Mac OS 10 Basics

A compendium of information for the Curious, Determined or Demented

This is a collection of technical tweaks and craziness that I've collected since my reintroduction to Unix via the OS X Public Beta, a stint in the first OS OS Boot Camps in Sacramento and later, reading and lots of questions to wizards far more experienced than myself…enjoy!

Exposé Blob

I occasionally find Exposé useful but hot corners annoy me and I need keyboard combos for other stuff. The Exposé Blob, aka "wvous," is another way to access Exposé that I find more convenient. To enable the Blob, go into Terminal and type this command:

```
omas$ defaults write com.apple.dock wvous-floater -bool true
```

Then, log out and back in again or quit and restart the Dock to see the changes take effect. You can restart the Dock by typing:

```
omas$ killall Dock
```

The Blob, a blue Aqua–style sphere should be visible on your Desktop. Click and drag it around to position it in a convenient location. If you ever get sick of the blob, just execute the above command, but change `true` to `false`. You then need to log out and back in again or quit and restart the Dock again.

A few Blob options: When holding *option* and clicking the blob, "All window" mode is enabled whereby all application windows shrink to fit so they're all visible. If you hold *shift* while clicking or *option*-clicking the Blob, the Exposé effect will occur in slow motion, as with *shift* in conjunction with other Finder effects.

Fonts

There are six possible locations for font resources in OS 10…6 folders, searched in the following order:

1) User App. ~/Library/Application Support/VendorName/Fonts –
accessible by application in individual user's account, takes precedence over other folders for the specific application, read–write
2) User ~/Library/Fonts –
accessible by individual user's account but not created by default, read–write
3) Local /Library/Fonts – accessible to all local users, read–write
4) Network /Network/Library/Fonts – accessible over a network
5) System /System/Library/Fonts – installed by the core OS, read only
6) Classic System Folder > Fonts – yup, them thar pesky Classic resources are still somewhat useful

Terminal

Basics

First thing to know about the terminal application is that it doesn't accept *enter* key returns, only the *return* key! The Shell > Run Command… command is an exception.

cal (month year) — prints a calendar
month 1 to 12, year 1 to 9999
no month and year prints the current month

cd — change directories
note: with no arguments, the command takes you to ~, your home directory

cp *filename* — copies the file named "filename"
note: don't copy Classic stuff with cp as bindings are lost

.command — appending ".command" onto a text file makes it executable
note: check permissions with BatChmod or XRay

crontab -le — lets you edit your personal "cron table"

		-l = lists or displays the current file -e = edit the current file or, if none exists, create a blank one *note*: for a graphical approach, use CronniX
ctrl–X ctrl–D	—	dumps a list of all the commands, not all have manual page entries BTW
defaults *options*	—	reads or writes default OS user settings (see man page for the 20 options) *note*: the options require declaring a desired domain on which to operate. The "NSGlobalDomain" is shared by all and so works fine if you don't know what domain name to use. Two examples: 1) `omas% defaults read NSGlobalDomain` produces a list of current settings 2) `omas% defaults write NSGlobalDomain AppleScreenShotFormat TIFF` changes the default PDF file format for screen grabs to TIFF
df	—	displays free disk space
diskutil *verb option*	—	runs Disk Utility faceless…must be super user for changes to the file system repairPermissions / = fixes permissions
ditto -V -rsrcFork	—	poor man's backup, copies one or more source files or directories to a destination directory -V = very verbose mode -rsrcFork = preserve resource forks and HFS meta-data *note*: stick the command in your crontab (see above) or use CronniX
emacs	—	simple text editing
file *filename*	—	determines and displays file type: text, executable or data
find	—	versatile find command
hostinfo	—	dumps a quick and useful synopsis of your machine's configuration
ifconfig	—	used to configure network interface parameters
kill -9 *processID*	—	kills the process with the ID of process with ID "processID" -9 = non-ignorable (kills with extreme prejudice)
ls -alFSt	—	lists the contents of a directory…operands: -a = includes directory entries whose names begin with a dot -l = lists in "long" or verbose format -F = displays the following symbols after each entry: * a forward slash (/) immediately after each pathname that is a directory * an asterisk (*) after each that is executable * an ampersand (@) after each symbolic link * a percent sign (%) after each whiteout * an equal sign (=) after each socket * a vertical bar (|) after each pipe or FIFO -S = sorts by size, largest file first -t = sorts by time modified, most recently modified first
ll	—	shorthand for ls -la
last	—	lists sessions, in reverse time order
locate *filename*	—	finds file and folder names, supports wildcards (*) *note*: searches entire file system, including hidden files and directories run locate.updatedb (`sudo /usr/libexec/locate.updatedb`) to update the search database
man *command*	—	"manual" or on–line documentation -k string = searches man for the text string "string" *note*: for a kinder, gentler man pages, download manThor
netstat	—	`netstat -na | grep 548` provides a listing of AFP connections to your host
niutil	—	a command line version of Netinfo Manager
open	—	open *filename or directory* is the same as double clicking in the Finder
perl *filename*	—	runs the perl script named "filename"
pico	—	simple, easy text editor…an alternative to emacs
pmset	—	controls power management settings
rm -i *filename*	—	removes or erases the file named "filename" -i = interactive mode
rmdir	—	rmdir *directoryname* removes the directory named " directoryname" *note*: the directory must be empty
rsync	—	rsync or remote sync syncronizes file and/or directories between computers…operands: -av = archive mode with "increase verbosity" -e *path* = specifies a path to rsync on the remote machine
script *filename*	—	logs a terminal session to a file named "filename," good for later review

softwareupdate	—	manually provides OS patching
su *username*	—	logs you in as a substitute user named "username" *note*: if no user name is given then root access is implied… exercise extreme caution
sudo passwd root	—	reset your root password
tcpdump	—	prints out the headers of packets on a network interface (see ifconfig above) *note*: requires root access
touch	—	If filename doesn't exist it's created… If filename already exists, its timestamp is bashed with the current time
uptime	—	shows how long your system has been running
vm_stat	—	displays virtual memory statistics

Character Restrictions

As many characters have a special meaning in shell commands, including "¡ © ® ™ & ! < > { } * ( ) - [ ] ?," it is safer to restrict your filenames to the upper and lower case letters, numbers 0-9, periods (full stop) and underscores. You can have as many periods as you like in a filename. In addition, the name of the files or folders should not contain a solidus or "forward slash" (/) character or any other special ASCII character.

Up Arrow

When typing in Terminal, you can save some time by using the *up arrow/pg up* key to auto–retype the previous entry. Given the following:

```
omas% uptime
11:44AM  up 9 days, 13:01, 2 users, load averages: 0.29, 0.51, 0.68
```

Hitting the *up arrow/pg up* key produces the same entry:

```
omas% uptime
```

Tab Completion

When typing in Terminal, you can save some time by using the *tab* key to auto–complete the line. Given the following:

```
omas% cd ~
omas% ls
Applications Documents    Library      Music        Public       Sites
Desktop      Icon?        Movies       Pictures     SME
```

To go to the Library directory, for instance, type:

```
omas%  cd L
```

then hit the *tab* key. The shell, since there is only one possible choice starting with "L," will complete the string with the following result:

```
omas%  cd Library/
```

If there were more entries starting with "L," then as you type more letters, the Terminal narrows your choices.

Tar Files

Though in OS 10.4, the OS can handle tar balls along with zip files and other formats without fuss, the following is presented for the curious or hail and hearty…

Use Terminal to decompress tar files. For example, to decompress the file "foo.tar.gz," do the following:

```
omas% gnutar -xvf foo.tar.gz
```

The "xvf" switches control:

x = If any files are named on the command line, only those files will be extracted from the archive

v = Verbose operation mode or "chatty" mode

f = Filename where the archive is stored

Terminal Tricks

When messing with Terminal, if you get stuck, just close the current window and try again…

AppleSystemProfiler | grep IP	—	pipe (|) connects the output of Profiler into grep
Bill Gates	—	a simple trick…
emacs -batch -l dunnet	—	before Pong, there was…
telnet towel.blinkenlights.nl	—	an asciimation from sten@blinkenlights.nl & friends
telnet towel.blinkenlights.nl 42	—	Marvin the paranoid android meets Eliza
telnet towel.blinkenlights.nl 666	—	The BOFH Excuse Server
grep "LOTR" /usr/share/calendar/calendar.history	—	For you Tolkien fans, a LOTR timeline

Want a really "active" Desktop? You can set your default screensaver selection to become your Desktop! Type or copy and paste the following into Terminal:

```
omas% /System/Library/Frameworks/ScreenSaver.framework/Versions/A/Resources/ScreenSaverEngine.app/
Contents/MacOS/ScreenSaverEngine -background &
```

The Terminal will return:

```
omas% [1] 1192
```

or something similar. The number after the [1], 1192 in this example, is the process ID in case you want to kill the process since it will most likely slow your computer down a goodly amount. Note that your copy of the ScreenSaverEngine may be in a different location.

Keyboard Shortcuts

Keyboard shortcuts with the Dock

- Hold down the *option* key with menus open to see additional options (for instance, Arrange in Front in Window menu).
- ⌘ + *tab* switches between applications. Keep your finger on ⌘ and tap *H* to hide the application or *Q* to quit it. ⌘ + *tab* + *shift* reverses direction.
- *option* + ⌘ + clicking on an application in the Dock will select that application and hide all others except Finder.

Other semi–secret shortcuts

- Scroll bars: If you hold down *option* when you use the up/down arrows, it will scroll pages instead of lines as if you had clicked in the "elevator shaft." Holding down *option* when you click in the "elevator shaft" moves the document location to your click location instead of scrolling pages.
- Holding down *option* key on startup produces a startup volume picker dialog. This lets you choose a startup volume then continue the boot process, good for quick booting off of a CD or FireWire volume.
- Holding down *shift* key on startup, as in Classic, disables autoloading of System resources. Holding the *shift* key until the Desktop appears disables system plug-ins or, in Darwin kernel parlance, kernel extensions or KEXT files which are located in /System/Library/Extensions. If user autologin is disabled, then the Login pane will appear. Once you have logged in, holding the *shift* key again disables auto–login items set in the Login Items pane of System Preferences.
- *command*–clicking on the Toolbar widget (that lozenge-shaped control in the upper right hand corner of Finder windows) cycles through the six variations on the Customize Toolbar… Show options.
- Holding down *control* key while tabbing in a Finder window in list view (⌘ + 2) will step through the columns as sort criteria, while *shift* reverses direction.

Startup Modes

Force Mac OS X startup

If Mac OS X is installed on the computer, these steps will force booting into X:

1. Restart the computer. If necessary, use the reset/interrupt button.
2. Immediately after the system startup tone, press and hold the "X" key. Continue to hold the key until the computer is finished starting up.

Safe Boot mode

"Mac OS X 10.2 and later include the Safe Boot feature…A Safe Boot may allow you to restart successfully using a reduced version of system software. During this restart, an automatic disk check and repair may resolve your issue (abnormal startup). If it does, then you will not need to take any further action. Follow these steps to see if a Safe Boot will resolve your issue:
1. Restart the computer (using the Power button or Reset/Interrupt button if necessary).
2. Immediately after the system startup sound, press and hold the Shift key until "Safe Boot" appears.
note: There may be a considerable delay, particularly on larger startup volumes, since the disk check and repair take place before "Safe Boot" appears.
3. After the system is fully started up, restart again normally."
note: See AppleCare Knowledge Base Article ID: 106214 at <http://kbase.info.apple.com/> for details…

Open Firmware mode

1. Restart the computer. If necessary, use the reset/interrupt button.
2. Immediately after the system startup tone, press and hold the *command-option-O-F* key combination. The computer starts up to a text-only screen, indicating that you are in Open Firmware mode.

Open Firmware functions:

a1. If a CD or DVD is present in the drive and you wish to eject it, at the prompt, type: `eject cd`
The disc drive should eject any disc that is present, and "ok" appears when the action is complete.

a2. Press *return*.

b1. To reset non–volatile RAM, type the following:
`reset-nvram`
return
`set-defaults`
return
`reset-all`
return

b2. The computer should reboot automatically.

b3. Check all preferences and correct any that have been reset.

3. To return to normal operation, type the following:
`mac-boot`
return

4. The computer will exit Open Firmware and continue starting up into Mac OS.
note: The Open Firmware Password application allows you to enable security features in Open Firmware. You can use it to prevent others from starting your computer using a CD or other disk with an operating system on it. You can use Firmware password protection to enhance access security to your computer. See Knowledge Base Article ID: 120095

Single User mode

Single user mode provides a terse startup into a command line user environment…

1. Restart the computer. If necessary, use the reset/interrupt button.
2. Immediately after the system startup tone, press and hold the *command-s* key combination. The computer starts up to a text-only screen, with a `localhost#` terminal prompt, indicating that you are in Single User mode.
3. An excellent use of single user mode is to repair the boot volume "in place," without resorting to an external repair boot volume. To do so, at the prompt, type:

```
omas% fsck -fy
```

This is almost the same as running the Disk Utility.app on the included Apple boot disc.

4. To return to Multiuser mode and restart…at the prompt, type either: "`shutdown -r now`" or "`reboot`"
note: Typing `exit` at the prompt will appear to produce an equivalent result to typing `reboot` but will leave the file systems in a damaged and unstable state.

Verbose mode

Verbose mode provides a startup into the normal Quartz/Finder user environment with detailed boot reporting… this mode can catch problems that occur during the boot sequence. Execution will stop when a problem is encountered.

1. Restart the computer. If necessary, use the reset/interrupt button.
2. Immediately after the system startup tone, press and hold the *command-v* key combination.

In Terminal, typing the following:

```
omas% nvram boot-args="-v
```

then press *return*. This will preset verbose startup mode. If you boot into OS 9, this setting will be removed an "normal" boot will commence.

Disable Login Items mode

The Login pane of System Preferences defines the programs that will automatically start up on login. Holding the *shift* key at startup will prevent these login items from autostarting.

FireWire Target mode

FireWire Target mode forces a FireWire–equipped computer to act as a FireWire disk. Start the computer and immediately hold down the *T* key. A floating FireWire icon should appear on–screen, then plug the computer into another running one to mount its volumes as FireWire disks.

Resetting PMU

Shut down the computer, then hold down the *shift* + *ctrl* + *option* keys and hold the power button for 3 to 5 seconds. Release the power button and wait 5 seconds before restarting normally. On startup, a dialog should appear informing you that the clock is set wrong, which indicated that the Power Management unit has been reset.

Resetting PRAM

Shut down the computer, then restart. When you hear the chime, hold down the *option* + ⌘ + *P* + *R* keys until you hear the chime twice again. After the second chime, release all keys and let the computer continue to boot normally.

Security

If you don't need it, shut it off!

1) Sharing Pref.s > Disallow remote login & FTP services
2) Make non–admin accounts for others
3) Beware of packages that ask for root priveleges. Control–click to "Show Package Contents"
4) Use a router with NAT
5) If you travel with your computer enable the software firewall in the Firewall pane of System Preferences > Sharing and only allow those protocols you really need.
6) Get jiggy with ~/Applications/Utilities/ProcessViewer's Process Listing
7) Make damn sure root privileges are disabled.
8) Do a ~/Applications/Utilities/Network Utility > Port Scan using "localhost" — An example from my machine follows:

```
Port Scan has started ...

Port Scanning host: 127.0.0.1

     Open TCP Port:    427      svrloc
     Open TCP Port:    548      afpovertcp
     Open TCP Port:    631      ipp
     Open TCP Port:    1033     netinfo-local
```

You or your admin should be able to account for all these ports being open…

Common UNIX Printing System

CUPS has its own browser–based UI, accessible at:

http://127.0.0.1:631

…that's port 631, by the way.

Setup Assistant

The file, "/var/db/.AppleSetupDone," is written by the Setup Assistant after it's finished. If this file is deleted, then Setup Assistant will run again. If present, startup will proceed normally.

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