or drives. Such references are called "Symbolic Links" or "Aliases".

Instead of copying a program into a folder, you can create a symbolic link to the program and its data. The advantage of a symbolic link over a normal file copy is that they require less memory: the link is only a *reference* to the original and is therefore very short. Changes made to the original file (e.g. a complete update or edit os the source file) are immediately adopted by the symbolic link.

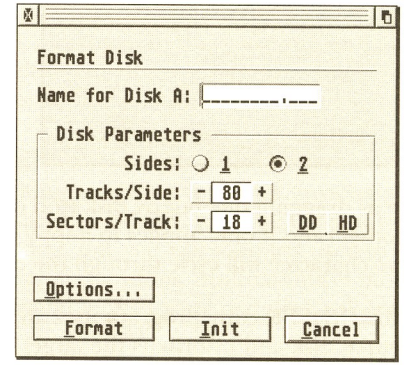
Creation of a symbolic link for a file, folder or drive is simple: hold down the **Alt** key *before* pressing the left mouse button on the icon and then drag the icon to the required destination (drive, folder or window). A dialog will be opened which displays the number of files and folders and their sizes. A symbolic link in a window is easily recognisable because MAGXDESK changes the style of the object name to *cursive*. Symbolic links can be removed by simply dragging the icon onto the trashcan.

Renaming Objects

Files, folders and drives can be renamed. Select a file, folder or drive icon and call *Information* from the "File" menu. See the chapter about the MAGXDESK menu structure (in the section "File: Information") for a detailed description of object-specific information.

Formatting and Initialising Drive Media

Before you can write data to a brand new disk it will have to be formatted. Select the floppy disk icon and then *Format* from the "File" menu. The following dialog box will appear:

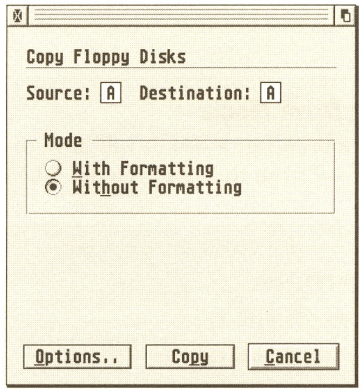


As you can see, besides being able to set formatting parameters (number of sides, tracks per side, sectors per track and density) you can also give the disk a name which will later appear under the corresponding drive icon. Formatting erases the entire disk and looks for damaged sectors. Any data previously on the disk is therefore lost forever. If the formatting program keeps giving you an error message (e.g. defective sectors) then you should throw the disk away to be on the safe side.

Formatting begins at the highest track, so that if you suddenly realize you are formatting over important data, you still have a good chance of retaining some of it by pressing both **Shift** keys as soon as possible. If you only want to clear all files from a disk which is already formatted you can use the button *Init*. This only erases the file allocation table and is therefore much faster. If you attempt to format a hard disk partition, an alert will appear giving you the choice of initialising the partition or aborting the action. MAGXDESK cannot format hard disks - this is the domain of specialized hard disk utilities (HDX, SCSITOOL etc.).

Copying Floppy Disks

The ability to make syfety copies of your floppy disks is very useful for backing up data. Selecting *Copy Disk* from the "File" menu will open the following dialog box:



This function is *not* the same as dragging one floppy disk icon onto another (that would copy each file one after the other) and it only applies to floppy disks. Drive A is assumed to exist. Clicking on the drive character will cycle through the registered floppy drives.

For the sake of speed, the MAGXDESK copy program uses an algorithm that analyses the current format of the source disk and reformats the target disk accordingly if the two differ. If the radio button *Without Formatting* is selected, the action will only be carried out if the formats of the two disks match. If are working with only one floppy drive you will be asked to insert the target disk. When the program compares the formats and sees that they differ, an alert will be opened giving you the choice of either reformatting the target disk to match the source disk or aborting the action.

If your computer has both a floppy disk and a hard disk, but not enough memory to be able to read a full disk, you can still use MAGXDESK's copy program to load the disk without having to play "disk-jockey". Click on the *Options* button and enter a hard disk drive for *Temporary drive used*. If there is enough room on the hard disk, the source disk will be read completely and then written as a single file to the temporary drive. You will be asked to insert the target disk. The temporary file will be written out and then deleted. If there isn't enough room in memory or on the temporary drive to allow using this method you might have to swap the disks several times. Disk copy can be aborted by pressing both **Shift** keys at the same time.

Displaying Files

MAGXDESK lets you specify an application used for viewing all files whose extensions aren't registered via *Options: Install Application*. There is a program on the disk (SHOWFILE.TTP) which displays text files in a VT52 window. Instead of using this program (especially if you want to be able to view several different formats - text, images etc.) you can specify an different viewer under *Options: Preferences* in the category *Utilities*. Well known shareware viewers are "1st Guide" and "GEMVIEW".

Starting GEM Programs

Now that you have a general idea of the scope of MAGXDESK you will probably be wanting to see multitasking in action. The easiest way would be to double-click on program icons, but you will soon learn that there are other methods which can be more suitable.

Many applications accept a file name as argument, and this is achieved under MAGXDESK by dragging one or more file icons onto a program icon. For instance, a graphics program which accepts an argument would start and load the file that was dropped onto it automatically. Not all programs react this way, but the newer ones usually do - just try it and see!

You can start more applications by clicking in the MAGXDESK windows, providing that they are still visible. Unfortunately, there are still some programs on the market which register their own desktop, effectively making the MAGXDESK windows/icons unavailable. That brings us to the next topic - switching between programs.

Switching between Programs

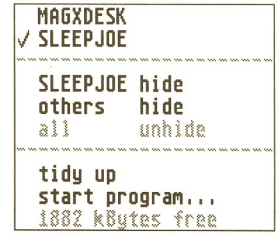
The simplest way of switching programs is to click anywhere in a window belonging to the program you want to activate. MagiC tops the window and switches the menu bar. It may seem confusing at first, but you will soon get used to seeing the desktop and windows belonging to other applications. Multitasking is more "real life" than singletasking - taking a second look at your real desk will convince you of this.

... using the Keyboard

The key combination **Ctrl-Alt-Tab** will cycle through all active applications. Hold down **Ctrl** and **Alt**, press **Tab** repeatedly until the small box in the centre of the screen displays the name of the program you want, then release all keys.

... using the Popup

Clicking on any "unused" area in the menu bar will open the following popup:



At the top are the names of programs in memory which have a menu and/or desktop background. The application whose menu/background are currently active is ticked. Programs are switched by clicking on the program name. The menu bar and background will be switched accordingly. Programs written with multitasking in mind will not have their own destop!

Hiding and Unhiding Programs

The more programs you start simultaneously, the more cluttered your screen will become, especially if it is small. The MagiC popup has a few handy features to help in this situation, so you are not forced to close windows which you may need later.

Program hide

This will hide all windows/background belonging to the currently active application and then switch to the next application.

Others Hide

All windows belonging to programs other than the currently active one will be hidden. Note that the *hide* function does not actually close the windows but only moves them offscreen. This means that hidden programs are not terminated, but are still at the "multitasking party", in the other room so to speak. We chose this method to allow older programs to benefit from this function, avoiding any special handling routines. The application is sent a message that the user has moved the window offscreen - any older programs which do not respond in this way will ignore the message and the window will remain visible.

Unhide All

Any hidden windows will be made visible - this entry will be greyed if there aren't any. Applications with hidden windows are marked in the popup with an asterisk. Switching to programs with any windows offscreen will of course restore the windows to their original positions.

Tidy Up

This will redraw the whole screen. If you have started a program which has left "droppings" or even messed up the whole screen, all you have to do is move the mouse pointer up to the menu bar and select *tidy up* from the popup. (Tip from the translator: Clicking on the top left pixel of your screen will always call the MagiC popup even if the menu bar is invisible).

Start Program...

If at any time you aren't able to get to the desktop easily, you can start another program from the file selector. Programs set to single-mode using *Options: Install Application* will not be started.

XXXX Kbytes Free

The bottom line of the popup displays free memory. This is useful for checking whether you have enough memory to start yet another program without having to terminate one. Note that some programs reserve as much memory as they can get.

Starting TOS Programs

Programs with the extension "TOS" or "TTP" are called generically "TOS programs". They differ from true GEM programs in that they don't use any graphic elements - their inputs and outputs are pure text. In MAGXDESK, TOS programs can be started in the same way as GEM programs with a double-click. Programs with the extension "TTP" (TOS Takes Parameters) will also accept arguments. If a TTP program is started with a double-click, MAGXDESK will open a dialog box in which you can enter any arguments you want to send. If a TOS program is started by dragging one or more file icons onto the program icon, the file name(s) will automatically be sent as argument(s) and the dialog is not opened.

Because you are working with a window-based system it would be more than irritating if the output of a TOS program would appear on top of your windows. Besides, you may want to start more than one TOS program in the multitasking environment (e.g. a packer and a raytracer). The obvious answer to this problem: divert the output (and input) of all TOS programs to a window!

This redirection is handled by the program "VT52". It provides a window for each TOS program you start, letting them run simultaneously without allowing conflicting inputs and outputs. A practical side-effect of this is that TOS programs have some of the functionality that was previously reserved for GEM programs i.e. clipboard support, output scrolling, font selection etc. For more information read the section on "VT52 menu structure".

Accessories

A word about accessories. Although these programs go against the MagiC philosophy, they are fully supported. Accessories are listed at the far left in the menu bar as usual. Accessories can always be loaded via double-click in MAGXDESK as long as there is enough room in the list MagiC is able to remove some accessories - hold down the **Ctrl** key before clicking on the entry to find out whether the accessory is removeable.

Switching off the Computer

Computers running multitasking operating systems shouldn't be simply switched off while applications are still running. Even a reset (pressing the Reset button or **Ctrl-Alt-Del**) is taboo. On the contrary, you should ensure that all files are closed and that all programs are terminated correctly before reaching for the power switch, otherwise you run the risk of losing data!

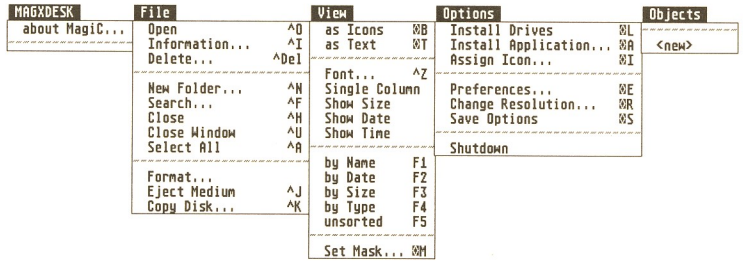
MagiC includes a "shutdown" mechanism for this purpose. This function is called in MAGXDESK by selecting *Shutdown* from the "Options" menu. Each program in memory is sent a message asking it to terminate. If one ore more applications don't respond to this message (and are still running) after a certain time, SHUTDOWN displays an error message.

The key combination **Ctrl-Alt-Del** is intercepted by MagiC. It will cause a normal system shutdown if you are running MAGXDESK - the same as selecting *Shutdown* from the menu. A further **Ctrl-Alt-Del** at this point will call the standard reset routine.

MAGXDESK Menu Structure

The MAGXDESK menu bar consists of five drop-down menus. The individual menu entries can be activated either with the mouse or with key combinations (hotkeys) which are indicated by symbols to the right of each entry. As there is little room to write **Alt** or **Ctrl**, these are abbreviated according to the following convention:

^ means **Ctrl**, **#** means **Alt**



MAGXDESK: about MagiC...

This shows the copyright, the MagiC and MAGXDESK version numbers and also the name and address of the licensee.

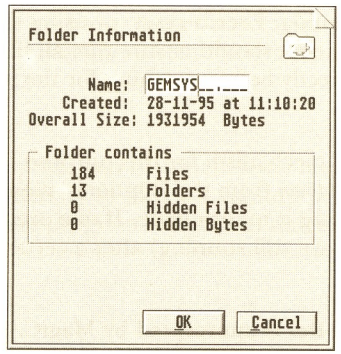
The "File" Menu

File: Open ^O

This entry can only be activated when a single desktop icon is selected. A dialog box will open in which you can enter parameters (e.g. the name of a file for your text editor, options for TTP program). The dialog box will also appear when the desktop icon is double-clicked while holding down the **Ctrl** key.

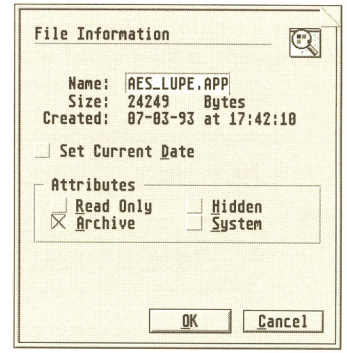
File: Information... ^I

This entry can only be activated when a single desktop icon is currently selected. Information is displayed according to the type of icon selected (i.e. about the file, folder or drive). Folder information resembles the following picture:



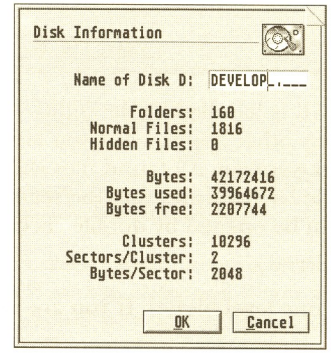
The *Name* field is editable - you can change the name of the folder.

If the selected icon was a file, the information box will look a little different:



The file name and its attributes can be changed here. The *Set Current Date* toggle corresponds to the "touch" function found in some programs. Intelligent compilers can be forced to recompile older source files instead of just linking the object code. Backup programs in incremental mode can be coerced into saving "touched" files. Files with the *Read Only* flag cannot be deleted or changed in any way. Hidden files are not visible in the desktop except if you have switched on the option *Show hidden files* in the menu "Preferences". The attribute *System* is used for files which belong to the operating system and should therefore not be changed.

Information about a drive is as detailed as should be necessary. Floppy disks boot sectors are also tested to find out whether they are executable. If so, the disk could possibly be infected with a virus (MagiC would open the alert "EXECUTABLE BOOT SECTOR"). The number of tracks and sectors per track are also displayed.



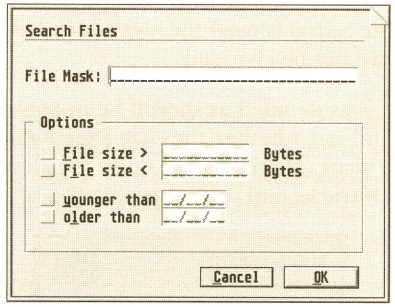
If more than one object was selected as you opened the Information dialog, you can jump to the next object by clicking on *OK*. The *Cancel* button will also jump to the next object, but any changes you have made to the previous one will be lost.

File: Delete... ^ Del
Calling this function will delete all selected files in the topped window. This is especially useful if the trashcan is covered by a window. This function can only be called if there are no selected icons (anywhere) except in the topped window!

File: New Folder... ^ N

This will open a small dialog box with which you can create a new folder. The new folder will appear in the currently topped (active) MAGXDESK window.

File: Find... ^ F
This entry is used for searching selected folders or drives for particular files. If no objects are currently selected, the top window will be searched. Apart from normal file names or masks (*, ?) you can also search for files according to size and/or date.



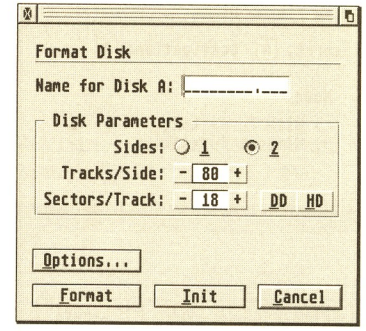
The search under MAGXDESK is handled by the utility "MGSEARCH" which runs parallel to the desktop and any other applications you are running. This means that the file search doesn't block the system. All found files will be listed in the search window. An asterisk in the title bar indicates that the search program is still working. Files in the search window can be opened by double clicking on them.

File: Close ^ H
Changes the current path to one level higher. If you are already in the root directory, the window will be closed.

File: Close Window ^ U
Closes the currently topped MAGXDESK window.

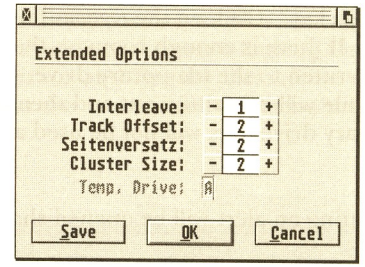
File: Select All ^ A
All objects within the currently topped MAGXDESK window will be selected. If no window is open, all the desktop icons will be selected!

File: Format...
Format is greyed unless a single drive icon is selected.



If the selected drive is not a floppy disk it will not be formatted but will only be initialised. A disk name can be entered in the dialog box - this will appear under the icon when the disk is accessed. It is always a good idea to name floppy disks if you are not in too much of a hurry. The *DD/HD* buttons set the standard values (double-side/80 tracks and 9 or 18 sectors per track) with only a single mouse-click. Disks formatted in this way can be read by IBM-compatible PCs or Macintosh (via PC-Exchange).

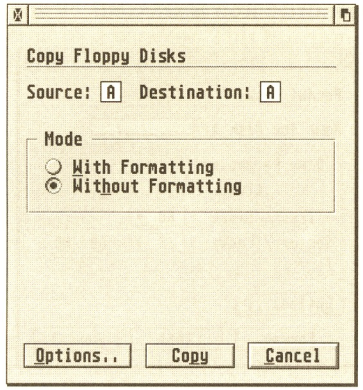
Clicking on *Options* will open a further dialog box for the more adventurous and technically-minded, where interleave, offset and cluster size can be set. Custom (non-IBM-compatible) values can be created. Note that the format routine is not able to create 11 sector formats on DD drives.



Formatting begins at the highest track - if you make a terrible mistake you can stop formatting by pressing both **Shift** keys at once, and if you are lucky no data will be lost. When an error occurs the disk should be removed from the drive because it has not been initialised completely and will contain invalid data.

File: Eject Medium ^ J
This entry is only available if a single drive icon is selected. A hard disk driver with XHDI support (e.g. Hushi or HDDRIVER 4.x - but not AHDI) is necessary for this to work. If you own a removable hard disk with a driver which supports ejection, MagiC will stop the drive and eject the medium.

File: Copy Disk... ^K



Copy Disk lets you copy from any drive with floppy-disk icon to any other (drive A is always assumed to exist). Clicking on the drive button will cycle through the registered drives. If you have chosen the mode *Without Formatting*, the present formats of the source and destination disks will be compared before formatting begins. If you only have one floppy disk drive you will be asked to change disks. If the two formats are different, an alert will be opened letting you either format the destination disk to match the source disk or abort. MAGXDESK makes use of the system formatting routines, which means that it can't create 11 sector formats for DD drives.

If your computer has both a floppy disk and a hard disk, but not enough memory to be able to read a full disk, you can still use MAGXDESK's copy program to load the disk without having to play "disk-jockey". Click on the *Options* button and enter a hard disk drive for *Temporary drive used*. If there is enough room on the hard disk, the source disk will be read completely and written to the temporary drive. You will be asked to insert the new disk, the temporary file will be written out and then deleted. If there isn't enough room on the temporary drive, this will not be used and you may have to swap the disks several times.

If errors occur during formatting an alert will be opened showing the error and will give you the following choices:

Cancel	Pass on the error message, abort the function
Retry	Repeat the function (e.g. after removing write-protect)
Continue	Ignore the error message and carry on formatting

Retry is the default button.

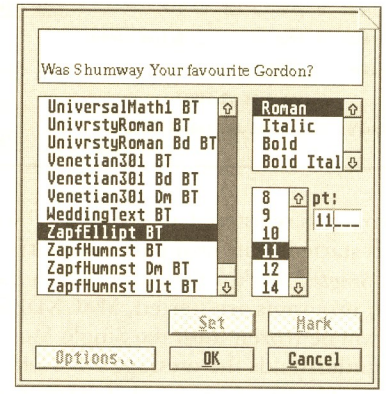
If copying is aborted before it has been completed you should remove the disk from the drive as it will contain undefined data (do not attempt to view the contents). Disk copy can be aborted by pressing both **Shift** keys at the same time.

The "View" Menu

Objects in windows can be displayed either as icons or as text (file, size, date, time). You can also select whether the size, date and time should be displayed and also whether the files (as text) in the window should appear in a single column or not.

View: Font... ^Z

Clicking on this entry opens a dialog in which you can select a font and size for the MAGXDESK text mode. If NVDI is installed, bitmap and vector fonts will be available in addition to the standard system fonts.



Sort modes

MAGXDESK normally sorts files according to their names. Sometimes it can be more convenient to use other methods e.g. if you are looking for the most recent file. Apart from the criteria *Name*, *Date*, *Size* and *Type* the files can be shown *unsorted*. This means that they will be displayed in the exact order in which they appear (physically) on the medium.

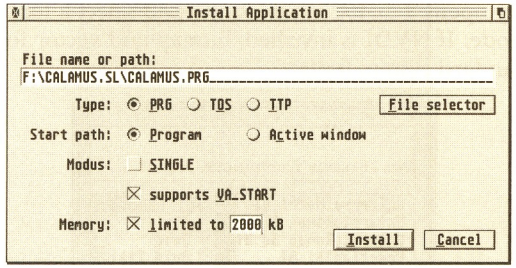
View: Set Mask... #M

This is a file display filter, whereby masks can be set for each window individually.

The "Options" Menu

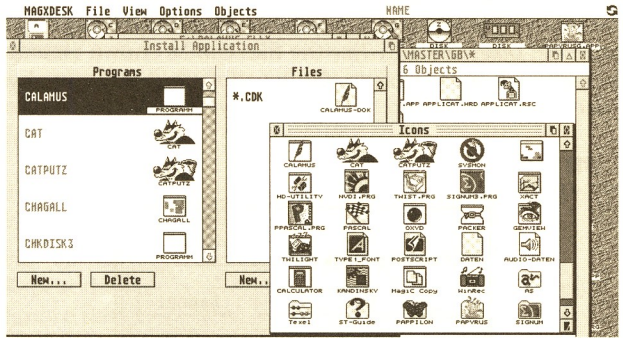
Options: Install Application... #A

This is only active when a single program icon is selected (or a file which has been linked to an application - see below). MAGXDESK starts (in parallel, of course) the desktop database application APPLIKAT.



You can:

- set the program type (programs registered as *TOS* or *TTP* will run in a VT52 window).
- set whether a program is started in its own path (default) or in the path determined by the top window. - set *Single Mode* for programs which have problems with multitasking. When such programs are started, MAGXDESK will be unloaded and any other parallel tasks will be frozen until the Single Mode program terminates.
- set whether a program understands the message *VA_START*. If a program is already in memory and you drag a file onto its icon, MAGXDESK will send the program a *VA_START* message. The existing program will load the file.
- limit a program's appetite for memory (some reserve all the memory they can get).
- create an association between various data types and a program.



Double-clicking a data file will then start the program with the file name as parameter. The two columns show the programs (left) and the associated files (right). Double-clicking a program name opens a dialog for all related settings. Double-clicking on an icon (program or file) opens a window showing all the available icons. Selecting an icon and dragging it onto a program or file icon will replace the original icon with the new one. When you have finished, click on the *OK* button. APPLIKAT saves all the settings, which are then immediately adopted by MAGXDESK.

Options: Assign Icons... #I

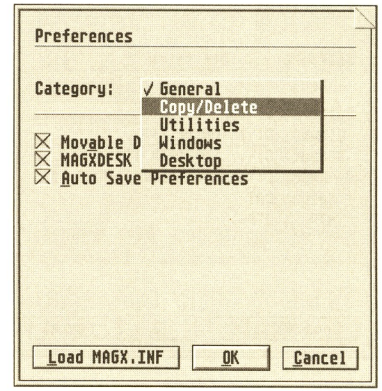
This entry is only available if a single icon is selected. It is used for changing the icons assigned to programs, files, folders, drives and also the printer and trashcan. Drag the required icon onto the icon you want to replace. Please note that assigning extra icons uses up memory. If your computer doesn't have much memory you should keep the number of different icons to a minimum.

Options: Find Drive... #L

This function will find all the drives/partitions and will display the appropriate drive icons. Any unwanted drive icons can be removed by dragging them onto the trashcan.

Options: Preferences... #E

This is where you can set all the parameters which affect the appearance of MAGXDESK. The settings are divided into five different categories. Clicking on the popup lets you switch between the various categories:



Options: General

Contains the following global switches:

- Movable Dialogs: Switches moveable dialogs in MAGXDESK on or off.
- MAGXDESK resident: Normally, MAGXDESK would stay in memory so that programs running in parallel always have access to the MAGXDESK functions. If *MAGXDESK resident* is switched off MAGXDESK will be removed from memory whenever a program starts.

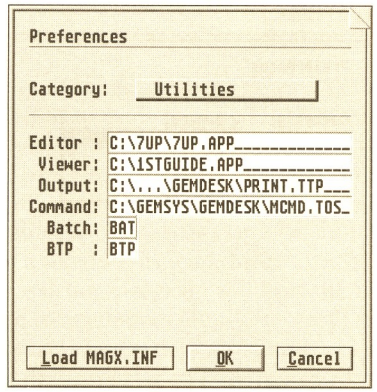
  Note: This behaviour can be toggled on-the-fly by holding down the Alt key when starting a program. The setting in *MAGXDESK resident* will then be read as its opposite.
- Auto Save: Ensures that MAGXDESK saves all its settings before terminating. These include the copy mode, background pattern, the positions of all windows and desktop icons etc. MAGXDESK will then look exactly the same as you left it (just like a real-life desk).

Options: Copy/Delete

This setting affects copy functions under MAGXDESK and Kobold:

- Confirm Copy/Delete: Used to switch the Alert boxes on or off.
- Copy Mode: See chapter "Copying, Moving and Deleting Files"
- Memory Usage: Before any files are copied, MAGXDESK will calculate wheter the target medium has enough space to accommodate them.
- Resident: The Copy program running in parallel with MAGXDESK can be forced to stay in memory (needs about 35 Kb).
- Kobold: The program "Kobold" will be used for all copy or move functions. MAGXDESK checks whether a KOBOLD_2 or KOBOLD_3 is running. If you have changed the name you will have to edit MAGX.INF with:
  #_ENV KOBOLD= *Full path of the KOBOLD program*

Options: Utilities



Parameters concerning useful tools to add to the MAGXDESK functions:

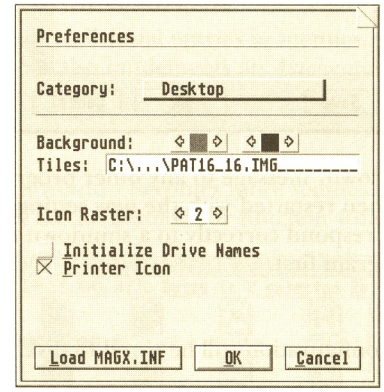
- Editor: The full path of a default text editor which can be started by either double clicking a text file while holding down SHIFT-CTRL or by pressing **Ctrl-E**.
- Viewer: The full path of a program which will be called whenever a file is opened which MAGXDESK can't place (i.e. not executable and the extension is not registered). External programs such as GEMVIEW and 1ST_GUIDE are able to display images and text in various formats. A simple viewer program is included on the MagiC disk (SHOWFILE.TTP).
- Output: The program to be called when an icon is dragged to the MAGXDESK printer icon. If the field is empty, the file will be sent directly to the standard printer port. Printing can be aborted at any time by pressing both **Shift** keys at the same time.
- Command: The full path of a CLI (Command Line Interpreter) e.g. MCMD.TOS, which can be called directly by pressing **Ctrl-B** CLIs are useful for processing batch files (.BAT or .BTP).

Options: Windows

These settings affect the appearance of windows:

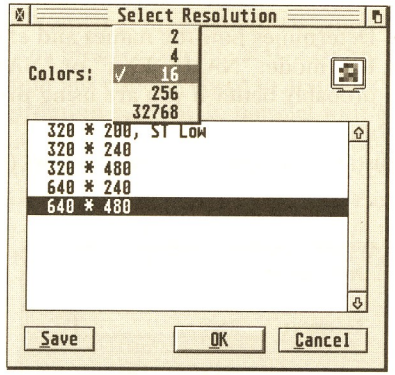
- Show Hidden Files: Files with the "hidden" attribute will be displayed anyway.
- Show TOS Files as 8+3: Determines how the names and extensions of files will appear in text mode: "NAME .EXT" or "NAME.EXT ". The second version is probably better if you are using proportional fonts or long file names.
- Icon Distance: Sets the distance between icons in windows (expressed in pixels)

Options: Desktop



- Background: Standard settings which will be used if a background tile isn't used in the current resolution or if the number of colors in the tile is too large.
- Tiles: The file selector will be opened in which you can select an IMG file to be used as the background tile. MAGXDESK supports 2, 16 an 256 colors and remembers a filename for each color depth. Try to choose IMG files which contain the 16 system colors otherwise your windows and color icons may well look a bit strange!
- Icon Raster: Sets the icons raster on the desktop (expressed in pixels).
- Initialize Drive Names: Causes a search for all hard disks and RAM disks and set their drive icons whenever MAGXDESK is started. If this is off, drive names are only updated when a window is opened.
- Printer Icon: Show printer icon.

Options: Change Resolution
Used for setting resolution and number of colors:



MAGXDESK sends a "shutdown" message to any other programs in memory and then terminates itself. MagiC is then restarted with the new settings. If you are running a program which isn't able to respond correctly to a shutdown message you should save your work and quit the program first.

Options: Save Options... #S
The current MAGXDESK configuration will be saved to disk.

Options: Shutdown
Select this entry before switching off the computer. MAGXDESK terminates and starts the program SHUTDOWN which sends a "shutdown" message to each program in memory. If there are still one or more programs in memory after a short while, SHUTDOWN shows an error message (you would then have to terminate the program manually).

Older programs may not recognize this message, but because some of them don't need to save any data (e.g. the clock supplied with MagiC) - MagiC takes this into account. The file SHUTDOWN.INF can be edited to list any programs which ignore "shutdown" and would otherwise cause an error:

```
ignore CLOCK
```

More recent programs which don't implement Shutdown very well can still be terminated properly:

```
terminate XCONTROL
```

A reaction time (in milliseconds, 0 = unlimited) for programs which support Shutdown can also be set in SHUTDOWN.INF:

```
timeout 10000
```


The "Objects" Menu

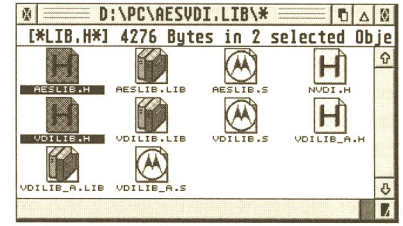
At the top there is a list of MAGXDESK windows, which can be used to switch windows very quickly. Directly below this is a list of Programs which have been assigned hotkeys (**Ctrl-F1** to **Ctrl-F10** are available). Hotkeys are assigned by clicking on *New* and selecting a program via the file selector. Programs currently in the list can be changed or even removed by holding down **Ctrl** while clicking in the list. A file selector is opened in which you can select a program for that particular hotkey; deleting the editable field deletes the hotkey.

Keyboard operations of MAGXDESK

In addition to the hotkeys for individual entries in menues, which you learned about in the last sections, MAGXDESK also implements an *Autolocator* as well as some generally useful shortcuts.

The Autolocator

Finding a particular file in a window becomes more tedious, the more files there are in that directory. MAGXDESK has an autolocator function which accepts a file mask:



Typing a space will remove the last "*". This can be useful for finding objects without extensions.

Entering special characters

Special characters which aren't available directly from the keyboard can be entered via the toggle **Alt-Capslock**. This switches into a system mode where foreign vowels etc. can be entered normally. E becomes É and e becomes é and so on. **Alt-Capslock** toggles back to normal.

Keyboard Operations

Esc	The directory index of the active window is updated.
Undo	The active window will switch directly to the root directory.
Tab	The same as **Ctrl-I** (file/folder/drive information).
Backspace	One directory level upwards ("climb the tree"). If the active window is already in the root directory this key will be ignored.
Insert	The same as clicking on the the active window's sizer.
Home	Moves the scroll-bar to the top.
Clr	Clr (**Shift-Home**) moves the scroll-bar to the bottom.
Cursor up **Cursor down**	Line by line scroll in the active MAGXDESK window.
Shift-Cursor up **Shift-Cursor dn**	Pagewise scroll in the active MAGXDESK window.
Spacebar	Deselects all objects
Alt-Shift a-z	Opens a new window (root directory of the drive)
Ctrl-Shift a-z	Changes the drive of the active window (root directory).
Ctrl-B	Starts the Command Line Interpreter (as set in *Options: Utilities* in the MAGXDESK menu) with no parameters. The same program can be started in different "instances". The working directory will be the same as the active window.
Ctrl-E	Starts the standard editor with no parameters. The working directory will be the same as the currently active window.
Ctrl-W	Cycles through the open windows. **Ctrl-W** may have to be pressed several times before the required window is topped.
Alt	Generally means "in addition": Holding down the Alt key while closing a window via the Closer or Backspace opens a window one directory level higher without closing the original one. Analogously, **Alt**-click on folders opens a new window without closing the original one. Starting a program while holding down the **Alt** key effectively inverts the state of the switch *Options: General: MAGXDESK resident* (see above).
Ctrl	If **Ctrl** is held down while a window is being closed (using the closer or backspace), the window will be closed completely.

SHOWFILE

If you don't have one of the popular Viewers (Gemview, 1st Guide) you can fall back on the MagiC text viewer "SHOWFILE". This is a small TOS program which runs inside a VT52 window. Although it can only display text, it is also able to display *.DOC files (most of the WORDPLUS control characters are converted) so that they become quite readable. The following keys have special meanings in SHOWFILE:

G ("Go")	Switches into running mode which defeats the --More-- facility. Longer texts will be output continuously until paused by **Shift** (see below) or being switched back to normal by the user pressing any other key.
Shift	In running mode, output will be paused until **Shift** is released.
Ctrl-Q, **Ctrl-C**	Quit - back to the desktop.

Spacebar	One page down
D	Half a page down
+	4096 Bytes down
-	4096 Bytes up (even at "--EOF--")
other keys	One line down.

Peculiarities of Icon Operations

The basic icon operations in MAGXDESK are similar to those you will already know from TOS or other alternative desktop programs:

- A single click on an icon selects it and any other selected icons are deselected. More than one icon can selected if **Shift** is held down.
- A set of icons to be moved must all be either desktop icons or window icons i.e. both types cannot be moved at once.
- Holding down the right mouse-button lets you work objects which are not in the active window.
- A click in an unused area of a window will deselect all window icons. Selected icons remain so even if the window is scrolled, moved or sorted differently etc.

An annoying behaviour of other alternative desktops is that if you happen to click on an unused area of the window by accident while selecting several icons (with **Shift**), all icons are deselected. MAGXDESK has been programmed so that all icons remain selected. If you click on a selected icon while holding down **Shift** this will be deselected. The MAGXDESK version of the GEM "rubber band" works the same i.e. all icons crossing the rubber-band area will have their selection-state inverted.

Sending Parameters to Programs with MAGXDESK

In addition to the usual *drag & drop* method of sending file names to a program MAGXDESK also allows files from different directories to be sent. Typical Example: You want to compare two files from different directories using a program which takes the two file names as arguments. This can be achieved by selecting the two files with **Shift**-click and, keeping **Shift** pressed, double-clicking the program icon. If you proceed as above but also hold down the **Ctrl** key while starting the program, all selected icons (from all windows and from the desktop) will be sent as parameters but will be diplayed in the parameter list first so that the list can be edited if necessary.

If you want to start the standard editor (*Options: Preferences: Categorie Utilities*) with only one file as parameter, this can be achieved by double-clicking the file icon whilst holding down **Ctrl**. If you want to edit more than one file from different windows, any one of the file icons can be doubleclicked whilst holding down **Shift-Ctrl**.

By the way, MAGXDESK prevents a program already in memory from being loaded again and sends a message (*VA_START*) to the existing program. This message tells the program that it should load the new files in the parameter list (in addition to any files already being edited). Some older editors do not understand this message - you are forced to load files from within the editor in the normal fashion.

The VT52 Menu Structure

In a multitasking environment, TOS and TTP programs must be routed to windows so that they will run in parallel without hogging the whole screen. This routing is handled by VT52. The VT52 menu bar consists of five dropdown menus. The individual entries can be selected either with the mouse or via hotkeys:

VT52: About VT52...
Displays copyright information and the VT52 version number.

The "File" Menu

File: Open... #O
TOS and TTP programs are automatically redirected into VT52 windows if they are started via MAGXDESK or an alternative desktop which has been adapted for use with MagiC. If your desktop doesn't support MagiC fully or if you want to start multiple instances of a TOS/TTP program, you can load the program(s) with this function. Note that multiple instances of the command line interpreter can be loaded directly by pressing **CTRL-B** in MAGXDESK.

File: Close... #U
Terminates the program and closes the VT52 window.

File: Quit #Q
This function terminates all TOS programs (if possible), closes their windows and removes VT52 from the system.

Note: If you are running programs which divert system vectors but don't support the XBRA process, VT52 might not be removeable (you will get an error message to that effect). In such cases VT52 simply remains in memory.

Copy & Paste

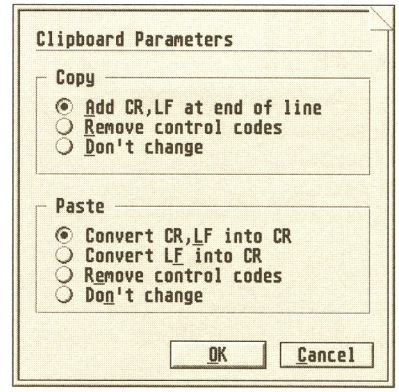
Marking Text (Copy)
The standard GEM method of selection (select with the mouse, save to the clipboard via "Copy" is not very suitable for text in VT52 windows. Blocks are marked in VT52 by holding down the left mouse button and "wiping" over the text. The mark is completed and the text is copied automatically to the clipboard as soon as the mouse button is released.

Edit: Paste #V
Inserts the contents of the GEM clipboard data to the current cursor position.

Window: Cycle Windows #W
Activates the next VT52 window (if there are more than one).

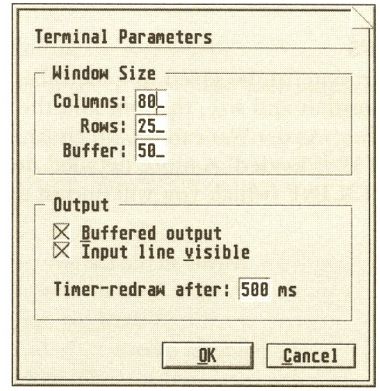
The "Options" Menu

Options: Clipboard... #C
This opens a dialog box used for setting the way line delimiters and control codes are handled during copy and paste.



Such conversion can be very useful if you want to export data to other systems e.g. Unix uses a single LF (linefeed) as delimiter. Also useful if you are running certain GEM programs (e.g. editors which don't interpret control codes).

Options: Terminal... #T
Selecting this entry opens a dialog box in which several parameters concerning the terminal can be set.



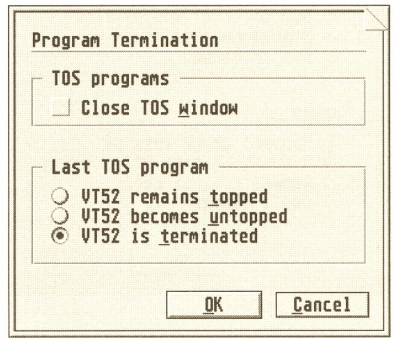
The upper box is used to set the size of the terminal window in characters (*Columns* and *Rows*) and the number of lines of output which will be buffered. This buffering is useful

if the output of the program is longer (in lines) than the height of the terminal - the text can be scrolled back into view.

If *Buffered Output* is switched on, the TOS program will carry on running even if its output is blocked (e.g. by another programs output and a modal dialog box). The output is written to a buffer and will be displayed as soon as the screen is free again.

Input line Visible ensures that input is always scrolled into view. *Timer Redraw* is used to set the interval between attempts to to update the terminal window (500 ms is usually about right).

Options: Program Termination... #P

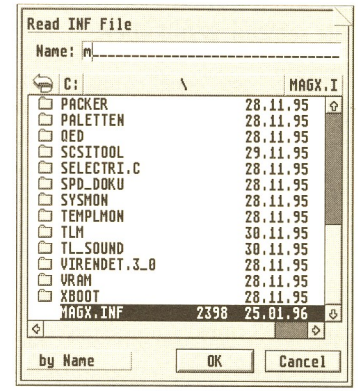


This regulates how VT52 behaves after all TOS/TTP programs are terminated and whether the windows belonging to terminated programs should be closed immediately.

Options: Font... #Z
This opens a dialog used for selecting the font and point size for the text in all terminal windows. Displays a list of all non-proportional fonts.

Options: Save Parameters... #S
The current VT52 configuration can be saved to a file called VT52.INF. Parameters included are the window position and size, the font and the paths of all currently active TOS/TTP programs. In other words: You can set which programs should be started automatically whenever VT52 is loaded! A more detailed description of VT52.INF can be found in the file VT52_EX.INF (which you will find in the UTILITY folder).

The File Selector



The MagiC file selector is a completely new development.The following extra functions have been implemented:

- The file selector also has an autolocator function like MAGXDESK. Typing in a file name causes the selector to find the first match.
- Folders can be opened via double-click (like in the desktop).
- Folders are immediately recognizeable - they are marked with a symbol.
- A double click on the Closer switches directly to the root directory.
- Multiple file masks e.g. "*.DOC,*.BAK" or "*.PRG,*.APP,*.TOS" etc.
- Incomplete paths are expanded. Invalid paths are ignored (e.g. a folder may not exist after you have after changed disks) - it simply defaults to the root directory.
- You can switch to "*.*" via popup as well as other file masks.
- Any file name entered in the field is retained so that it can apply in other directories.
- The sort mode can be changed.
- The date stamp and size of files is displayed.
- The dialogbox is moveable if there is enough free memory.

You can select files either with the mouse or with one of the following key combinations:

Cursor up	Selects the one above
Cursor down	Selects the one below
Ctrl-Cursor up	Moves the scrollbar up
Ctrl-Cursor down	Moves the scrollbar down
Alt-A	Change to drive A:
... **Alt-Z**	Change to drive Z:
Alt-Esc	Reread after media change
Ctrl-D	Unselect all
Ctrl-H	Go to parent folder
Return	*OK* if a file is selected. Otherwise opens folders.
Undo	Cancel

There are also some special functions in programs which support MagiC:

- The file selector can run as a window (non-modal dialog) so that you have access to other programs while the file selector is still open.
- Path history local to the program
- Apart from typing in a file name or mask, the file description can be selected from a popup list.
- Multiple selection

Dialogs and Alerts

You may have noticed that the dialog and alert boxes in MAGXDESK and VT52 are a little different from the standard TOS ones.

Dialog boxes

The most obvious difference is the square in the top righthand corner (called a "dog-ear") which is used for moving the box around the desktop. Some buttons contain underlined characters, radiobuttons are round (as usual on a Mac) and there are also checkboxes (toggles). Dialog boxes can be moved in two ways:

- Click the left mouse-button on the dog-ear and hold it down. The arrow turns into a "flat hand" with which you can then move the dialog. The dialog will be placed wherever you release the mouse-button.
- Click and hold the right mouse-button. Then click and hold the left mouse-button anywhere within the dialog box - it will disappear and only the outline will remain visible. Move the dialog by dragging it to a new position and then release both buttons.

Underlined characters within dialog boxes signify that this character is the hotkey for that element - it can be activated from the keyboard by holding down the **Alt** key before pressing the respective character key. In order to make the operation of dialog boxes even more comfortable we have extended the system functions. The following additions will only apply if the program uses system functions for its dialog boxes:

left mouse button	Position cursor exactly (even within editable fields)
Shift-Cursor up	Cursor to the last editable field
Shift-Cursor down	Cursor to the first editable field
Shift-Cursor left	Cursor to the start of the editable field
Ctrl-Cursor left	Cursor to the previous word or beginning of line
Shift-Cursor right	Cursor to the end of the editable field
Ctrl-Cursor right	Cursor to the next word or end of line
Clr/Home	Same as Shift cursor left
Shift-Clr/Home	Same as Escape
Ctrl-Delete	Delete to end of line
Insert	Insert mode
Shift-Insert	Overwrite mode
Ctrl-C	Copy (line)

Ctrl-X	Cut (line)
Ctrl-V	Paste (at cursor position)
Undo	Button "Cancel", "Abort" etc.
Help	Button "Help"
Ctrl-Q	Button "Quit", "Exit" etc.

Use of the clipboard functions (cut/copy/paste) lets you copy data from one editable field to another (e.g. from a file selector into a dialog box). Subsequent insertion using **Ctrl-V** is the same as if the data had been written in "by hand".

Unfortunately, there are an increasing number of programs on the market which bypass GEM and implement their own dialog routines. Many or all of the additions above may not work within such programs. Both MAGXDESK and VT52 make exclusive use of system routines. This means that many programs can be improved (e.g. adding hotkeys, round radio buttons) simply by editing their resources!

Alertboxes

Alert boxes in MagiC are usually movable. However, if there isn't enough memory available to support this feature, the dog-ear will be missing and the alert cannot be moved. If (annoyingly) an alert box appears when your mouse pointer isn't visible you can still close the alert from the keyboard. In addition to **Return** for the default button and **Undo** or **Ctrl-Q** for the "Cancel" button, the keys **F1**, **F2** and **F3** will activate the left, middle and right exit buttons respectively. We have also added more descriptive text.

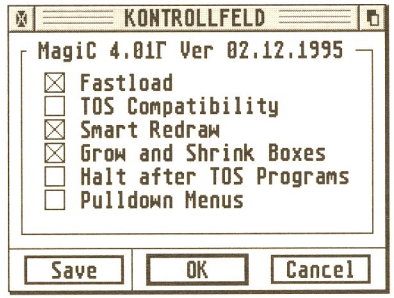
Configuring MagiC

The CPX Modules

The folder MAGX\EXTRAS on the original disk contains the two CPX modules MAGXCONF.CPX and TSLICE.CPX for use with Atari's variable control panel XCONTROL.ACC. These should be copied to the CPX folder in your boot partition. Note that some older versions of XCONTROL will not work properly together with multitasking systems - use only XCONTROL version 1.31 or higher.

MAGXCONF

This module lets you set a number of default values for MagiC. If you don't have XCONTROL (ask your Atari dealer!) you will have to use the accessory MAGXCONF.ACC instead.



The MAGXCONF switches have the following functions:

Fastload

Switching this on will increase the speed at which floppy disks are read. Fastload should be left on except if you are having difficulty with read-errors. The status of this switch is harmless anyway because it only affects disk-reads and not writes.

TOS Compatibility

As several programs can run simultaneously under MagiC, strict data security measures have to be taken because a single file would otherwise be accessible for write operations to more than one program at the same time. Unfortunately, there are still programs in circulation which make erroneous system calls, and these can cause multitasking systems no end of confusion. The switch *TOS Compatibility* allows the user to turn off the MagiC security measures so that such faulty programs will run. Needless to say that this switch should only be turned on when absolutely necessary, and then only for *short* periods!

Smart Redraw

This switches into a mode in which the screen will be redrawn at a much faster rate. To get the feel of this setting switch *Smart Redraw* off, change to text-mode by ticking *View: as Text* in the MAGXDESK menu bar and finally enlarge a MAGXDESK window. If one of your programs tends to forget to redraw parts of the screen (because it doesn't get on with Smart Redraw) you should turn this off.

Grow and Shrink Boxes

Switching this off deactivates the implosion/explosion effect seen when opening and closing windows. Used to speed up display.

Floppy Background DMA

MagiC is able to read, write and format floppy disks in the background. This means that you can carry on with other tasks at the same time. This switch activates or deactivates floppy background DMA. Note that ST and Falcon 030 computers need a special hard disk driver with this capability (*HDDRIVER*). Contact *System Solutions* for further informations.

Preemptive Multitasking

This term has only been mentioned in passing at the beginning of the manual and requires further explanation before moving on to the next configuration module. The average computer contains only one central processor, so programs don't really run simultaneously. The tasks are simply switched so quickly that they *seem* to be simultaneous. The main difference between various multitasking concepts lies in the conditions which govern this switching (called the "task switch").

The GEM in Atari's ROM as well as Windows for Intel-PCs or System 7 for the Apple Macintosh only allow a task to be switched when the program currently running makes a system call. This behaviour is called "cooperative multitasking". If the current program doesn't make a system call for a comparatively long time, the other programs will not get a word in - so the whole system appears to stumble along e.g. reaction to mouse and keyboard input is very "clammy".

MagiC as well as UNIX, OS/2 and Windows NT use an additional "timeslice" method for switching tasks: Programs are interrupted at regular intervals and switched so that one program doesn't reserve too much processor time at the expense of all the others. This task switch behaviour is called *preemptive* multitasking. Unlike cooperative multitasking, this method requires a high degree of task-management which can lead to loss of speed if it is not implemented well. MagiC implements preemptive multitasking well!

A common misconception is that multitasking systems use up more processor time dealing with task management than they give to programs, even if there is only one program running. If a programmer has compile times which are twice as long under a multitasking system than in singletasking, even a megabyte cache is not going to stop him from asking whether multitasking is worth the loss of processor time. Luckily, this loss due to MagiC is far below one percent! Misconception exposed...

Sounds overcomplicated? Don't worry, you don't have to adjust very much to MagiC. Except for a few extra parameters, operation under MagiC is comparable to TOS in terms of complexity. Under "Vanilla" TOS, you are forced to wait until the computer has finished a complicated task (e.g. compiling huge sources, raytracing etc.) - now you

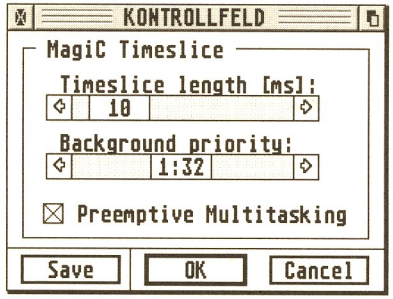
can get on with other work (e.g. writing a letter) while the tedious task is still running in the background. This is especially true of TOS programs as their outputs are redirected into windows.

Unlike most solutions in the multitasking world, MagiC does not use static priority control, which allocates more processor time for certain programs than for others. The MagiC method involves giving preferable treatment to the program the user is currently sending messages to. All other programs (e.g. whose windows are not active) will be treated as being not quite as important.

This is as simple as it sounds: Even if you are an ace on the keyboard, you will be spending a comparatively long time looking at the screen and not actually writing anything. MagiC makes good use of this time by giving it to any programs waiting in the background - you won't notice any delays and may be surprised when the fractal (for instance) behind your text window is finished.

Some degree of control over the distribution of processor time may however become necessary. MagiC has two methods which affect this, described next.

TSLICE.CPX



This CPX module has two sliders and a switch. One slider is used to control the size of timeslices in milliseconds. The other one regulates the priority-ratio between background and foreground processes. A value of 1:1 would be a high priority and 1:64 a low one.

Values of 5ms to 10ms for timeslices and 1:20 to 1:32 for background priority are good in practice. A timeslice setting of 5ms causes a small loss of speed on 8MHz STs (the system uses too much time for task switching), and therefore a setting of 10ms is recommended here. Faster computers will have no problem with 5ms timeslices. The value of background priority has a much stronger influence upon the behaviour of your computer. Try not to set this value too low, otherwise the background programs will slow down the foreground one noticeably (an Atari TT however can handle a value of 1:10).

Switching *Preemptive Multitasking* off will do exactly that - MagiC will then work with cooperative multitasking. This should only be switched off if a program is critical.

Preemptive multitasking really does allow programs to run simultaneously without blocking each other. Even if a dialog box is open in the foreground program, the background programs (e.g. a packer in a TOS window) will still be given processor time. The dialog box would halt background programs if cooperative multitasking were used!

The other method of controlling the distribution of processor time can be seen in the file MAGX.INF. The line #_TSL sets the length of timeslices and also background and foreground priority.

TIP: MagiC processes MAGX.INF first and then starts accessories - including XCONTROL.ACC with the modules MAGXCONF.CPX and TSLICE.CPX if they are installed. If you boot an accessory which has problems with preemptive multitasking (e.g. the accessory loader "Chameleon"), you can turn off the preemptive multitasking in MAGX.INF and turn it on afterwards in the control panel using the MagiC timeslice module "TSLICE.CPX".

Manual Configuration in MAGX.INF

A file named MAGX.INF has been written to the root directory of your boot drive during installation. This file contains the desktop information you have saved by selecting *Options: Save Options* from the menu bar, as well as other settings which cannot be changed directly within the MAGXDESK desktop. Advanced users can load MAGX.INF into a text editor and change this information to suit their hardware and software.

Listed below are all the three-letter keywords in the same order as they should appear in MAGX.INF. All lines which are relevant for MagiC begin with a hash and an underscore. The keyword section is delimited with the line `#_CTR`. After this is the desktop section (it is undocumented, and should *not* be edited unless you know exactly what you are doing!).

Note: The parameters shown in curly braces below should not be written in this way, it is merely a convention used during this description. As a rule, any line except `#_CTR` and the desktop information can be deleted - MagiC assumes default values. Comments in MAGX.INF are preceded with a semicolon.

```
#_MAG {version}
```
Example: `#_MAG MAG!X V4.00`

This is the MagiC version number written by the installation program.

```
#_ENV {environment}
```
Example:
```
#_ENV PATH=C:\BIN\;A:\
#_ENV DESKFMT=C:\GEMSYS\GEMDESK\MGFORMAT.PRG
```

This keyword assigns environment variables. No comments are allowed in #_ENV lines because all characters in the line will be read by MagiC. This is necessary to allow semicolons as well as spaces to be used as path delimiters. The environment sent by BIOS will be used by AES only when MAGX.INF contains no #_ENV lines.

```
#_BUF {bufsize}
```
Example: `#_BUF 4192 ; Size of the shell buffer in decimal`

This line sets the size of the shell buffer where desktop data is held. This has to be variable to support any shell program - its value should be between 4192 and 65535 bytes. The size of this buffer (unsigned int) can be inquired within a program by a call to shel_get() with zero length as parameter. If the buffer is too small the shell will not be able to save all its data.

```
#_DEV {vdidevice modecode}
```
Example: `#_DEV 4 0 ; VDI screen driver, 4 = ST high`

This line is read at system start and sets which VDI driver should be opened. If opening the VDI workstation returns an error code, then VDI will be restarted with device number 1 (current resolution). Standard resolutions are:

2 = ST low
3 = ST mid
4 = ST high
5 = Falcon resolutions
6 = TT mid
8 = TT high
9 = TT low

Depending upon the hardware (e.g. graphic card with NVDI/ET 4000) other useable VDI drivers can be found in ASSIGN.SYS.

```
#_TXT {bigfontsize smallfontsize fontid}
```
Example: `#_TXT 0 0 1 ; Text heights and font ID. 0 = default`

The font family and character height used by AES can be set using this keyword. Text heights `{bigfontsize}` and `{smallfontsize}` are set by AES using vst_height(). For the GEM system fonts this would mean:

Text height 4 = 6x6 font
Text height 6 = 8x8 font
Text height 13 = 8x16 font
Text height 26 = 16x32 font

If zero is entered then the standard font heights will be used. `{fontid}` sets the font family, whereby the system font has ID 1. Using this keyword, you can even use the 8x8 font in monochrome - but beware: programs which are not written well may cause faulty display or even crash. Note also that only *fixed-size* fonts are supported at present.

```
#_WND {numwindows}
```
Example: `#_WND 32`

This keyword sets the maximum number of windows. Valid values are between 0 and 64, but 16 should be the minimum for practical reasons. The default value of WND is 16.


```
#_FLG {bitvector}
```
Example: `#_FLG 0 ; Bit 0 = 1: Rotator left`

This sets various properties of the MagiC AES: - the position of the MagiC rotation symbol ("logo") in the menu bar. - 3D effects (minimum 16 colors) on/off - Backdrop function via backdrop button or via the title bar. The individual bits have the following meanings:

Bit 0: 0 = logo left, 1 = logo right
Bit 1: 0 = 3D on, 1 = 3D of
Bit 2: 0 = Backdrop via button, 1 = backdrop via title bar.
Bit 3: 0 = 3D window title on, 1 = off
Bit 4: 0 = 3D title text on, 1 = off

```
#_TSL {slicelen bkgrprio}
```
Example: `#_TSL 1 32`

This keyword controls the distribution of processor time between background and foreground processes. `{slicelen}` sets the length of timeslices in 5ms steps and `{bkgrprio}` the priority ratio between background and foreground. A value of 32 signifies a priority of 1:32 for background processes. If #_TSL is missing from MAGX.INF this deactivates preemptive multitasking.

```
#_SCP {scrappath}
```
Example: `#_SCP C:\CLIPBRD\ ; Clipboard path`

This keyword defines a path which is used in GEM applications for the Cut/Copy/Paste functions to and from the clipboard. This should always be set to an existing path as there is no default.

```
#_ACC {accpath}
```
Example: `#_ACC C:\AUTO\ACCS\ ; Path for ACCs`

This defines the directory where accessories will be loaded. If this line is missing, accessories will be assumed to be in the current directory of your boot drive (usually the root).

```
#_APP {appath}
```
Example: `#_APP C:\AUTO\APPS\ ; Path for parallel APPs`

All applications in `{appath}` will be started before the desktop, making them immediately available (running simultaneously). This is a good substitute for the old-fashioned concept of accessories because programs can be loaded and removed from memory at will. As is the case for all programs in a multitasking environment, you should only run programs with moderate appetites. A program which reserves all memory for itself should only be loaded if you have already limited memory supply. All programs in `{appath}` will be started in graphic mode.

`#_AUT {autopath}`
Example: `#_AUT C:\LOGIN.PRG`

An application registered here will be started automatically. This differs from the #_APP programs (see above) in that the program cannot be started in parallel, but is a replacement for the desktop or default shell. The desktop/default shell will be started only after the application has terminated and no successor has been found via shell_write(). This can be used for "login" programs! The application in `{autopath}` is always started in graphic mode.

`#_TRM {terminalpath}`
Example: `#_TRM C:\GEMSYS\GEMDESK\VT52.PRG`

TRM defines the program which will be used to redirect TOS and TTP programs. If the program is not already in memory when the TOS program is started then MagiC will attempt to load it from {terminalpath}. If you want to load VT52 automatically (e.g. together with a Command Line Interpreter) then you should copy VT52 into the AUTO\APPS\ folder and write the full path in #_TRM!

`#_SHL {shellpath}`
Example: `#_SHL C:\EASE\EASE.PRG ; Shell`

An alternative shell (instead of MAGXDESK) can be registered here. This program will be started after those registered with #_AUT. If #_SHL is missing then MAGXDESK will be started (if it exists). Make sure that the shell program adheres to GEM 2.x conventions for shells. GEMINI 2 and EASE 3.x are suitable and they actively support MagiC. The application in `{shellpath}` is always started in graphic mode.

The MagiC keyword list is delimited by the line #_CTR. Any data after this (for control panel and desktop) will be read directly into the shell buffer. The lines for the desktop begin 128 bytes behind #a and begin with #_DSK (128 bytes is an old TOS convention). The important point here is that line #d is padded out so that the total size of control panel data is exactly 128 bytes. The example below ends with a semicolon because some editors automatically remove any excess spaces at the end of lines!

```
#_CTR ; Start of control panel data
#a000000
#b001001
#c777000700060007005520050555222077055707505550770311302
#d                                                ;
```


Tuning

WBDAEMON - Write Back Cache

WBDAEMON is the name of a particularly effective method of speeding up access to hard disks and floppy disks, especially during write operations. The principle is based upon the (e.g. Unix) method of delaying write operations until the processor is not being used much. Further changes to data doesn't have to written to disk but can be read directly from the (much faster) volatile memory in the computer. Only if no changes are being made for a certain time will the disk be updated (in one go).
Installation: Copy the program WBDAEMON ("Write Back Demon") into the AUTO-APPS folder and restart the system.

Write Back Cache in the Atari

We recommend reserving plenty of memory for the cache (even for floppy drives). That doesn't mean that you have to reserve 2 Megabyte (like in some computers we know!) - between 5 and 20 sectors should suffice for the FAT. The smaller the files being copied or deleted, the more adavantage you will have from using WBDAEMON. Make sure that the cache has been written completely to the floppy disk or other removeable medium before changing the disk. You should wait until the light belonging to the drive turns offf - you probably do this anyway. Furthermore, you shouldn't simply switch off the computer when you want to end a session. The safest method of terminating the system is via the Options menu in MAGXDESK.
The risk of losing data is extremely low because the cache is always written to the medium within two seconds after the last access. You can even quit WBDAEMON via the program manager (**Ctrl-Alt-Esc**) without risk.

Write Back Cache in the Mac

MacOS has its own write back cache which also benefits MagiCMac when it accesses the Mac drives. If you switch off "Immediate Save" in the MagiCMac systemparameters, MagiCMac will make use of the MacOS cache. In this case you must use WBDAEMON, otherwise any changes to files will be lost if MagiCMac happens to crash. If "Immediate Save" is switched on (for safety's sake), write operations will be much slower. Use of WBDAEMON is then unnecessary.

Appendix

The following two chapters are not aimed at the average user, but should be of interest to advanced users looking for further insight into the system.

Drive U

You may have noticed the drive "U" in the MagiC file selector and Desktop. This is not really a drive like A or C but is a "pseudo drive" with several special features explained below.
Open drive U:, You will see the following directories/files:

- The DEV directory
  This directory contains pseudo files which represent devices and interfaces. The list of files will differ, depending upon the hardware in your system (TT/Falcon or ST). Additional device drivers can be installed here to ensure standard access to interfaces and external devices. Installation of such drivers is described in the MagiC Developers Guide. If, for instance, you save a file to U:\DEV\PRN, this will be sent to the parallel printer port.
- The PIPE directory
  This directory contains objects which can be used for transferring data between programs. The directory is also used for "drag and drop". Please read the MagiC or MiNT documentation for developers if you need more detailed information on this subject.
- The PROC directory
  This contains a list of all the (running) programs together with their start times and use of memory. Deleting a "file" will terminate the program (brutally). Please aviod using this method.
- The SHM directory
  Management of shared memory. See the MiNT documents for more info.
- Each drive recognized by the system is represented by a directory or a 0-byte file. The directories can be opened and you can work with them just like drives in the desktop. The path "u:\c\bin" is practically another way of writing "c:\bin". Invalid drives (e.g. no medium in the drive) appear as empty files. These are symbolic links to the root directories of all drives.

The Program Manager

All important functions concerning application management can be called very easily by opening this popup. Further settings requiring sound knowledge of the system (e.g. for fault finding) are also available here, hidden from the average user. Whenever a program makes an AES call or is waiting for an event, the key combination **Ctrl-Alt-Esc** will open the program manager.

Unlike the popup menu, this is also possible from within modal dialogs (e.g. alerts). Caution: The program manager should not be called from within the text editor "Tempus" as this program hooks itself into too any critical interrupts and can cause the system to crash. All registered applications are displayed as a line containing the following information:

- Application number (ap_id): This is the number retrieved by appl_init(), to be found in global[2]. Unlike TOS, not all numbers have to be present because applications are created and deleted dynamically. The main application always has the ap_id number 0 under MagiC and all TOS versions, while the screen manager has the number 1. Unlike under TOS, programs running under MagiC can have IDs other than 0.
- Application Name: This is the name under which the program has been started. It is used for finding an ap_id via appl_find(). The name is always written in capitals in MagiC.
- Application Status: "running" means that the program is currently active. "ready" is a program which is not waiting for input and will continue shortly. "waiting" applications are those which are waiting for input from the user or other events. The actual events waited for are shown as two letter abbreviations:

kb	Keyboard
bt	Mouse button
m1	First mouse-rectangle
m2	Second mouse-rectangle
ms	Message
ti	Timer
se	Semaphore (wind_update)

  "frozen" programs have been stopped - either by another application running in single mode or by use of the "F" key in the program manager. "zombie" programs are waiting to terminate! They cannot be manipulated in any way and will be removed from memory at the next opportunity.
- Response to events: MENU means that the respective application is the one whose menu is currently active (and will thus respond to menu messages).
  MOUSE means that mouse button messages and mouse movement is sent to this application. Both TOS and MagiC will only let a single application respond to mouse events. The respondent is either the program to which the topped window belongs or the program which has reserved keyboard and mouse control by way of a GEM system call (BEG_MCTRL). If you click on the desktop background and the corresponding application is waiting for mouse events, it will receive them.

However, mouse control still belongs to the topped window, which is why the application to which the desktop belongs might have to call BEG_MCTRL (e.g. to move icons).

KBD is similar to MOUSE - all keyboard events are sent to the application whose window is topped. SCR is the screen semaphore, meaning that the program has reserved the screen via [wind_updat()], locking all other output.

- Memory used:
  The amount of memory used by application number 0. If a program has been loaded from "within" another, this value is the memory used by the child application.

- For Programmers: The program manager is useful for finding the cause of "deadlocks". A classic example is the following:

  0 PROGRAMM waiting kb bt SCR
  1 SCRENMGR waiting se MOUSE KBD

  PROGRAMM waits for keyboard and mouse events which have been sent to the screen manager (SCRENMGR) instead. SCRENMGR is waiting for the screen to be released (it was locked by PROGRAMM).

Hitting **Return** after selecting a different program is the same as switching programs using the popup menu.

The key "C"can be used to hand over both keyboard and mouse control to an application, thus releasing the deadlock. The culprit is always a missing call to "wind_update(BEG_MCTRL)" in an application.

The keys "F" and "U" freeze and thaw applications respectively. In effect, this is the same as starting programs in Single Mode. The program is halted and cannot be started until it is thawed with "U". Programs which hook into any system vectors cannot be removed properly. The text editor "Tempus", for instance, doesn't take to being frozen at all (while cleanly written GEM programs don't cause any trouble). A frozen accessory doesn't respond - its place in the menu is greyed.

Removing normal programs can also prove critical because the application would be aborted without its "consent". Quitting "dirty" programs is often only possible because MagiC goes to such length to clean up afterwards! However, programs which circumvent GEM too much (like "Tempus") cannot be terminated. The only sure medicine against these problems is trial and error.

If a dialog or menu is open when you attempt to start the program manager via **Ctrl-Alt-Esc**, and memory is in short supply, the contents of the screen may become messy. This is only temporary - quitting the dialog or menu will cause the screen to be redrawn.