MAE 1.0: Technical Frequently Asked Questions (6/95)

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TOPIC -----

This article is the MAE 1.0 Technical Frequently Asked Questions (FAQ) for users of Macintosh Application Environment (MAE).

DISCUSSION -----

What's New
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1. Various updates to reflect changes in the patch "a" release.

2. How to increased shared memory.

3. How to remove MAE from your system.

4. How to suspend MAE.

5. Ross HyperSparc incompatibility.

6. ISO 9660 CD incompatibility.

7. Removable volume compatibility.

8. Maximum number of environment variables.

9. How to use command line arguments.

10. How to use X Resources to configure MAE at startup.

11. Setting the DISPLAY environment variable (and related issues).

12. How to change the font size used for desktop filenames.

13. Description of the APPLEPATH environment variable.

MAE FAQ's

Question: What information is contained in each of the three FAQ documents?

Answer: The Product FAQ contains general information about the product and licensing. This FAQ answers questions about support, pricing and product specifications.

The Technical FAQ contains information of about product performance, tuning, workarounds and other technical tips.

The Trial FAQ contains information specific to the MAE Trial.

Installation and Startup

Question: After installing and running MAE for the first time, a window stating "Rebuilding the Desktop" appears. This can last for a very long time. What should I do?

Answer: Building a desktop over a large file system or one with NFS mount points generally taks a long time and can use up a fair amount of disk space. The directories that MAE scans, in order, are:

1. System Folder

2. appledir

3. Home directory   ***NOTE: this scan removed in patch "a"***

4. directory specified by APPLEPATH environment variable

It is best to allow the rebuild of the System Folder and appledir directories (which should be short) but it is not necessary to rebuild the HOME or APPLEPATH directories, so you can go ahead and cancel those rebuilds at any time by clicking the "Stop" button.

Question: What is the APPLEPATH environment variable used for?

Answer: The APPLEPATH environment variable is used to force MAE to scan a particular directory during a desktop rebuild (which is done whenever a System Folder is created or when MAE is started with the "-rebuild" command line argument). This is useful when a number of Macintosh applications are located in a directory shared by several MAE users. Forcing MAE to scan this application directory causes the appropriate application to launch whenever one of its documents are double-clicked.

Question: Does MAE pose a limit on how many UNIX environment variables can be

defined at startup?

Answer: No. However, the total size of all defined environment variables should not exceed 35K (35,000 characters).

Question: MAE complains that it cannot connect to my X-Window display. What should I do?

Answer: If you are running MAE on the same workstation that you are running the X-Server, you can set your DISPLAY environment variable to be "local:0" and it should work. If you are running MAE on a different machine than the X-Server, you should set your DISPLAY environment variable to be the machine name the X-Server is running on with a ":0" appended, such as "my_machine:0". If MAE still does not open the display, run the program "xhost" on the X-Server machine. For example, if MAE is running on a workstation named "my_workstation", and the X-Server is on a machine named "my_terminal", then on my_terminal run the command "xhost +my_workstation", which lets MAE on my_workstation open a display on my_terminal.

Note that the command line argument "-display <dpy>" overrides the DISPLAY environment variable.

Question: When I first start up MAE 1.0 after installing, I get the splash screen, the 'Welcome to Macintosh' window, and then a system error. What's wrong?

Answer: There is an incompatibility between MAE 1.0 (commercial and trial versions) and the number of groups associated with a user under Solaris and HP-UX.

NOTE: This problem has been fixed in MAE patch "a" and MAE Trial version 1.0a.

The symptom of the problem is a Macintosh "bomb box" alert indicating that a bus error has occurred. This alert shows up just after the "Welcome to Macintosh" dialog displays. The restart button in the dialog is ineffective, and you must manually kill the MAE process to recover.

The cause of this problem is related to the supported number of groups that the user's login ID is affiliated with. Solaris 2.3 supports a maximum of 16 groups and HP-UX 9.x supports a maximum of 20 groups. MAE limits the number of groups to 8. Therefore whenever you attempt to run MAE with more than 8 groups you get the previously described "bomb box".

The workaround to this problem is to avoid running MAE when logged in as a user with more than 8 groups. This can be done by either deleting unneeded group associations from your normal user ID, or creating a new user ID with 8 or less group associations for the purpose of running MAE. A permanent fix for this problem will be available in an upcoming patch release.

You can determine the number of groups defined for a user by entering the command "groups". To change the supplemental group affiliations, edit the

/etc/group file (you must be super-user to do this). See your system administrator (or your system administration manuals) for more information about user IDs and group associations.

Performance

Question: Can MAE be run as an X Application over the network?

Answer: Yes. However, MAE was optimized to run as a local application and be displayed on the local workstation console. While MAE is certainly an X application and can be run remotely, it is graphics intensive and may run significantly slower over the network. MAE performance is highly dependent on the X server, X client, and network bandwidth/traffic.

Question: Can I increase the performance of MAE when using a remote X-Client over the network?

Answer: Yes. Changing the Monitors Control Panel to "Black and White" reduces the amount data sent over the network to the X-Client. This can make a significant difference when running remotely, especially with graphics intensive applications.

Question: Will my performance be affected if my HOME directory is located on a remote volume.

Answer: Absolutely. The "System Folder" which contains the Macintosh toolbox and operating system is built in your HOME directory when you start MAE for the first time. Performance is affected since the code in this folder must be executed to run MAE and it runs more slowly when the System Folder is located on a remote volume.

Question: Can I run MAE with my HOME directory physically located on a machine running SunOS 4.1.x and NFS mounted to a Solaris 2.3 workstation running MAE?

Answer: Yes, but be careful with your permissions. Performance may also be significantly affected.

Question: How many licensed users can run MAE from the same shared workstation?

Answer: As stated before, MAE is very graphics intensive and, depending on the applications, network, and X hardware/software used, your performance could be severely affected. For optimum performance, Apple recommends one MAE user per workstation with the console used for display.

Question: Opening a folder sometimes takes a long time. Why is that?

Answer: When MAE opens a folder it must build a list of all files in that

directory. In addition, the file type of each file must be identified ("stat'ed") in order for the proper icon to be displayed in the Finder window. This can take some time if there are hundreds of files in the directory.

A delay may also occur if you have automounter running and there are several mount points within the directory being opened. In this case, when MAE "stats" the mount point, the automounter attempts to mount the filesystem.

Customizing

Question: What are the command line arguments for MAE?

Answer: usage: apple/bin/mae [-argument ...]

Arguments include:

-display <dpy>	Name of the X server to display MAE
.	Example: -display my_xterm:0
-geometry <WxH+X+Y>	Size and location of window
.	Example: -geometry 600x800+200+200
-title <string>	Title for X window
.	Example: -title My_MAE_Window
-sysfol <path>	System Folder path
.	Example: -sysfol "/u/jim/System Folder"
-appledir <path>	Location of the 'apple' directory
.	Example: -appledir /usr/opt/apple
-memory <memorysize>	Macintosh memory size in megabytes
.	(m = megabytes, k = kilobytes)
.	Example: -memory 10m
-maxdepth <bitdepth>	Set maximum frame buffer bit depth
.	(1 bit == monochrome)
.	Example: -maxdepth 8
-installcmap	Force the installation of X colormap
.	(do not depend on window manager)
-iconic	Start MAE iconified
-iconsleep	Start MAE iconified (same as iconic)
-noextensions	Startup MAE with no Extensions/INITs
-rebuild	Rebuild MAE desktop database
-zappram	Clear VPRAM settings

```
-help                   Display command arguments Help screen

-version                Display MAE version number
```

Question: Is there a way to permanently set the MAE command line arguments?

Answer: X resources have been defined for several of the command line arguments (see below). Place the desired X resources and settings into a file named ".Xdefaults" in your HOME directory. When starting MAE, it looks into your .Xdefaults file and sets the options accordingly.

Argument		X Resource
-geometry	==	Mae.geometry
-title	==	Mae.title
-sysfol	==	Mae.systemFolder
-appledir	==	Mae.appleDirectory
-maxdepth	==	Mae.maximumDepth
-installcmap	==	Mae.installColormap
-iconic	==	Mae.iconic
-iconsleep	==	Mae.iconSleep

Sample .Xdefaults file

```
# X Resource          Sample settings
# ----------          ---------------
Mae.geometry:         1200x800
Mae.iconic:           True
Mae.title:            "My MAE Window"
Mae.systemFolder:     "/u/jim/System Folder"
Mae.appleDirectory:   /usr/opt/apple
Mae.maximumDepth:     1
Mae.installColormap:  False
```

Alternately, one could type "xrdb -merge file" where "file" contains the resource settings. The difference is that "xrdb" sets options for all users on the X server, while .Xdefaults only affects one user.

IMPORTANT: Command line arguments override xrdb, which override the equivalent resources in .Xdefaults. To override xrdb, you can either delete the resources from xrdb (in which case .Xdefaults is used) or use the command line equivalents.

Again, a resource in xrdb is used for every user that runs MAE on that X server. .Xdefaults settings are used whenever MAE is started by a particular user on an X server.

Question: How do I increase the usable RAM for MAE applications?

Answer: There are two ways in which to do this. The first is by using the memory control panel (which makes the change permanent) and the second is by specifying

a -memory option on the command line (which lasts until MAE is restarted). For example, the following command starts MAE with a RAM size equal to 10MB

```
$ ~/apple/bin/mae -memory 10
```

26 June 1995
Question: When I start MAE on my SparcStation I get a message saying, "Not enough shared memory, using malloc..." How do I fix this?

Answer: When MAE notices that it is running on your SparcStation's local display, it attempts to enhance graphics performance by communicating with the X server using the "X Shared Memory Extension". For MAE to succeed at this, your Solaris kernel must be configured to support several large shared memory segments. If MAE is unable to obtain the shared memory it requires (based on the size and color depth of the MAE window), it falls back to a less efficient communications scheme based on large malloc'd X image structures.

To ensure that sufficient Solaris kernel resources are available to support efficient execution of MAE, Apple suggests adjusting the file "/etc/system" to include the following:

```
set shmsys:shminfo_shmmax=16777216
set shmsys:shminfo_shmseg=8
```

These shmsys parameters should adequately cover most screen and color depth configurations and take affect after rebooting your system.

IMPORTANT: Talk with your system administrator first before making any changes to this file. While it is unlikely that adjusting these parameters will have adverse effects on other software, Apple Computer does not support or take responsibility for any problems you may encounter.

NOTE: The only reason to make this change to your /etc/system file is if you get the "Not enough shared memory, using malloc..." message mentioned above.

Question: Is there Virtual Memory and if so, how does it work with UNIX?

Answer: MAE "thinks" virtual memory is turned off, however, it is running in a large "malloc'ed" chunk of UNIX memory. So in fact, a 48 Meg session of MAE could be run on a machine with only 16 Meg of RAM and lots of swap space (but note that Apple highly discourages this).

Troubleshooting

Question: I've just installed MAE 1.0 from the CD. When started, MAE opens a window, displays a splash screen, then displays the "Welcome to Macintosh" screen and bombs. What do I do now?

Answer: Follow these steps to help you troubleshoot this and other MAE start problems:

Step 1
Install and run MAE under a user account on the console machine (the root account tries to build a System folder in the root directory -- which may not have enough free disk space). Your HOME directory should be local to the console machine (not via some NFS or other mount point).

Step 2
Make sure that you have plenty of available disk space in your HOME file system (the Installer checks free space for the package install but MAE builds a System Folder in your HOME directory and there should be at least 5 Meg available for it).

Step 3
Make sure there are no NFS (or other) mount points within your HOME directory or in any of its parent directories. The first time MAE starts up, it scans thorough all these directories up to the root, which can trigger the automounter or AFS cells if these mount points are in the path. This can cause long delays or "hanging" situations at startup. Stale NFS mount points also cause these problems.

Step 4
Check UNIX permissions on your HOME directory and the files and directories within the apple directory (this should not be a problem unless you installed or operated as root or some other privileged account). Note: You MUST be able to create the System Folder directory in your HOME directory.

Step 5
Check the workstation RAM and available swap space to ensure there is enough to run MAE (which runs in 16 Meg minimum).

Step 6
If a problem occurs after "Rebuilding the Desktop" begins or if rebuilding takes a long time, cancel the rebuild.

Once you get MAE to successfully run, work back until you discover what caused your problem.

Question: Everything works except I do not seem to be able to access the floppy drive on my Sun workstation. How can I fix this?

Answer: Be certain the permissions on the floppy device file symlinked to /dev/rdiskette are readable and writable by you.

In addition, software products that do not currently support the Solaris Volume Manager conflict with MAE, which uses the Volume Manager. Until software products that are incompatible with the Volume Manager are upgraded to support it, you can work around this conflict by turning the Volume Manager on when using floppies or CDs in MAE and off when using other software. This work-around is only necessary when accessing a Macintosh floppy or CD since MAE does not use the Volume Manager until you try to access a Macintosh disk. Beware, too, that some software disables Volume Manager control at the device level by changing your /etc/vold.conf file, rather than starting or stopping the Volume Manager's

vold process.

Printing

Question: When I cancel printing in MAE, is the job really canceled or is a partial job queued to UNIX?

Answer: If a "Printing Canceled" or some equivalent dialog comes up, then the entire print job is canceled and nothing gets printed. Note that the Command and period (.) keys may need to be held down for a few seconds to ensure this occurs. After the application has completed writing the print job, MAE queues the entire print job to UNIX where it is printed by the UNIX spooler.

Networking

Question: Does MAE 1.0 work with hard mounted NFS filesystems?

Answer: Yes, MAE works with hard mounted NFS filesystems. However, like any application, MAE can hang if an NFS server mounted with the hard mount option goes down. (This problem will be addressed in a future patch.)

Question: Does MAE 1.0 work with NFS automounters?

Answer: Yes, MAE works with NFS automounters. However, as with any application that scans the filesystem, MAE's behavior is dependent on your setup.

For example, if a directory contains a large number of direct mapped automount points, then whenever this directory is opened and scanned (such as when the MAE Finder opens a folder on the desktop to display its contents), the automounter is triggered to mount each of the NFS filesystems in that directory. This can produce a "mount storm" of activity with a corresponding delay dependent on the number of mount points and the time it takes to mount each of them. In addition, if any of the servers are down, then MAE can hang. On the other hand, directories of indirect mapped automount points do not have these problems since the mapped directories are not being specifically referenced.

A related MAE startup delay can occur if your site has configured the automounter to place NFS filesystems on direct mapped mount points within any directory on the path to your home directory (including "/"). The reason for this is that when MAE first runs, it opens and examines each directory along the path from the root to your home directory to gather information that is used to present the Macintosh desktop. For example, if your home is /nfs/sitename/users/joe, MAE tries to open and read "/", "/nfs", "/nfs/sitename", and so on. This behavior can cause MAE to trigger the automounter for all direct mapped automount points listed in any directory along the path to your home (which could take a long time). In addition, as with hard mounted NFS filesystems, MAE may hang if any of those NFS servers is down.

Question: Does MAE 1.0 work with Andrew Filesystems (AFS)?

Answer: AFS is not supported under MAE 1.0. However, MAE can be used on a workstation that is an AFS client if you start MAE 1.0 with $HOME referencing a filesystem that is not in your /afs hierarchy. As with the NFS automounter (see earlier question), when MAE traverses the path to your home directory on startup, any AFS cells found along this path may be contacted (which could produce a very long delay). In addition, MAE may hang if one of the cells in /afs is down.

Support

Question: What about updates of MAE? Since this is a new product, can we expect updates to bug reports to be free?

Answer: Apple is putting together a "free patch" mechanism of incremental fixes at no charge. This will be done on an as needed basis (determined by Apple). Patches will be made available via anonymous ftp on server ftp.support.apple.com and also through the ARCHIVE mechanism of the mail server (send mail to listproc@medraut.apple.com with body text of HELP for more information on obtaining archives).

Compatibility

Question: Does MAE run with the Ross HyperSparc processor upgrade?

Answer: No, this release of MAE does not support Ross HyperSparcs.

Question: Does MAE support the Chinese and Japanese language kits?

Answer: These kits are not supported under MAE release 1.0. But like many applications, however, they may work adequately for your needs.

Question: Is there any way of accessing a Macintosh-formatted hard disk from MAE if I connect it to the SCSI bus on my workstation?

Answer: No. Apple does NOT support HFS format hard disks (only CDs and floppies) in MAE. Further, you may potentially damage your workstation or Macintosh disk if you try this since most workstations use fast differential SCSI2, which is electrically different from single-ended SCSI2 or SCSI1 used by most Macintosh SCSI drives.

Question: What kinds of removable media are compatible with MAE?

Answer: The current release of MAE only supports Macintosh formatted CDs and Macintosh formatted 1.4 MB floppy disks.

Question: Are ISO 9660 formatted CDs compatible with MAE?

Answer: No. MAE cannot mount ISO 9660 format CDs. If these CDs are mounted under UNIX (Solaris 2.3 does this automatically), the mounted directory should be accessible to MAE. Do not add the "ISO 9660 File Access" extension (or any of the other Macintosh CD-ROM extensions) to your System Folder -- it does not work.

Miscellaneous

Question: What are the AppleSingle and AppleDouble file formats?

Answer: Apple provides two standards for representing files on foreign file systems. The goal is to preserve all attributes of the file's home file system on file systems that do not otherwise support the same attributes. MAE can read and write to both formats.

AppleSingle format keeps all contents and attributes of a file in a single file on the foreign file system. Both the data and resource forks of a Macintosh file, the Finder information and associated icons, and so on, are all arranged in a single file with a simple structure.

AppleDouble format is the same as AppleSingle format, except that the data fork is kept in a separate file from the resource fork and Finder information. The two can be distinguished by a "%" sign preceding the filename of the file containing the resource and Finder information.

Apple recommends that AppleSingle format should be used to transfer files to MAE whenever possible.

Question: Can MAE read MacBinary file formats?

Answer: No, MAE only reads AppleSingle and AppleDouble file formats.

Question: I notice that MAE uses CPU resources even when I am not doing anything. Is there way I can stop an idle MAE from eating these cycles?

Answer: There is no method within MAE to halt operation in this release. If this overhead is a problem, you can press Control-Z (or whatever stty suspend is set to) in the controlling window. Typing "fg" in the controlling window reawakens MAE. Note that the controlling window is the window where MAE was started. If MAE is started from a Window Manager menu, then you cannot use this trick. Also, if your shell does not support job control then it does not work either.

Question: How do I remove MAE from my system?

Answer: To remove MAE, delete the following:

```
~/apple           (and all its contents)
~/"System Folder" (and all its contents)
~/.mac            (and all its contents)
```

~/man1
~/docs

NOTE: you may have installed your "apple" directory in a place other than your HOME directory and you may also have chosen to create multiple "System Folders" (using the -sysfol argument or by running MAE with different user IDs).

Question: Is there any way to access the workstation serial ports through MAE?

Answer: No, this release of MAE does not support serial ports.

Question: What happens to applications that use sound?

Answer: MAE returns an error to the application when it requests sound support. If the application does not check for this error (refusing to believe the Macintosh does not have sound capability), the application may not behave correctly.

Question: What happens to file names that begin with the characters "//" ?

Answer: MAE looks in the root directory for these files. For example, if you save a file with name //foo, MAE attempts to write file "foo" into directory "/".

Question: How do I change the size of the desktop font used for filenames?

Answer: Use the Views control panel.

Question: How do I show ".*" files and directories in MAE Finder windows.

Answer: You can show/hide these files and directories by setting the appropriate check box in the Views control panel.

Question: The Views control panel check box for "Calculate folder sizes" does not seem to work and neither does the "Get Info" menu command. How can I find out the size of a folder from within MAE?

Answer: By setting the "Calculate folder sizes" check box in the Views control panel and viewing the contents of a folder "by size", the folder sizes within that directory are calculated and displayed.

WARNING: this can take a very long time depending on the depth of your directory.

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12 Jan 1995 - Made minor updates to Trblshting, Compat., and Misc. areas.
16 Dec 1994 - Added keyword and made several minor technical updates.

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