# 10.6 Seed Notes:

## 10A096

- Seed notes missing

## 10A190

- Basic reading and editing support for Microsoft Exchange in Mail, iCal and Address Book.
- Multicore enhancements including changes to queue management in Grand Central, syntax changes, and blocks in C++/GDB.
- The Finder is now partially rewritten in Cocoa.
- A simplified install experience.

In addition to testing your own applications and the updated technologies in Mac OS X, please pay particular attention to the following areas and report any issues such as incompataibilities or usage problems.

Microsoft Exchange Support

Snow Leopard now contains additional support for Microsoft Exchange 2007 via Mail, iCal and Address Book. While there is support for basic browsing, creation and editing of Microsoft Exchange data, much functionality and polish is still forthcoming which may impede full Exchange use in this seed. Please focus on the areas of Microsoft Exchange outlined below:

Setting Up Exchange

Mail includes an autodiscovery feature to streamline the configuration process:
1. Open Mail preferences and click the plus button to add a new account.
2. Enter your Microsoft Exchange email address and password and click "Continue."
3. Your server settings will be auto populated and you can choose to simultaneously configure Address Book and iCal for use with Microsoft Exchange as well.
4. Verify the settings are correct and click "Create."

If the your server settings are not automatically configured, after step 2 you can select "Microsoft Exchange 2007″ as a new account type and manually enter your server settings. You will still be able to simultaneously configure Address Book and iCal for use with Microsoft Exchange.

Mail
- Autodiscovery and account configuration with support for simultaneous setup of Address Book and iCal

- Reading & writing Messages, Notes, and To Do's

iCal
- Scheduling events.
- Checking recipient and room availability.

Address Book
- Adding contacts and groups.
- Verifying data is consistent in Outlook and Address Book.
- Exchange support is available in "Address Book" (version 5.0) not "Address Book (Leopard.)"

Known Limitations in Microsoft Exchange Support:

Mail
- Working offline is not yet supported so actions performed while offline will not be sent to the server when the account goes online.
- Event invitations, delegation authorizations and some other types of messages are not currently displayed.
- Some characters in messages that are moved from another account to a Microsoft Exchange account may be replaced with '=' characters.
- Account information for Microsoft Exchange will be lost if a user's home directory is shared between Snow Leopard and Leopard.
- Undo / redo is not fully supported.

iCal
- Creating calendars on Microsoft Exchange accounts is not yet supported.
- Calendar and task folders must have the same permissions for delegation.

Address Book
- Syncing a Microsoft Exchange account doesn't always work as expected.
- Smart groups are not fully supported.
- Some menu and preference items are missing or disabled.
- Undo / redo is not fully supported.
- Adding a search result from the global address list to your local contacts will prevent future searches from returning results until Address Book is restarted.

Multicore - Grand Central

Dispatch queues and event sources are now reference counted via retain/release API. Blocks submitted to a queue for asynchronous execution retain the target queue until they have executed. Dispatch event sources also retain the target queue to which they submit their event handler Blocks.

The dispatch_call() and dispatch_call_wait() API have been removed. Two new interfaces have been introduced: dispatch_async() and dispatch_sync(). Callbacks should now be expressed as nested blocks.

Accessors to three "well-known" global concurrent queues with a priority level (high, default, low) have been added. This allows Blocks to be executed asynchronously without the application needing to create a specific queue for them. Blocks submitted to the high priority queue will be executed before blocks submitted to the default priority queue, and so on. Dispatch queues created by the application may also set their priority level.

Dispatch event sources now report error codes via the the dispatch_event_t argument to event handler Blocks. Applications should check the event for errors using the dispatch_event_get_error() API inside their event handler Blocks. Once a dispatch event source reports an error, it will never deliver any additional event handler Blocks and may be released by the application.

Monitoring the same underlying Grand Central object (i.e. process identifier, signal, file descriptor) from multiple dispatch event sources may have unreliable results.

Running the following two commands in Terminal will provide additional information Grand Central:
headerdoc2html -o ~/Desktop/libdispatch_core /usr/include/dispatch/core.h
headerdoc2html -o ~/Desktop/libdispatch_events /usr/include/dispatch/events.h

Multicore - Blocks

Syntax Changes
The existing syntax of bracketing "by reference" variables between '|' (bar) symbols is deprecated and will be removed. There is a new form of storage available, __block storage, and it is on par with register, auto, and static for local variables. The new syntax is:

```
void foo() {
__block int i = 0; // "i" lives in block storage
void (^myblock)(void) = ^{ printf("is is now: %d\n", ++i); };
myblock(); // i is now: 1
myblock(); // i is now: 2
}
```

A Block literal (e.g. ^{ … }) is implemented as the address of a stack local data structure that represents the Block. The stack local data structure has scope of the enclosing compound statement. The following, for example, should be avoided:

```
void bar() {
void (^blockArray[3])(void); // an array of 3 block references
for (int i = 0; i < 3; ++i) {
blockArray = ^{ printf("hello, %d\n", i); }; // INCORRECT: block literal scope is "for loop"
}
```

*}*

*It is now possible to use a global Block literal*

*int GlobalInt = 0;*
*int (^getGlobalInt)(void) = ^{ return GlobalInt; };*

*C++ support*
*- Blocks are now supported in C++ and ObjC++*
*- Within a member function references to member variables and functions are via an implicitly imported "this" pointer and thus appear mutable. During a Block_copy the literal value of the "this" pointer is copied so memory management of the object must be done carefully.*
*- A stack based C++ object that is referenced within a block must have a const copy constructor. During a Block_copy a const copy will be made into the heap storage. Two known issues are there is no destructor called on the stack based block const copy and under Garbage Collection the heap based destructor is not invoked.*

*Debugger support*
*- It is possible to set breakpoints and single step into Blocks.*
*- Blocks can now be invoked from within a gdb session:*

*$ invoke-block myblock 10 20*

*- Note that C strings need to be passed in the form "\"this string\""*

*- Block storage starts out on the stack just like Blocks do and is copied to the heap when either a Block_copy (or in ObjC a -copy message) is performed. Thus, the address of a __block variable can change over time.*

*64-bit Kernel*

*The early 2008 models of the Mac Pro, 15" and 17" MacBook Pro and Xserve can be used for 64-bit kernel development. Audio and AirPort are now enabled on these on these testing configurations. In SnowLeopard, the 64-bit kernel is is used by default on the Xserve and the Mac Pro and MacBook Pro systems can be booted into the 64-bit kernel in one of two ways:*

*1) Temporarily boot into the 64-bit kernel by holding down "6" and "4" while powering on the machine*
*2) Run `sudo nvram boot-args="arch=x86_64"` to set the 64-bit kernel as your default kernel, and append any other debugging flags you may need, such as "debug=0x144". To revert back to the 32-bit kernel as the default, you can run `sudo nvram -d boot-args`.*

*This seed contains the necessary support for porting kexts to 64-bit and developers are strongly encouraged to do so.*

*Known Limitations in the 64-bit kernel:*

*- Shark does not work on the 64-bit kernel.*
*- Sleep / wake and power management is not currently supported. It is recommend that you disable sleep in System Preferences.*
*- Graphics acceleration is not yet supported which may cause programs which require graphics acceleration to run incorrectly.*
*- Some behavior which was previously unsupported, such as modifying a collection while enumerating it, and attempting to modify a kext's __TEXT segment, now results in diagnostic kernel panics.*

*Finder*

*Almost all user facing applications in Mac OS X are written in Cocoa with the exception of a select few. Finder, one of the oldest Carbon applications in the system, is being transitioned to Cocoa for SnowLeopard and much progress has been made in this seed. Please report any issues you find with the new Cocoa pieces of Finder.*

*Default Gamma Changes*

*To better meet the needs of digital content producers and consumers, the default display gamma has been changed from 1.8 to 2.2 in Snow Leopard. Applications that override the deftault and assume a gamma 1.8 setting may have different onscreen and printed output than they did in previous releases of Mac OS X. Please report any visual differences that you encounter.*

*Mac OS X Installer*

*Details can be found in the "Developer Preview Information" document in the "Instructions" folder.*

*Additional Changes Since the WWDC Seed*

*- Split view support has been added to Terminal and tab support has been enhanced with a contextual menu and the ability to create new tabs by double clicking.*
*- The Basic Security Module (BSM) audit code now uses OpenBSM version 1.1a1http://www.trustedbsd.org/openbsm.html*
*- Snow Leopard uses Java SE 6 for all Java applications and applets.*

*System Preferences*

*The System Preferences application will now run with garbage collection enabled under 64-bit. However, in order to support legacy pref panes, when run under 32-bit garbage collection will be disabled. This means that your preference pane code*

*must support both retain-release and garbage collection modes — similar to a framework that supports garbage collection.*

*Automator*

*- Automator can now export Workflows as Services.*
*- New Find and Filter Actions have been made available.*

*International Preferences*

*- Added support for Uighur.*
*- Added support for calendars in the following languages: Chinese, Coptic, Ethiopic, Ethiopic Amete Alem, Indian National, Persian, Republic of China.*

*High Level Toolbox*

*- Added constants for F16-F19 glyphs and a way to specify resolution of images in menus.*
*- Added API to specify rounded corners in menus (a la contextual menus.)*

*IPSec/racoon*

*- The default racoon.conf file will now look for additional include files in /var/run/racoon instead of /private/etc/racoon/remote.*
*- /private/etc/racoon/remote/anonymous.conf is only to be used as a reference and will no longer be supported.*

*Pluggable Authentication Modules (PAM)*

*- Linux-PAM has been replaced by OpenPAM.*
*- Modules developers may need to adjust to some API changes. In particular, the misc_conv function has been superseded by openpam_ttyconv(3); and pam_std_option has been superseded by openpam_get_option(3).*
*- It is recommended that modules be recompiled for Snow Leopard and installed with the file name "pam_*

*OpenSSL*

*- OpenSSL has been updated to version 0.9.8i.* [http://www.openssl.org/news/changelog.html](http://www.openssl.org/news/changelog.html)
*- Previous versions (0.9.7l for Intel and PowerPC; and 0.9.6l for PowerPC only) of the OpenSSL libraries are included for runtime binary compatibility only and cannot be used at link time.*
*- If a project's build system references a specific version of OpenSSL, the project may need to be updated. For example, if an Xcode project references "/usr/lib/libcrypto.0.9.7.dylib" or "-lcrypto.0.9.7", this should be changed to "/usr/lib/libcrypto.dylib" or "-lcrypto" respectively.*

*Apple HFS+ File Compression*

*- File compression has been added to the HFS+ file system.*
*- Compression was designed to be used with Apple System and Application files that are normally read-only/updatable. These files are not normally copied by users, however, if they are, the copies will be expanded to their normal size.*
*- This is not a new file system format and does not require volumes to be repartitioned.*

*Developers who write disk utility programs may need to recognize these files exist, and some details about how they are implemented. In the st_flags field of the stat struct of a compressed file, bit SF_COMPRESSED will be set to indicate that the file is compressed. In addition to this bit, the compression information will be stored in invisible extended attributes "com.apple.decmpfs" and possibly the "com.apple.ResourceFork". On a Tiger or Leopard system, these files will show up as zero length and have the indicated extended attributes. On Snow Leopard, the file's length will show up as its uncompressed length and these extended attributes will be invisible to your software. Thus, any copy program will see proper information to make an uncompressed copy of the data on Snow Leopard. This is to prevent the creation of unreadable compressed files on other file systems and external disks that may make their way back to previous OSes. As always, it is not advised to copy system files from one OS release to previous ones.*

*\*Additional information for most technologies listed here can be found by selecting "Documentation" in the Xcode Help menu.*

*Installing Mac OS X*

*- Some machines may panic during the reboot after installation. The install has still suceeded so please reboot again.*
*- Some users may hit a crash in the Mac OS X Installer. If you see this please save your installer log for a report to Apple, reboot and then attempt the install again.*
*- Third-party keyboards are not recommended for use in this seed and may result in an Mac OS X Installer crash.*
*- To install on a MacBook Air you will need to either use the USB drive or perform a remote install over ethernet. Remote installs over AirPort are not functioning in this seed.*
*- After installing on a MacBook Air you will need to restart before you can use AirPort.*
*- This seed is not supported on the Fall 2008 MacBooks and MacBook Pros.*

*Finder*

*- Keyboard navigation does not always work as expected.*
*- Finder sometimes crashing after burning a CD.*
*- System applications and files may not be correctly copied via Finder. Please use*

command line tools such as 'ditto' or 'cp' to workaround this.
- Browsing the system Trash in column view may cause Finder to consume significant amounts of the CPU.

*Java*

- Applets using Java Advanced Imaging (JAI) crash on launch.
- Java Applets fail to load in Firefox.
- Adobe Version Cue v 3.1 fails to launch as it looks for J2SE 5.0, rather than running under Java SE 6.

*iChat*

- PDF / Keynote documents are blank in iChat Theater.
- iChat Theater may crash when sharing a movie or a picture.
- iChat may not immediately connect when launched.

- Please ensure that the batteries for any attached Bluetooth are sufficiently charged. The warning dialog about low batteries may log you out of your session.
- Selecting a contact with a stored birth date will leave Address Book in an unusable state. Quit and relaunch Address Book to work around this. If you need to view or edit contacts with stored birth dates use "Address Book (Leopard)". If the first contact in "Address Book" has a stored birthdate you will need to remove the birth date using using "Address Book (Leopard)" or only browse contacts with "Address Book (Leopard)".
- Attempting to include the AppKit framework header file NSMenuItem.h (or any header file such as Cocoa.h which imports NSMenuItem.h) in a project which uses gcc 4.0 will result in a compile-time failure. You can work around this by editing /System/Library/Frameworks/AppKit.framework/Headers/NSMenuItem.h, and on line 17, removing "DEPRECATED_IN_MAC_OS_X_VERSION_10_6_AND_LATER", leaving just "@protocol NSMenuItem;". If you are using the 10.6 SDK, you will also need to similarly edit /Developer/SDKs/MacOSX10.6.sdk/System/Library/Frameworks/AppKit.framework/Headers/NSMenuItem.h.
- Keychain syncing may result in errors and it is reccomended that Keychain Syncing be disabled in this seed.
- Some systems with ATI graphics cards may show pink flashes when using the built in iSight camera.
- Selecting "Paper Feed" or "Cover Page" in the printer options may result in an inability to print.
- Some auto-mounted network shares may become unavailable after a period of time.
- On a 64-bit system QuickTime Pro Registration via the QuickTime Preference Pane is unavailable until relaunch System Preferences in 32-bit.
- Users with ATI Radeon HD 2600 graphics cards may see graphics corruption when dragging windows.
- Atempting to print to a postscript printer may result in errors.
- Mobile accounts (portable home directories) cannot be created with this seed.

*- iDisks display an error upon the initial connection attempt, but clicking on the disk again will successfully bring up your iDisk contents.*

*- Ink is not reccomended for use in this seed.*

## 10A222

**Areas To Focus On**
- Microsoft Exchange Support

Setting Up Exchange
Mail includes an autodiscovery feature to streamline the configuration process:
1. Open Mail preferences and click the plus button to add a new account
2. Enter your Microsoft Exchange email address and password and click "Continue"*
3. Your server settings will be auto populated and you can choose to simultaneously configure Exchange for Address Book and iCal as well
4. Verify the settings are correct and click "Create"
If your server settings are not automatically configured, after step 2 you can select "Microsoft Exchange 2007″ as a new account type and manually enter your server settings.
Mail
Messages moved from a different account to Exchange no longer have content replaced with "=" characters
Working offline is supported
Most Exchange*administrative*messages should now be visible
Undo should work as expected
iCal
You can now send and receive meeting invitations
Calendars can now be created on Exchange accounts
Address Book
Searching and importing from the global address list is now supported (only single-term searches are expected to work at this time)
Offline editing of Exchange contacts or folders is supported
Address Book will now sync with contact or folders deletions done via another Exchange client
Creating an Exchange 2007 account from Address Book should properly set up the account in Mail
You can now edit assistant, spouse, birthday, anniversary fields for Exchange contacts.
Known Limitations in Microsoft Exchange Support
Mail
Redo is not fully supported.
Canceling*operations doesn't always work as expected.
Address Book
Editing existing contacts doesn't always work as expected.
Undo/redo is not fully supported.
Displaying and editing photos for Exchange contacts is not fully supported.

Error messages may be unhelpful or non-existent. *e.g. There is no warning if you enter the incorrect password.

Multicore

Grand Central

Dispatch Group [New]

A Dispatch Group API has been introduced, allowing applications to group multiple Blocks together and wait for their completion or receive an asynchronous notification of their completion. *See the dispatch_group(3) manual page for more information.

Retain / Release

GCD has been changed to provide polymorphic data types. *As a result, all GCD data types can now be retained and released via a single API pair: dispatch_retain() and dispatch_release()

dispatch_apply()

The dispatch_apply() function's arguments have changed order for consistency with other GCD APIthe Queue argument now immediately precedes the Block argument.

dispatch_source_signal_create()

The dispatch_source_signal_create() function has changed to accept an integer signal number instead of a sigset_t.

64-bit Kernel

64-bit kernel development is supported on the following systems:

 Mac Pro (Early 2008) [MacPro3,1]

 iMac 20″ and 24″ (Early 2008) [iMac8,1]

 MacBook Pro 15″ and 17″ (Early 2008) [MacBookPro4,1]

 Xserve (Early 2008) [Xserve2,1]

The MacBook Pro (Late 2008) [MacBookPro5,1] is not currently supported for 64-bit kernel development.

Systems can be booted into the 64-bit kernel in one of two ways:

1) To temporarily boot into the 64-bit kernel, hold down "6″ and "4″ while powering on the machine

2) Run `sudo nvram boot-args="arch=x86_64″ ` to set the 64-bit kernel as your default kernel, and append any other

debugging flags you may need, such as "debug=0×144″. To revert back to the 32-bit kernel as the default, you can run

`sudo nvram -d boot-args`.

The 64-bit kernel is used by default on Mac OS X Server on the Mac Pro (Early 2008) and Xserve (Early 2008). The 32-bit kernel can by used by either holding down "3″ and "2″, or running `sudo nvram boot-args="arch=i386″ `

Updated release notes for Kernel, Kext & IOKit development can be found at https://developer.apple.com/snowleopard/library/releasenotes/index-date.html

Other Areas

Directory Utility support for updating directory server information has moved into the Login Options section of the Accounts Preference Pane

The spell-checking language can now be specified in the International Preference Pane

Improved calendar support for Thailand and Ethiopia, and general enhancements

There have been some broad changes in how widgets are rendered, please report

any anomalies
**Known Limitations**
Installation Issues
- Upgrades are only supported from 10.5.5+ and the previous Snow Leopard seed (build 10A190).
- Portables must be plugged into a power source to install Snow Leopard.
- It may take several minutes for all of the disks to become available in the Mac OS X Installer.
- Selecting an installation volume while some volumes are still grayed out may result in a hang.
- When installing from the Mac OS X Installation DVD, the system may sit at a grey screen with the Apple logo for up to ten minutes before progressing.
- There are intermitting hangs that may prevent the Mac OS X Installer from completing. If the progress bar has not moved for over 20 minutes please re-attempt your installation.
- Users who hang at a grey screen after installation should reboot once into "safe boot" mode by holding down the shift key when powering on the machine. Subsequent normal boots should be ok.
- Some users have reported that the screen is very dim during the when installing Mac OS X. Re-attempting the install will typically result in a fully lit screen.
- "Install Mac OS X.app" will not launch on Tiger. Users wishing to upgrade from Tiger should boot into the Snow Leopard Installation DVD by holding down the 'c' key with the DVD in the drive when booting.
- When migrating your users and applications from another system after installation, the progress indicator may report completion and stop well before migration actually finishes. When migration does complete, the next MacBuddy panel will appear normally.

Time Machine Network Backup Issues
If your Time Capsule Base Station name, backup volume name or user name contains a space, backups to Time Capsule or network backup destinations will not complete. Please follow these steps to work around this issue:
1. Remove any spaces from your user name
- Open System Preferences and choose the Accounts preference pane
- Edit the "Name" to not contain any spaces
- Reboot
2a. If using Time Capsule backups
- Open AirPort Utility and choose your Time Capsule
- Click the Manual Setup button
- Choose the Airport section from the toolbar, then choose the Time Capsule tab and ensure that Time Capsule Name does not contain any spaces
- Choose the Disks section from the toolbar, then choose the Disks Tab then select the volume on the disk and ensure that its Name field does not contain any spaces
- Choose Update and let the Time Capsule restart
2b. If using AFP network backups
- Login to the host machine for your network backups
- Change the backup volume name so that it does not contain any spaces
- Open System*Preferences to the Sharing preference pane*and verify that the machine name does not contain any spaces

- Open System Preferences to the Accounts preference pane and verify that the name of the account you will be using to connect does not contain any spaces

3. Re-configure Time Machine destination

- Open System Preferences and select the Time Machine pane
- Click Select Disk and choose the network backup volume
- Enter your username/password*

Other Issues

- asr will fail when specifying a volume name as the target. Unmount the volume and specify the /dev entry to workaround.
- Launching PhotoBooth or attempting to use iChat video effects with the latest MacBooks and MacBook Pros will leave your system in an unusable state that requires a reboot to resolve.
- The Mobile Me Preference Pane may report that a sync is in progress even when it is actually complete.
- Some checkboxes for selecting what data to sync in the Mobile Me Preference Pane may not be clickable until quitting and relaunching the Preference Pane.
- iDisks may not mount correctly in Finder. In Finder's 'Go' menu select 'iDisk' and 'Other User's iDisk' to workaround
- Enabling iDisk syncing may cause FileSyncAgent to crash.
- Time Machine will encounter errors when backing up to a network volume if the volume name or the admin user's name includes spaces. To work around this issue, rename the Time Machine volume or set up Time Machine from an admin user whose user name is only one word.
- First generation MacBook Air's may exhibit*occasional*graphics corruption. Sleeping and waking the machine or reboot typically works around this.
- Attempting to configure Hot Corners in the 'Display & Screen Savers' Preference Pane or going to the Advanced section of the Network Preference Pane on a Mac Pro while running with a 64-bit kernel will result in a kernel panic.
- On some systems with NVIDIA graphics cards DVD movie playback will only be visible when a second monitor is attached.
- Layered graphics do not render correctly in Safari.
- Audio / Video chats in iChat may not always connect successfully.
- Airport connections secured with 802.1X may be unreliable.
- Open, Review & Show Info Finder services are not functioning.*
- Ink is not functioning in this seed.*
- -*Lexmark printer drivers are not*available*at this time.
- SMB printing is not working in this seed.
- Fax support is not working in this seed.
- Portables may experienced decrease battery life.

Developer Issues

- gcc will output 64-bit binaries by default when building on a 32-bit system. Specify the correct architecture with the '-arch' flag to workaround. You can also add "-arch i386″ to your CFLAGS environment variables when building software with Makefiles or autoconf scripts.
- 32-bit contextual menu plugins will not work in 64-bit apps.
- gdb must be run as root when debugging Power PC applications.
- To compile for PowerPC architectures it is necessary to link against the

Mac OS X 10.5 SDK.

- Running 'sample' generates extra warnings.
- -*The legacy database establishing code equivalence between different versions of a program that is not code-signed has been removed. This will result in additional dialogs when a non-code-signed third-party program attempts to access another non-code-signed program.
- The WebObjects developer support package is not included in the Xcode Tools distributed with this seed of Snow Leopard. The package may be downloaded from ADC soon after the Snow Leopard seed has been made available.
- Some Carbon applications might find that Carbon event handlers are not firing, or are incorrectly fired at earlier or later times during application initialization.
- Kexts calling sysctlbyname() may panic in that call.

Xcode

- Xcode, when run on 32-bit systems, will hang when refactoring more than 2 or 3 files at once.
- When running 64-bit apps in Xcode, breakpoints are not set when breakpoints are activated and the backtrace is incomprehensible then the program is paused. To workaround this, activate breakpoints before running your application or to choose Run > Debug to force debugging.
- Within the debugger, NSString values are not visible in the Summary column.
- Referring to an .xcconfig file using #include does not consult any of the targets Search Paths; all referenced configuration files should be stored in the same directory.
- Using a port number when setting up a Subversion repository in the Repositories panel generates an inaccurate svn+ssh: URL. Instead of entering the port number in the Repository setup pane, eave off the port number in Xcode and add an entry with the port number in ~/.ssh/config for the desired host.
- A bug in NSFileManager makes restoring from snapshots fail catastrophically in specific circumstances. Until this is addressed, ensure that you have a Time Machine backup or a repository version of your working code before attempting to restore from a snapshot.
- When adding frameworks or libraries using the Target Inspector, you can only see frameworks in the SDK that the inspected target is configured for. To add frameworks from a different SDK, first change the Base SDK setting of that target.
- Find in File and Project Find will only find the actual key names in a Property List file, not the display names as seen in the Property List Editor. 5946354 Replace does not work in the embedded Property List editor; command-click and choose Open As [▶] Source Code File to perform Find and Replace.
- Syntax-Aware Indentation does not work correctly with certain keyboard layouts, such as German.
- The default Build and Go toolbar item is not useful in projects without a configured Executable, such as KEXT projects. Add a Custom Executable or replace the Build and Go item with Build.
- When running 64-bit apps in Xcode, breakpoints are not set when breakpoints are activated and the backtrace is incomprehensible then the program is paused. To workaround this, activate breakpoints before running your application or to choose Run > Debug to force debugging.
- Within the debugger, NSString values are not visible in the Summary

column.

Interface Builder

- Interface Builder has deprecated the Apple Script Studio inspector and now automatically upgrades NIB files to the 3.x format when NIB files are saved. These two capabilities can be reenabled with the following user defaults commands: defaults write com.apple.InterfaceBuilder3 IBEnableAppleScriptStudioSupport YES

defaults write com.apple.InterfaceBuilder3 IBEnableNIB2Writing YES

64-bit kernel

- Shark does not work on the 64-bit kernel.
- Sleep / wake and power management is not currently supported. It is recommend that you disable sleep in System Preferences.
- Graphics acceleration is not yet supported which may cause programs which require graphics acceleration to run incorrectly.
- Some behavior which was previously unsupported, such as modifying a collection while enumerating it, and attempting to modify a kext's __TEXT segment, now results in diagnostic kernel panics.

Font System

- Applications that register fonts using ATS APIs will not be visible to NSFont or CTFont APIs. For example, the Instruments application in Developer / Applications uses a font whose number glyphs like a digital calculator numbers. You will notice that these font is missing and the numbers are displayed using Helvetica.
- CTFontManager APIs are functional. These are the replacement APIs for the ATS font registration APIs. Currently, fonts registered with these APIs are only available to clients of CoreGraphics, CoreText, and Cocoa. ATS APIs will not see these fonts.
- The system includes a new system font for Simplified Chinese (STHeitiSC-Light) and Traditional Chinese (STHeitiTC-Light). If your application hard codes the use of STXihei and LiHeiPro, these are the replacements for Snow Leopard.
- Font Book is being re-written, but is not yet fulling functional
- Third party Font Management utilities (Suitcase, FontAgent Pro, LinoType Explorer, etc.) are only partially functional.
- Font installation should be done using the Finder. Drop your fonts into any of the known Font folders to install.
- Legacy font formats are not fully supported in the seed. Please report any fonts that don't work for you.
- SFNT CID fonts do not fully work (e.g. PDF).*
- Variations/MM fonts are not functional and may display incorrectly.
- Please report any issues with front rendering, particularly in PDFs. Where possible, include the PDF.

Third Party Issues

- TextMate may crash for some users.
- The Microsoft Office 2004 Installer does not work on this seed. *Drag the Office 2004 folder from the installation Image onto your local system to workaround.
- Unplugging a Motorola USB modem may lead to a panic.
- Some users may experience panics when using Cisco VPNs.
- Some third party installation packages may run into errors when running scripts.

# 10A261

 - This seed includes the CoreLocation framework which lets you determine the current latitude and longitude of a computer. The framework uses the available hardware to triangulate the user?s position based on nearby signal information. Additional details can be found at /System/Library/Frameworks/CoreLocation.framework/Headers

- Cocoa now includes APIs for using multi-touch features in the new MacBook and MacBook Pros. Details are available in the AppKit framework release notes.

- The WebObjects developer support package is not included in the Xcode Tools distributed with this seed of Snow Leopard. The package may be downloaded from ADC soon after the Snow Leopard seed has been made available.

Objective-C Garbage Collector
The garbage collector now features much faster root tracing. In particular, "info gc-roots" in gdb is now many times faster than before.

The collector also features a number of new environment variables that can be used to aid in debugging. Set AUTO_USE_GUARDS to "YES" or "true" to enable guard pages in the collector. If the process attempt to write beyond the end of an allocated chunk of memory, the collector will abort() the process. Like GuardMalloc, this can be a quick way to deduce heap corruption bugs.

Set AUTO_REFERENCE_COUNT_LOGGING to "YES" or "true" to log collector retain/release events via the malloc history mechanism. Requires MallocStackLoggingNoCompact or MallocStackLogging to be enabled.

Set AUTO_RESURRECTION_ABORT to YES or true to catch cases where objects become valid after having been finalized. Resurrection will become a hard error before Snow Leopard is released, as it can lead to heap inconsistencies and difficult to diagnose crashes.

Printer Driver Changes
SnowLeopard no longer installs all printer drivers by default. Rather, the default behavior is to install only the drivers for attached USB printers, printers previously used by the old system, network printers visible on Bonjour, and popular printers.

If you add a printer for which no driver is installed, Mac OS X will now query the Software Update server and then offer to download and install a driver should one be available.

Known Limitations

Installation Issues
- Some users have encountered errors while installing. A subsequent installation attempt to the same volume should result in a successful upgrade.
- Booting from the Mac OS X Installation DVD can take up to 10 minutes.
- When migrating your user, Setup Assistant may may not finish calculating the size of your content which prevents those items from migrating. If this occurs, quit Setup Assistant and reboot.

Developer Issues

- Using the Help system in Xcode may result in a crash. Please save your project before accessing Xcode Help.
- Selecting 'SCM -> Diff With... -> Base' in Xcode may lead to a hang.
- Script Editor fails to record Finder actions.
- When Automator is run in 32-bit mode stopping and then running a workflow results in a crash.
- Launching an application via Xcode's Debug option sometimes fail. Relaunching Xcode, rebuilding the application and attempting to debug it again will workaround this.

Other Issues
- Adding a field to a Address Book contact through the 'Card' menu will result in the deletion of other data for that contact.
- There are known deadlocks in AppKit which can cause an application to hang. To confirm whether this is the source of a particular hang, run 'sample' in Terminal on the hung application and confirm whether NSUIHeartBeat is in the call stack.
- Applications that access the system keychain may display password prompts or report incorrect user names or passwords even when the application has successfully authenticated.
- The warning for low batteries in an attached Bluetooth mouse causes the current user to be logged out.
- The date shown in the iCal Dock icon does not update correctly.
- Active Directory support may be unreliable.
- Certain mailboxes in Mail may not always display new messages. Quit and re-launch Mail to workaround this.
- By default all of your local disks will be in the exclusion list for Time Machine backups. You can remove a volume from the exclusion list, but will not be able to add it back to the exclusion list after that point.
- iDisk syncing sometimes leads to a crash in FileSyncAgent that prevents the sync from completing.
- The Microsoft Office 2004 installer hangs mid-way through. Drag the Office 2004 folder to your Applications folder to work around this.
- Adobe CS4 can be run as a universal binary, but will crash when opened in Rosetta.
- In Microsoft Office 2004 hitting Cmd-P to print to an HP printer will result in a crash. Select File->Print to work around this.

- Attempting to save an Adobe CS4 document after it has already been saved may result in an error.
- Grayed out or disabled icons & images look extra dark.
- Front Row crashes when launched.
- Photo booth crashes when launched.
- Accessing the built in help system yields a blank window.
- iChat bubbles display minor graphics corruption.

# 10A286

**Mac OS X 10.6 Build 10A286 seed notes:**


**New Content**


**This seed contains some major new changes in the following areas:**


**QuickTime Player**


**The new QuickTime Player has a new minimal UI and is focused on playback.**


**Finder**


**Finder includes a new Cocoa Desktop, Info Window and Contextual Menu**


**Safari**

Safari 4 beta is included in the seed as the default browser.


**Known Issues**
Remote Installs over Airport may cause panics (A workaround is to install via Ethernet or DVD.)
Booting from the install DVD can take a long time
Some settings are not migrated from the previous system when upgrading, including file sharing, sharing name and energy saver settings.
Finder issues: Icon previews will not appear on the Desktop, selecting Clean Up does not change icon placement on the Desktop. Sometimes the Finder and Desktop will stop responding to input. A workaround is to restart Finder.
iTunes will sometimes lock up when an iPhone is connected. A workaround is to rename or delete ~/Library/Lockdown)

Microsoft Office 2004 applications can hang when using the File->Open menu. A workaround is to open the file by opening it in Finder.)

On newer MacBook Pros, the screen's backlight will not come on when booting into the installer if the brightness is set below 6.

Hibernation is not working on machines with Nvidia graphics cards and will result in a frozen machine.

The Time Machine UI cannot be activated in Finder and Mail in some cases.

The linker creates a bad image when the minimum OS target is set to Mac OS X 10.5 and weak external symbols are used. (A workaround is to set Mac OS X 10.4 or 10.6 as the minimum OS target.)

Xcode often crashes when navigating in documentation using the navigation buttons.

Lastly, Apple advises against installing the latest Snow Leopard seed on Nehalem Mac Pros. The issue may be tied to the lack of compatibility with Nvidia graphics cards.

## 10A314

## Known Issues

- It may take 5-10 minutes to get to the Mac OS X Installer when using a DVD.
- Setup Assistant sometimes crashes when migrating users. Please reboot and try again if you encounter this.
- iCal, Mail or Safari may hang sometimes due to a backround process (configd) crashing. Please reboot if you encounter this.
- If multiple users are editing the same documenut simultaneously over an AFP connection it may result in data loss. Only 3rd party applications that support this behavior, such as database applications, will hit this. Editing files with Finder, for example, is OK.
- Finder may crash on 32-bit machines when viewing movie previews through QuickLook, Finder's column view or the Get Info window.
- Changing SSL setting for a Microsoft Exchange 2007 account refetches all of your messages.
- Mac Mini's with a Core Solo CPU will run very slowly.
- 'Repair Permissions' in Disk Utility reports spurious errors.
- Portable Home Directory accounts cannot be created.
- Switching between Finder windows with Cmd-` does not work in this seed.
- The initial Welcome Page in Safari is blank.
- The contextual menu for the Finder icon in the Dock is missing some options.
- VoiceOver cannot be started in Setup Assistant using Cmd-F5. Workaround:
- 1) When you hear "Mac OS X has a built in Screen reader.." press escape.
- 2) Press the right arrow 13 times to get to the screen that reads

"Congratulations, You have learned how to use..".
- • 	Wait for this screen to finish reading and VoiceOver will launch.
- • 	3) You can then press the right arrow or escape key to return to Setup Assistant with VoiceOver running.

**Developer Notes**
64-bit

We strongly encourage you to start developing and testing 64-bit versions of your KEXTs.  To help you along we've included the 64-bit transition guide with the seed.
- • 	Launch Xcode in Snow Leopard
- • 	Go to Help menu
- • 	Select Documentation Viewer
- • 	Search for "64-bit Transition Guide"

We've also enabled the 64-bit kernel, for development purposes only, in this seed on the following configurations:
Using 10A314 and one of the K64-capable machines listed above, simply boot the Mac with the '6′ and '4′ keys held down to use the 64-bit kernel. Observe that uname -v reports RELEASE_X86_64.  Machines listed as "Default" will run K64 automatically when loaded with 10A314.

You can also set arch=x86_64 in your boot-args NVRAM variable, using nvram(8). When you're done, you can remove the boot-arg, or if you can no longer boot into an OS to unset it, hold command-option-P-R to zap NVRAM.

If you just want one partition to boot x86_64, edit the file /Library/Preferences/SystemConfiguration/com.apple.Boot.plist and add arch=x86_64 to the kernel flags.

If some functionality is not working and you must revert to using the 32-bit kernel, you can either reboot with the '3′ and '2′ keys held down or set arch=i386 in your boot-args.

**Xcode Changes Since the Last Seed**
- • 	A new startup screen allows you to open recent projects directly from the startup window.
- • 	The list of project templates for New Project has been trimmed and all templates have been updated for Snow Leopard.
- • 	The Build Results window has been updated with new options for grouping information.
- • 	Code completion now adds opening or closing square brackets where needed.
- • 	The tab key can now be used to advance to the next CodeSense placeholder token; 'Enter' or 'Return' reduces the placeholder to editable text.
- • 	"Add Frameworks" now brings up a sheet of relevant frameworks in the current SDK.
- • 	Significant performance improvements when building, searching, or indexing due to adoption of Grand Central technology.

**Known Xcode Issues**

- xcodebuild issues build commands as if building all files in the project, rather than just the ones that need to be built.  It is not actually recompiling the files, simply retrieving the persisted build results.
- Similarly, the build status line may show a larger number of files to be rebuilt than actually need to be.

# 10A335

**Known Issues**
- Migrating users over a network connection may result in a hang. Connect the machines via Firewire to workaround this.
- It may take several minutes to get to the Mac OS X Installer when using a DVD.
- Some settings such as Mobile Me login info and Keyboard settings are not migrated correctly.
- Some Rosetta applications crash on launch.
- 'Repair Permissions' in Disk Utility reports spurious errors.
- configd crashes can cause DNS lookups to fail.
- Custom install sizes are sometimes inaccurate, which may result in the Install Assistant failing due to disk space issues.
- Quicktime Player X may crash when playing DRM protected content in 64-bit.
- PowerPC apps are crashing for some users after installing Rosetta. Running 'sudo update_dyld_shared_cache' in Terminal and then rebooting will typically work around this. Note that you will be prompted for your admin password.

# 10A354

- Seed notes missing

# 10A380

- Seed notes missing

# 10A394

This is the first Snow Leopard seed to be released in an "update" form through Software Update rather than as a complete separate build from the Apple Developer Connection website.

This Snow Leopard Developer Preview Update is recommended for all users

running the Snow Leopard Developer Preview Build 10A380 or later. This update includes general operating system fixes for stability, compatibility, and security.

Updates:

- Dock Exposé feature works now.

## 10A402a

This is the second Snow Leopard seed to be released in an "update" form through Software Update rather than as a complete separate build from the Apple Developer Connection website.

This Snow Leopard Developer Preview Update is recommended for all users running the Snow Leopard Developer Preview Build 10A394 or later. This update includes general operating system fixes for stability, compatibility, and security.

The update is 1.31GB through Software Update

Updates:

- Third party System Preference panes now work

- New list view in the Dock**

- Quicktime Version 10.0 (42)

- Battery on notebooks improved.

- Safari is snappier (really!)

- Overall system performance boost.

## 10A411

This is the third Snow Leopard seed to be released in an "update" form through Software Update rather than as a complete separate build from the Apple Developer Connection website.

*This Snow Leopard Developer Preview Update is recommended for all users running the Snow Leopard Developer Preview Build 10A402 or later. This update includes general operating system fixes for stability, compatibility, and security.*

The new update weighs in at about 750 MB

- Safari 4.0.3 build 6531.4


# 10A421a

This is the fourth Snow Leopard seed to be released in an "update" form through Software Update rather than as a complete separate build from the Apple Developer Connection website.

This Snow Leopard Developer Preview Update is recommended for all users running the Snow Leopard Developer Preview Build 10A411 or later. This update includes general operating system fixes for stability, compatibility, and security.

The updates weighs in at 743.7 MB.

- New Quicktime icon
- New desktop wallpapers
- Exposé shows minimized windows in a spot below a divider line...
- Safari 4.0.3 build 6531.7


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# 10A432 GM (Retail Release)