

What's new with Munki?

Greg Neagle
Walt Disney Animation Studios

Munki Review

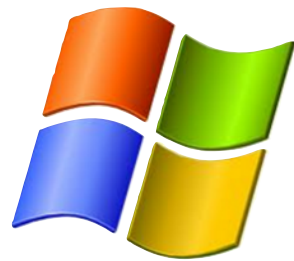
- A set of tools to manage software installs and removals on OS X
- Written in Python (mostly)
- Free and open source – Apache 2 licensed
- <https://github.com/munki/munki>

Who is using Munki?

- Disney Animation
- Google (over 50K Macs)
- Facebook (over 10K Macs)
- Dropbox
- Universities, colleges and K-12 schools worldwide
- and more...

Munki needs:

- Munki “server” can be any web server on any platform



- Client tools run on OS X 10.5–10.10



Munki does:



Installs and removes Apple packages



Installs and removes items on “drag-n-drop” disk images



Installs and removes Adobe software



Installs Apple updates

Desired state

- Client manifest describes what should be on (or not on) a machine.
- Munki figures out how to get the machine into that state

Latest is greatest

- Munki ensures each client has the latest version of every piece of software it manages

Latest is greatest

- Vendor (or internal developer) releases new version:
 - Import it into your Munki server.
 - That's it.
- No Smart Groups or Extension Attributes or Policies to tweak.

**Compare
with
Brand "C"!**

But, wait!

Munki catalogs (think: tracks)

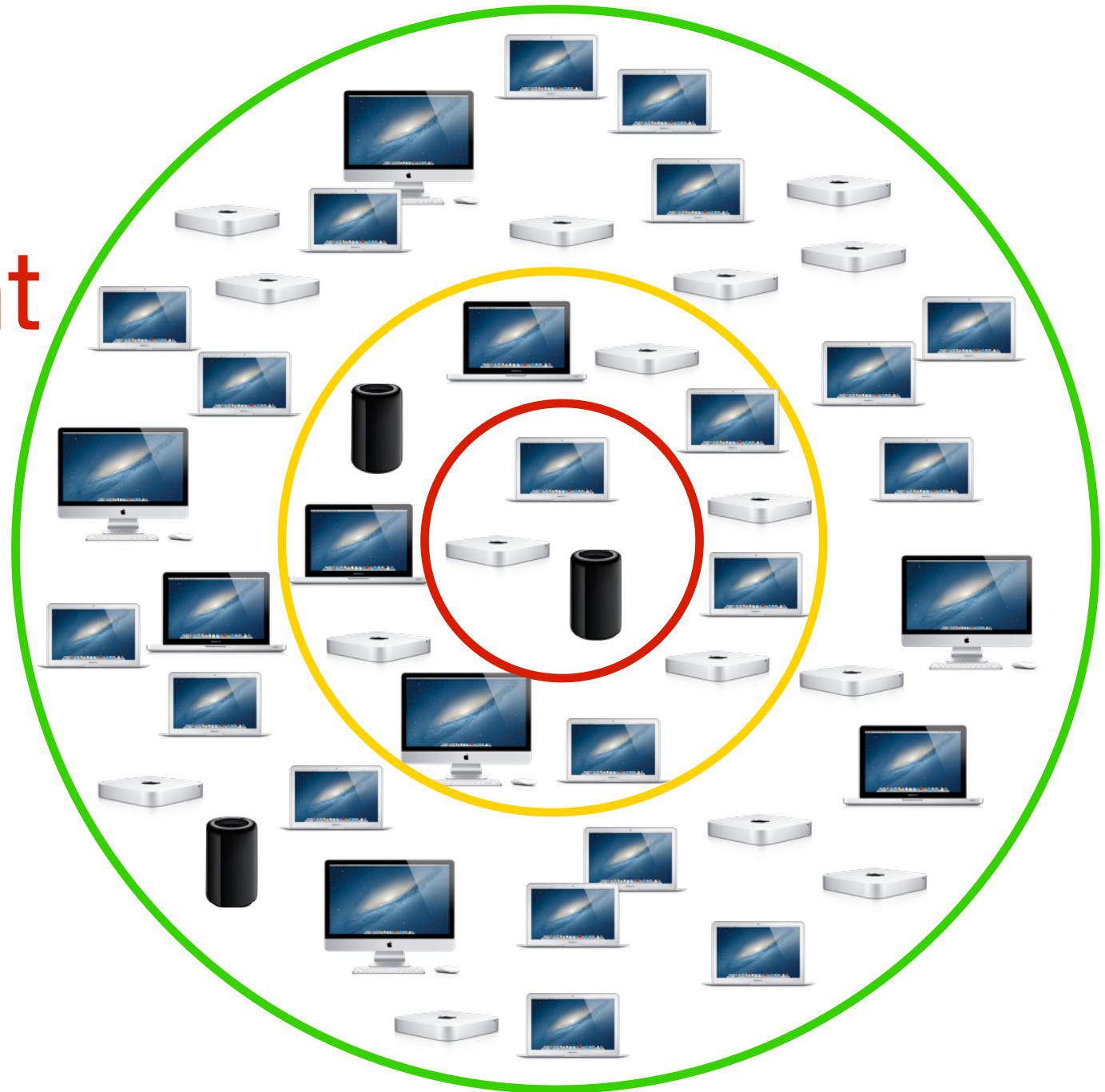
WhizBang 2.0



Development

Testing

Production



New/Updated software

- Admin can mark items to install silently in the background
- Or users can be prompted when updates are available
- “Self-service” option

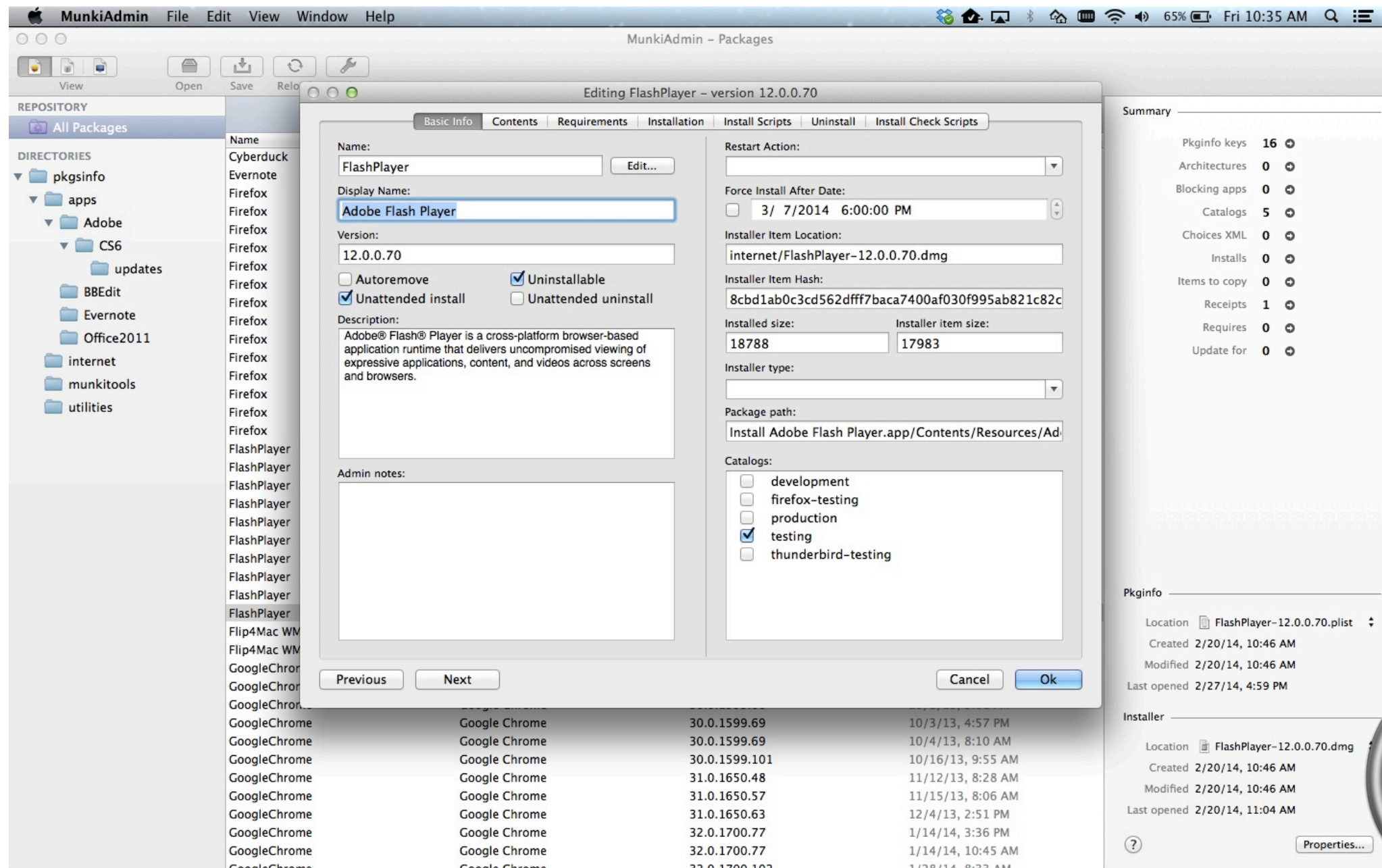


Munki Ecosystem



GUI

<https://github.com/hjuutilainen/munkiadmin>



Web Front Ends

Status

Clients with errors	20
Clients with warnings	65
Clients with activity	537

Top installs

This week	Today	This hour
DA_ColorProfiles_Hero 1.0	583	
GoogleChrome 37.0.2062.94	191	
DA_ColorProfiles_HDR 1.0	165	
AAFUtils 1.5.3.41.0	125	
Raconteur 4.5.4	67	
iTunes 11.3.1	59	
Skype 6.19.0.450	58	
CanonFieryDriver 3.3.1206.14113	49	
dpix 3.24.17.0.12	41	
dplay-plugins 0.2.14.0.12	38	

OS breakdown

unknown	1
10.10	4
10.5.8	1
10.6.3	1
10.6.4	1
10.6.7	2

Check-ins

This hour	423
Today	528
Past week	645

Top pending installs

1-10	11-20	21-30
AAFUtils-1.5.3.41 1.5.3.41.0	319	
iTunes 11.3.1	142	
Raconteur-4.5.4 4.5.4	128	
Office 2011 14.4.3 Update 14.4.3	124	
Safari 6.1.5	78	
Security Update 2014-003 1.0	77	
Google Chrome 37.0.2062.94	69	
iTunes 11.3.1	62	
Photoshop Camera Raw 8.4(CS6) 8.4	62	
img2avid-1.0.0.106.12 1.0.0.106.12	48	

Hardware breakdown

MacBook1,1	3
MacBook2,1	5
MacBook3,1	1
MacBook4,1	2
MacBook5,1	1
MacBook5,2	4

No check-ins

Past week	53
Past month	62
Past three months	116

Today's top errors/warnings

Errors 10	Warnings 10
-----	3
Cannot install on volume / because it i	1
Apple update failed to install: Package	1
Could not retrieve manifest groups/Digit	1
Could not retrieve manifest groups/Disne	1
Could not retrieve manifest groups/Disne	1
Could not retrieve manifest groups/Disne	1
Could not retrieve manifest groups/Disne	1
Could not retrieve manifest groups/Disne	1
Could not retrieve manifest groups/MCX f	1
installer: Cannot install on volume / be	1

Low disk space

Just Don--pantry	0.0 KB
Don Benjamin Lins--jrpacman	3.2 GB
avid-dx20	4.0 GB
-----t--stargate	4.9 GB



Greg-Neagle--humantorch

MacBook Air

Report :: 2014-08-28 14:21 | [Inventory](#)

Machine

Model:	MacBookAir6,2 Intel Core i7 1.7 GHz
RAM:	8 GB
Serial:	C02KX5KXF6T6
MAC:	84:38:35:56:af:a6
Remote IP:	172.30.160.127
Hostname:	humantorch.fas.fa.disney.com
OS version:	10.9.4 x86_64
Free disk space:	179.6 GB
Console user:	gneagle

Munki

Version:	2.0.0.2170
Manifest:	humantorch
Run Type:	custom
Start:	2014-08-28 14:21
End:	2014-08-28 14:21

Warranty Information

Warranty status:	Check status
Manufacture date:	Week of Monday 24th June 2013

Errors 0

Warnings 0

Active Installs 2

Name	Size	Status
Disney Animation Firefox Configuration 6.0	52.0 KB	not installed
LibreOffice 4.3.1002	181.4 MB	not installed

Managed Installs 234

Name	Size	Status
------	------	--------

Managed Uninstalls 22

Name	Status
------	--------

Catalog: production ▾

Search:

Flash

Name	Version
AdobeFlashBuilderUpdate	4.0.1.0.0
AdobeFlashProCS5.5	11.5
AdobeFlashProfessionalCS6	12.0
DisableFlash10AutoUpdate	1.0
FlashbackFinder	1.0
FlashCS4ProUpdate	10.0.2.0.0
FlashPlayer	14.0.0.145
	14.0.0.125
	13.0.0.214
	13.0.0.206
	13.0.0.201
	12.0.0.77
	12.0.0.70
	12.0.0.44
	12.0.0.38
	11.9.900.170
	11.9.900.152
	11.9.900.117
	11.8.800.94
	11.8.800.168

FlashPlayer-14.0.0.145

name	FlashPlayer	
version	14.0.0.145	
display_name	Adobe Flash Player	
description	Adobe® Flash® Player is a cross-platform browser-based application runtime that delivers uncompromised viewing of expressive applications, content, and videos across screens and browsers.	
catalogs	production	
autoremove	False	
category	Internet	
developer	Adobe	
installed_size	16711	
installer_item_hash	0825ccb4485386e39267aa93d61b670da827aeb30e94f95311fea500e2b33c86	
installer_item_location	internet/FlashPlayer-14.0.0.145.dmg	
installer_item_size	15941	
minimum_os_version	10.5.0	
package_path	Install Adobe Flash Player.app/Contents/Resources/Adobe Flash Player.pkg	
receipts	version	14.0.0.145
	installed_size	16711
	packageid	com.adobe.pkg.FlashPlayer
unattended_install	True	
uninstall_method	removepackages	
uninstallable	True	

Section:

manifest name

▾

humantorch

Search

Hint: you can use shell-style wildcards in searches for 'fuzzy' matches.

Manifests 1

Name	User
humantorch	Neagle, Greg S ...
<div>+ New manifest</div> <div>Delete manifest</div>	

humantorch

Save

Cancel

User

Neagle, Greg S (Gregory)

Catalogs

development

testing

production

Included Manifests

groups/DisneyStandardConfiguration

Managed Installs

DA_QuickTime7ProLicense

theadminv2

TextMate

iLife11_iPhoto

iLife11_iMovie

iWork09

AdobePhotoshopCS6Extended

OracleJava7

Adobel

AdobeIllustratorCS4

AdobeIllustratorCS6

AdobeInDesignCS5

Optional Installs



Greg-Neagle--humantorch

MacBook Air

[Report](#) | [Inventory](#) :: 2014-08-28 08:52

Machine info

MAC:	84:38:35:56:af:a6	Model:	MacBookAir6,2 Intel Core i7 1.7 GHz
Username:		RAM:	8 GB
Location:		Serial:	C02KX5KXF6T6
Last inventory date:	2014-08-28 08:52	OS version:	10.9.4 x86_64

Application inventory 622

Show entries

Search:

Name	Version	BundleID	Path
50onPaletteServer	1.1.0	com.apple.50onPalettelM	/System/Library/Input Methods/50onPaletteServer.app
AAM Registration Notifier	6.2.127.0	com.adobe.PDApp.AAMRegistrationNotifier	/Applications/Utilities/Adobe Application Manager/P6/AAM Registration Notifier.app
AAM Registration Notifier	3.0.64.0	com.adobe.PDApp.AAMRegistrationNotifier	/Applications/Utilities/Adobe Application Manager/LWA/AAM Registration Notifier.app
AAM Updates Notifier	6.2.112.0	com.adobe.PDApp.AAMUpdatesNotifier	/Applications/Utilities/Adobe Application Manager/UWA/AAM Updates Notifier.app
ABAssistantService	8.0	com.apple.ABAssistantService	/System/Library/Frameworks/AddressBook.framework/Versions/A/Helpers/ABAssistantService.app
Accessibility Inspector	4.0	com.apple.AccessibilityInspector	/Applications/Xcode.app/Contents/Applications/Accessibility Inspector.app
Activity Monitor	10.9.0	com.apple.ActivityMonitor	/Applications/Utilities/Activity Monitor.app
AddPrinter	9.4	com.apple.print.add	/System/Library/CoreServices/AddPrinter.app
AddressBookManager	8.0	com.apple.AddressBook.abd	/System/Library/Frameworks/AddressBook.framework/Versions/A/Helpers/AddressBookManager.app
AddressBookSourceSync	8.0	com.apple.AddressBookSourceSync	/System/Library/Frameworks/AddressBook.framework/Versions/A/Helpers/AddressBookSourceSync.app
AddressBookSync	8.0	com.apple.AddressBook.sync	/System/Library/Frameworks/AddressBook.framework/Versions/A/Helpers/AddressBookSync.app
AddressBookUrlForwarder	8.0	com.apple.AddressBook.UrlForwarder	/System/Library/CoreServices/AddressBookUrlForwarder.app
Adium	1.5.9	com.adiumX.adiumX	/Applications/Adium.app

Inventory items 4798

Show 20 entries

Search: Photoshop CS

Name	Version(s)	
Adobe Photoshop CS6	13.0.6	536
	13.0.5	2
	13.0.4	10
	13.0.1	1
	13.0.0	5
Adobe Photoshop CS5.1	12.1	3
Adobe Photoshop CS5	12.0.4	128
	12.0	45
Adobe Photoshop CS4	11.0.2	134
	11.0.1	1
	11.0	25
Adobe Photoshop CS3	10.0	1
Adobe Photoshop CS	8.0	1

Showing 1 to 6 of 6 entries (filtered from 4,798 total entries)

Licenses 46

Show 20 entries

Search: Omni

Item	▼ Licensed Seats	Installed Seats	Available Seats
OmniPlan	30	24	6
OmniOutlinerPro	30	7	23
OmniGrafflePro	75	70	5
OmniFocus2	7	2	5
OmniFocus	40	34	6

Showing 1 to 5 of 5 entries (filtered from 46 total entries)

Clients



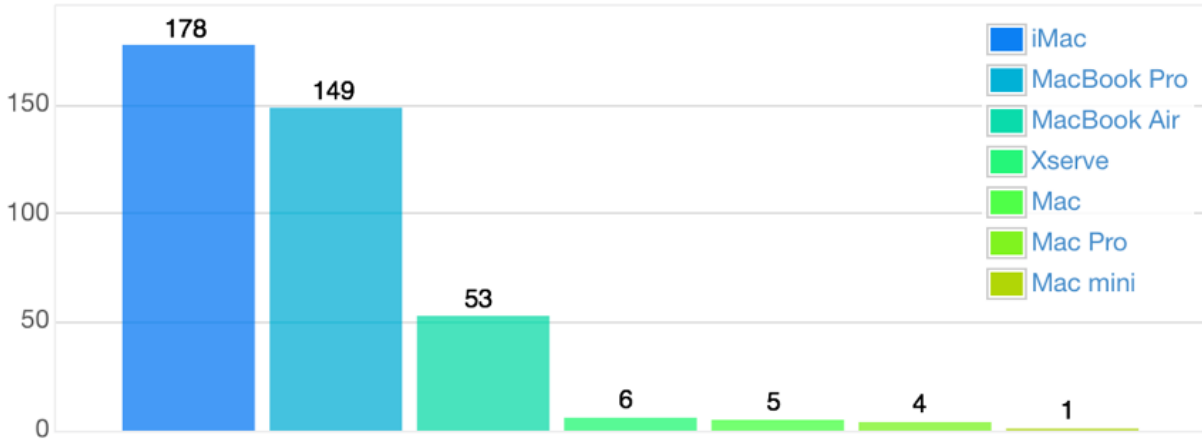
Disk status



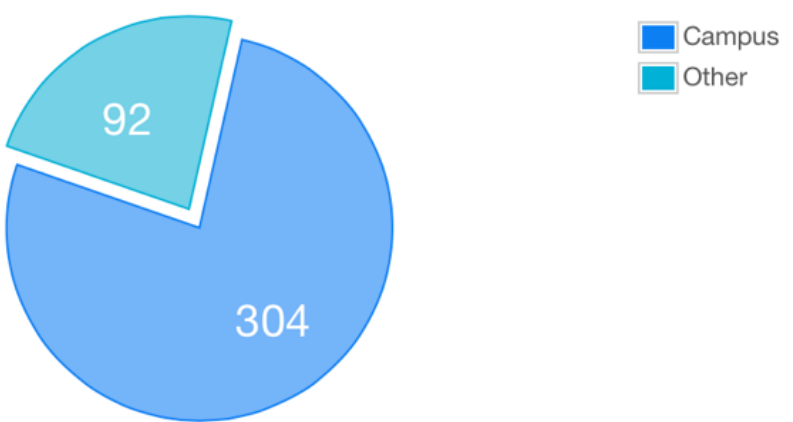
Munki



Hardware breakdown



Network locations



New clients

5

Rik's MacBook Pro	a day ago
Jeroen's MacBook Pro	2 days ago
Lorenz Kolbes MacBook Pro	2 days ago
Rob's MacBook Air	6 days ago
mb-016358	6 days ago

Warranty status

Expires in 30 days (Supported) 2

https://github.com/wollardj/Mandrill/

META

Mandrill Admin

ADMIN

Accounts

Login Services

Mandrill Settings

REPO ITEMS

Manifests 830 1

Pkginfo 753

Catalogs 2

OTHER WEB TOOLS

[Edit]

Pkginfo

New Pkginfo

Search

▼

First

Prev

26 - 50 of 749

Next

Last

Display Name	Name	Catalog(s)	Version
	Admissions_HP4200N_as_default_printer	production	2013.11.18
Adobe Flash Player	Adobe Flash Player	production	11.2.202.233
Adobe Flash Player	Adobe Flash Player	production	11.3.300.257
Adobe Flash Player	Adobe Flash Player	production	11.4.402.265
Adobe® Integrated Runtime	AdobeAIR	testing	3.9.0.1210
Adobe® Integrated Runtime	AdobeAIR	production	3.9.0.1380
Adobe Flash Player	AdobeFlashPlayer	production	11.5.502.136
Adobe Flash Player	AdobeFlashPlayer	production	11.5.502.146
Adobe Flash Player	AdobeFlashPlayer	production	11.5.502.149
Adobe Flash Player	AdobeFlashPlayer	production	11.6.602.171
Adobe Flash Player	AdobeFlashPlayer	production	11.7.700.169
Adobe Flash Player	AdobeFlashPlayer	production	11.7.700.202
Adobe Flash Player	AdobeFlashPlayer	production	11.7.700.203
Adobe Flash Player	AdobeFlashPlayer	production	11.7.700.225
Adobe Flash Player	AdobeFlashPlayer	autoimport	11.8.800.168
Adobe Flash Player	AdobeFlashPlayer	production	11.8.800.94
Adobe Flash Player	AdobeFlashPlayer	production	11.9.900.117
Adobe Flash Player	AdobeFlashPlayer	production	11.9.900.152
Adobe Flash Player	AdobeFlashPlayer	production	11.9.900.170
Adobe Reader X (10.1.2)	AdobeReader	production	10.1.2
Adobe Reader X (10.1.3)	AdobeReader	production	10.1.3
Adobe Reader XI	AdobeReader	production	11.0.0
Adobe Reader XI	AdobeReader	production	11.0.01
Adobe Reader XI	AdobeReader	production	11.0.02
Adobe Reader XI	AdobeReader	production	11.0.03

Mandrill 0.7.3 on Meteor 0.8.2

Mandrill v0.7.3

- ☒ autoimport
- ☐ dev
- ☒ development
- ☒ od_testing
- ☒ production
- ☒ testing

https://github.com/wollardj/Mandrill/

META

Mandrill Admin

ADMIN

Accounts

Login Services

Mandrill Settings

REPO ITEMS

Manifests 830

Pkginfo 753

Catalogs 2

OTHER WEB TOOLS

[Edit]

Mandrill v0.7.3

File Edit Select Selection Find Goto Help

pkgsinfo/apps/plugins/Adobe Flash Player-11.2.202.233

1 <?xml version="1.0" encoding="UTF-8"?>

2 <!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN" "http://www.apple.com/DTDs/PropertyList-1.0.dtd">

3 <plist version="1.0">

4 <dict>

5 <key>autoremove</key>

6 <false/>

7 <key>catalogs</key>

8 <array>

9 <string>production</string>

10 </array>

11 <key>description</key>

12 <string>Cross-platform browser plugin that delivers much of the web-based multimedia currently available.</string>

13 <key>display_name</key>

14 <string>Adobe Flash Player</string>

15 <key>installed_size</key>

16 <integer>11036</integer>

17 <key>installer_item_hash</key>

18 <string>8833f3630e896ed460611733cee79ddf4f18202db269873f8eab2330634fa642</string>

19 <key>installer_item_location</key>

20 <string>apps/plugins/Adobe Flash Player-11.2.202.233.dmg</string>

21 <key>installer_item_size</key>

22 <integer>10706</integer>

23 <key>minimum_os_version</key>

24 <string>10.4.0</string>

25 <key>name</key>

26 <string>Adobe Flash Player</string>

27 <key>receipts</key>

28 <array>

29 <dict>

30 <key>filename</key>

31 <string>Adobe Flash Player.pkg</string>

32 <key>installed_size</key>

33 <integer>11036</integer>

34 <key>packageid</key>

35 <string>com.adobe.pkg.FlashPlayer</string>

36 <key>version</key>

37 <string>11.2.202.233</string>

38 </dict>

39 </array>

40 <key>uninstall_method</key>

41 <string>removepackages</string>

42 <key>uninstallable</key>

43 <true/>

44 <key>version</key>

45 <string>11.2.202.233</string>

46 </dict>

47 </plist>

48

https://github.com/wollardj/Mandrill/

META

Mandrill Admin

ADMIN

Accounts

Login Services

Mandrill Settings

REPO ITEMS

Manifests

PkgsInfo

Catalogs

OTHER WEB TOOLS

[Edit]

830

1

753

7

Mandrill v0.7.3

testing

Display Name	Name	Version
Adobe® Integrated Runtime	AdobeAIR	3.9.0.1210
Cyberduck	Cyberduck	4.4.2
Cyberduck	Cyberduck	4.4.3
DenisonSetup-2013.09.06	DenisonSetup	2013.09.06
Firefox	Firefox	24.0
Flip4Mac	Flip4Mac	3.2.0.16
Google Chrome	GoogleChrome	31.0.1650.57
Google Earth	GoogleEarth	7.1
Office 2011 14.3.8 Update	Office2011_update	14.3.8
Office 2011 14.3.9 Update	Office2011_update	14.3.9
Skype	Skype	6.11
Skype	Skype	6.9
VLC Media Player	VLC	2.0.9
VLC Media Player	VLC	2.1.1
VLC Media Player	VLC	2.1.2
create_denisonmac-2.0	create_denisonmac	2.0

Mandrill 0.7.3 on Meteor 0.8.2

Activity

Machines this hour	98
Machines today	120
Machines this week	245
Inactive for a month	11
Inactive for three months	1

Status

Clients with errors	3
Clients with warnings	49
Clients with activity	47
All machines	272

Operating System breakdown

10.7.5	17
10.8.5	238
10.9.0	7
10.9.1	9

Uptime

207 > 1 Day	96 > 7 Days	9 7 Days +
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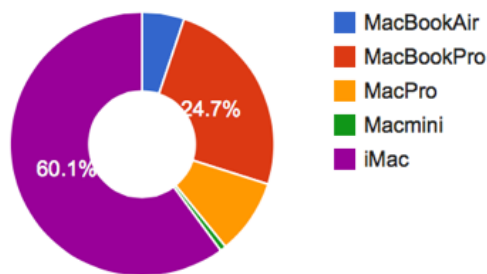
Memory

183 8GB +	80 4GB +	9 > 4GB
--------------	-------------	------------

Disk Space

257 > 80%	7 80% +	2 90% +
--------------	------------	------------

Hardware Types



Pending 3rd Party Updates

Adobe Flash Player 12.0.0.38	2
Adobe Reader 11.0.06	1
Facter 1.7.4	1
CS6 Master Collection 6	2
Creative Suite 6 Design Standard 6	11
GarageBand Core Content 1.0.0.0.1.1256150330	1
GrandPerspective 1.3.3	1
Managed Software Update 3.6.0.1864	3
Managed Software Update admin tools 1.0.0.1864.0	3
Managed Software Update core tools 1.0.0.1864.0	3

Pending Apple Updates

AirPort Utility 6.3.1	1
Java for OS X 2013-005 1.0	2
Migration Assistant Update for Lion 1.0	1
OS X Update 10.9.1	1
Digital Camera RAW Compatibility Update 5.01	1
Digital Camera RAW Compatibility Update 5.02	8
Remote Desktop Client Update 3.7.1	12
Safari 6.1.1	1
Safari 6.1.1	16
Safari 6.1	1

Sal Software by pebble.it

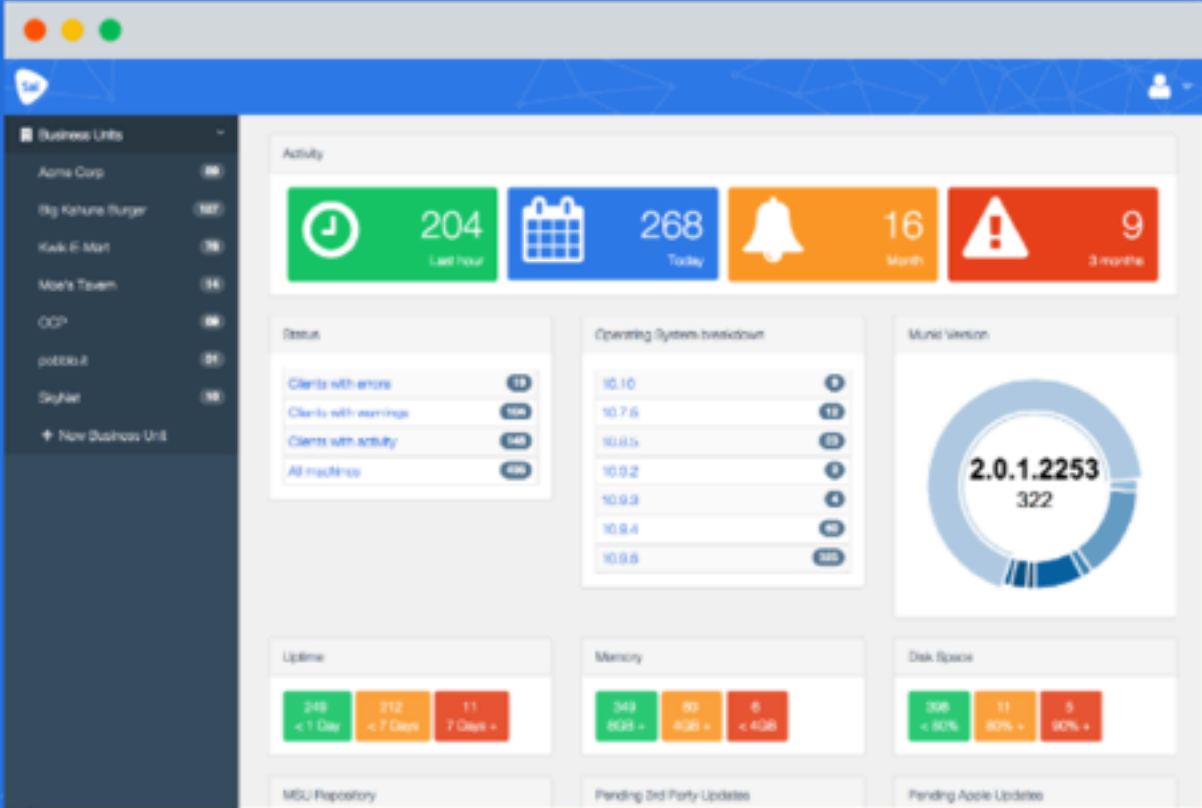
salsoftware.com

Sal by pebble.it

Built by pebble.it Try Sal for free Get in touch

EASY MAC MANAGEMENT BY PEBBLE.IT

Start using Sal right now Get in touch

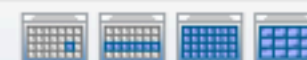


The screenshot displays the Sal software interface, which is a dashboard for managing Macs. It features a sidebar on the left with a list of business units: Acme Corp, Big Kahuna Burger, Kwik-E-Mart, Moe's Tavern, OOP, pebble.it, and Stylar. Below this list is a button to 'New Business Unit'. The main content area is titled 'Activity' and contains several widgets. At the top, there are four colored boxes with icons and numbers: a green box with a clock icon and '204 Last hour', a blue box with a calendar icon and '268 Today', an orange box with a bell icon and '16 Month', and a red box with an exclamation mark icon and '9 3 months'. Below these are three columns of data. The first column, 'Status', shows counts for 'Clients with errors' (19), 'Clients with warnings' (104), 'Clients with activity' (148), and 'All machines' (308). The second column, 'Operating System breakdown', shows a list of OS versions with their respective counts: 10.10 (9), 10.7.6 (12), 10.6.5 (10), 10.9.2 (4), 10.9.3 (4), 10.9.4 (10), and 10.9.5 (100). The third column, 'Munki Version', shows a donut chart for version '2.0.1.2253' with a count of 322. At the bottom, there are three more widgets: 'Uptime' showing counts for '< 1 Day' (248), '< 7 Days' (212), and '7 Days +' (11); 'Memory' showing counts for '< 8GB' (349), '8GB' (80), and '> 8GB' (6); and 'Disk Space' showing counts for '< 80%' (108), '80%' (11), and '> 80%' (5). The interface also includes sections for 'MDU Repository', 'Pending 2nd Party Updates', and 'Pending Apple Updates'.

We built Sal to help us understand and manage the huge number of Macs we are responsible for - now you can use it too... for free.

Thursday, November 6

MTC: Breakout Track 1, MTC: Breakout Track 2, MTC: General Schedule, MTC: Special



	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:00 AM	8:00 AM - 9:00 AM Terrace: Full Buffet Breakfast						
9:00 AM	9:00 AM - 9:10 AM B2-Day 2 Welcome						
	9:15 AM - 9:30 AM B1-Day 2 Welcome				9:10 AM - 9:40 AM B2-What's new in Apple IT -Tad Johnson, JAMF Software		
	9:30 AM - 10:00 AM B1-Writing Secure Code -Andrew McDonnell				9:40 AM - 10:10 AM B2-IT, The Hacker Way - The Good, The Bad, The Ugly -Mike Dodge		
10:00 AM	10:15 AM - 10:30 AM Lobby/Foyer: Coffee Break						
	10:30 AM - 11:01 AM B1-Xcode for Non-Apple Devices -Amanda Walker		10:30 AM - 11:30 AM B2-Munki 2 -Greg Neagle		10:30 AM - 12:00 PM L3-Business -Ryan Grimes		
11:00 AM							
	11:30 AM - 12:00 PM B1-Emotion Intelligence -Boisy Pitre		11:30 AM - 12:00 PM B2-Documentation -Rich Trouton				
12:00 PM	12:00 PM - 12:30 PM Vendor Forum: IBM, Internet of Things		12:00 PM - 12:30 PM Vendor Forum: Absolute		12:00 PM - 12:30 PM Vendor Forum: Microsoft		
	12:30 PM - 1:45 PM Lobby/Foyer: Lunch Buffet, Sponsor Tables ; Random Lunch						
1:00 PM	1:45 PM - 2:15 PM B1-Tools and Techniques for Creating Professional Screencasts - Jim Rea				1:45 PM - 2:15 PM B2-Better Living through Science Fiction -Vanessa White		
	2:15 PM - 2:45 PM B1-Designing Secure Systems With TLS -Anthony Vcherushniy				2:15 PM - 2:45 PM B2-Twisting Munki -Graham Gilbert		
	2:45 PM - 3:00 PM Lobby/Foyer: Coffee Break						
3:00 PM	3:00 PM - 4:20 PM L3-Beginning Assembly Language -Gwynne Raskind		3:00 PM - 4:20 PM L2-Arduino Basics -Ed Eigerman		3:00 PM - 4:20 PM L4-Deployment Lab -Sutton, Gilbert		3:00 PM - 4:20 PM L1-Learning AWS -Nathan Toups
4:00 PM							
	4:30 PM - 6:00 PM L2-Virtualization (Trouton, White, Bruienne)		4:30 PM - 6:00 PM L4-Security Lab -Vcherushniy, McDonnell		4:30 PM - 6:00 PM L1-Swift Lab (Royal-Gordon)		4:30 PM - 6:00 PM L3-Publishing -Tonya Engst
5:00 PM							

Are you [registered?](#)
If not, [register now.](#)

«
»
Thu, Nov 6

Legend:

- MTC: Breakout Track 1
- MTC: Breakout Track 2
- MTC: General Schedule
- MTC: Special

[Printer Friendly](#)

Jump to


Pick multiple:

☐ MTC: Breakout Track 1
 ☐ MTC: Breakout Track 2
 ☐ MTC: General Schedule
 ☐ MTC: Special

- Tomorrow's Events**
- Terrace: Full Buffet B...
 - Good morning welcome, ...
 - Good morning welcome, ...
 - B2-Communication Tools...
 - B1-Testing -Steve Masl...
 - B1-Jon Flanders
 - B2-AutoPKG -Allister B...
 - Lobby/Foyer: Coffee Br...
 - Vendor Forum: Watchman...
 - Vendor Forum: Filewave
 - Vendor Forum: TBA
 - Lunch & Birds of Feath...
 - Jeanette Lee
 - You can Even Use the T...
 - Lobby/Foyer: Final Cof...
 - Communities Made Easy^...
 - Breaking "BACCHANTE"

Alternate Servers

https://code.google.com/p/simian/



simian

Simian : Enterprise Mac OS X Software Deployment on App Engine

Search projects

[Project Home](#) [Downloads](#) **Wiki** [Issues](#) [Source](#)

Search

Current pages

 for

Search

★ **SimianAtAGlance**
Simian features at a glance.

Updated Mar 11, 2012 by [o...@google.com](#)

- [Web-based Package Management](#)
- [Host Report](#)
- [Summary, Active Clients, Patch Compliance Dashboard](#)
- [Apple Updates Admin](#)
- [Install Reports](#)
- [Tags](#)

Web-based Package Management

Admins can see what catalogs and manifest packages are in with a glance, quickly view pkginfo plists, download package DMGs, etc.

Summary

Search

▼ Munki Packages

Package Admin

Logs

Historical List

Installs

Failures








Other Install Problems

► Apple Updates

► Manifests

► Admin Tools

New Package


Package	Files	Success*	Failed*	Avg Secs	Pending**	Properties	Catalogs	Manifests	Manifest Mod Access
Acrobat X Pro Update-10.0.0	 695.9 MB	238	7	186	83	update unattd	u t s	u t s	
Adium-1.4.3	 22.0 MB	419	7	47	1	update optional unattd	u t s	u t s	
Adobe Acrobat Update-10.1.1	 135.0 MB	143	6	137	84	update unattd	u t s	u t s	
Adobe Acrobat X Pro-10.0.0	 695.9 MB	629	1	159	16	optional	u t s		support
Adobe Captivate-5.5.1	 1.2 GB	26	1	235	0	optional	u t s		support
Adobe CS 5.5 Design Premium-11.5.1	 3.7 GB	202	7	1109	5	optional	u t s		support
Adobe CS 5.5 DS-5.5.1	 2.5 GB	308	2	667	2	optional	u t s		support

New Package

To upload a new package, use HTML forms to upload a pkginfo directly copied/pasted from makepkginfo, and a DMG associated with the pkginfo.

https://code.google.com/p/simian/

▼ Client Information

Hostname	Serial	Host Details	Owner	Owner Details	Site	Office	Config Track	OS Version	HDD Bytes Free	Uptime
äpfelbüch-lüft	02DW0LZDJ	view	ogle	view	NYC	US-NYC-9TH	testing	10.7.3	165.4 GB	0 days, 15:17:18
UUID			Track	Munki Version	Dynamic Manifest		Tags	User Settings		
51485a-e65a-4ad7-ba6d-5b4dc75537			unstable	0.8.2.1424.0			Tags ▼			

▼ Connection Details

Last Preflight	Last Postflight	Run Type	Avg Download Speed	(on/off corp)	Last Corp Preflight	Last IP Address
March 9, 2012, 1:42 p.m. (7 hours, 3 minutes ago)	March 9, 2012, 1:46 p.m. (6 hours, 59 minutes ago)	installwithnologout	857 KB/s	217 / 150	March 8, 2012, 10:15 p.m. (22 hours, 31 minutes ago)	

Connection Dates

March 9, 2012
March 8, 2012
March 7, 2012
March 6, 2012
March 5, 2012
[more](#) 2012

Connection Times

March 9, 2012, 1:46 p.m. (6 hours, 59 minutes ago)
March 9, 2012, 1:42 p.m. (7 hours, 4 minutes ago)
March 8, 2012, 10:16 p.m. (22 hours, 30 minutes ago)
March 7, 2012, 11:07 p.m. (1 day, 21 hours ago)
March 7, 2012, 10:56 p.m. (1 day, 21 hours ago)
March 7, 2012, 2:23 p.m. [more](#) days, 6 hours ago)

▸ Client Logs

▸ Packages, Installs, and Updates

▸ Problems, Exits, etc.

▸ Misc Admin Actions

<https://code.google.com/p/simian/>

[« Back to package list](#) [Save](#) **Package Photoshop CS5-3.1** [Edit PkgInfo XML](#) [X Delete Package](#)

Disk Image

PhotoshopCS5.dmg File is uploaded ✓

Name

Display Name

Version

Minimum OS Version

Maximum OS Version

Force install after date

Time is evaluated in the client's local timezone

YYYY-MM-DD HH:MM

Catalogs

☒ unstable ☒ testing ☒ stable

Manifests

☐ unstable ☐ testing ☐ stable

Install Types

☐ managed_installs ☐ managed_uninstalls

☐ managed_updates ☒ optional_installs

Unattended install?

☐ unattended install

Manifest mod access

☒ support ☐ security

Description

Photoshop CS5

https://github.com/jnraine/munkiserver

MANAGE YOUR **MACS**

MUNKI ON RAILS

Units Settings Logout (jraine)

doesn't work yet... Search

Testing **IRMACS** IT Burnaby

Computers Computer Groups Bundles Packages

Listing computers

All

Filter







all, none

Remove

Surrey

Move

displaying 1-7 of 7 records

	Hostname	MAC Address	Actions
<input type="checkbox"/> 	brian-w-test.itds.sfu.ca (staging)	00:1b:63:93:c7:ff	Edit Remove View Plist
<input type="checkbox"/> 	demo.sfu.ca	ff:ff:ff:ff:ff:ff	Edit Remove View Plist
<input type="checkbox"/> 	express2.ucslabs.sfu.ca	00:17:f2:d5:f9:72	Edit Remove View Plist
<input type="checkbox"/> 	hcc-shaggy.ad.sfu.ca	00:17:f2:0d:fa:2e	Edit Remove View Plist
<input type="checkbox"/> 	ives.itds.sfu.ca (staging)	00:26:bb:02:88:f3	Edit Remove View Plist
<input type="checkbox"/> 	laptopdragon.ucslabs.sfu.ca	00:17:f2:d8:c3:0a	Edit Remove View Plist

COMPUTER GROUPS

Surrey (1)
bcw_workstation_model (0)
Burnaby (3)
techone (1)
Vancouver (1)
bcw_dev (2)
bcw_staging_dev (1)
ard_import_test (0)

View All

FILTER

Quickly find the computer you are looking for by filtering the hostname.

UNIT KEY

qUwc4Jm33frZGFoQfCuSaf0gT

Thursday, November 6, 14

https://github.com/jnraine/munkiserver

MANAGE YOUR **MACS**

[Units](#) [Settings](#) [Logout \(jraine\)](#)

MUNKI ON RAILS

doesn't work yet...

Search

Testing **IRMACS** IT Burnaby

[Computers](#) [Computer Groups](#) [Bundles](#) [Packages](#)



Computer was successfully updated.



demo.sfu.ca

bcw_dev

ff:ff:ff:ff:ff:ff

No description

COMPUTER ([EDIT](#))

Bundles	Installs	Uninstalls
No bundles assigned	Firefox Cyberduck Google Earth TextMate Chrome choose version	No packages assigned

COMPUTER GROUP ([EDIT](#))

Bundles	Installs	Uninstalls
No bundles assigned	No packages assigned	No packages assigned

https://github.com/jnraine/munkiserver

MANAGE YOUR **MACS**

MUNKI ON RAILS

[Units](#) [Settings](#) [Logout \(jraine\)](#)

doesn't work yet...

Search

Testing **IRMACS** IT Burnaby

[Computers](#)

[Computer Groups](#)

[Bundles](#)

[Packages](#)


Editing a package



Firefox

Firefox
3.6.0.0.0

Editing the name property will change the stream of applications this package belongs to

Display name	<input type="text" value="Firefox"/>
Name (unlock)	<input type="text" value="Firefox"/>
Version	<input type="text" value="3.6.0.0.0"/>
Version Tracker ID	<input type="text" value="10208569"/>
Installer (unlock)	<input type="text" value="2010-02-08_165135_Firefox_"/>
Installer Size (unlock)	<input type="text" value="20054"/>
Installed Size (unlock)	<input type="text" value="54324"/>
Category	 <input type="text" value="Application"/>
Minimum OS Version	<input type="text" value="10.4: Tiger"/>
Mode	<input type="text" value="Production"/> <input checked="" type="checkbox"/> Uninstallable
Uninstall Method	<input checked="" type="radio"/> Remove packages <input type="radio"/> Uninstaller <input type="text"/>
Upgrade for	<input type="text" value="None"/>

MODES

There are two modes available. Use staging for new, untested packages and production for ready-to-deploy packages. Staging packages are not available to bundles or production computers.

UPGRADE FOR

If this package updates (add to) another package, select the package that is updated.

DEPENDANCIES

Select packages that must be present for this package to function properly. Dependancies are version specific.

CREATE PACKAGE VARIATION

Create an alternative package info record that refers to the same installer package.

Update automation


https://github.com/timsutton/aamporter

GitHub

This repositorySearch

[Explore](#)[Features](#)[Enterprise](#)[Blog](#)

[Sign up](#)[Sign in](#)

 **timsutton / aamporter**

[★ Star](#) 28[🔗 Fork](#) 5

Utility to batch download Adobe Creative Suite/Cloud updates and optionally import them into a Munki repository.

🔄 45 commits

🌿 2 branches

🏷️ 0 releases


👤 2 contributors

🌿 branch: master ▾

aamporter / +

⋮

Error on malformed settings plists.

 **timsutton** authored on Jun 19

latest commit b5b0d95025

📁 product-plist-examples	Switch to --product-plist mode rather than channels in aamporter.plis...	2 years ago
📄 .gitignore	ignore .DS_Store	2 years ago
📄 LICENSE.md	Create LICENSE.md	a year ago
📄 README.md	Update Channels PDF URL to newer version	4 months ago
📄 aamporter.py	Error on malformed settings plists.	2 months ago

📖 **README.md**

⌘ aamporter

Overview

aamporter is a command-line utility to retrieve the user-definable sets of updates for Adobe Creative Suite products and suites. It also automates the process of importing these into a [Munki](#) repo. Later, the tool can be re-run to pull in new updates as they are released and you can begin testing.

<> **Code**

🔔 [Issues](#) 5

🔗 [Pull Requests](#) 0

[Pulse](#)

[Graphs](#)

HTTPS clone URL

`https://github.com/timsut`

You can clone with [HTTPS](#) or [Subversion](#). ?

[🖥️ Clone in Desktop](#)

[📄 Download ZIP](#)

Thursday, November 6, 14

http://autopkg.github.io/autopkg/

AutoPkg

Automating tedious
tasks since 2010!

 View On GitHub

AutoPkg

AutoPkg is a system for automatically preparing software for distribution to managed clients. Recipes allow you to specify a series of simple actions which combined together can perform complex tasks, similar to Automator workflows or Unix pipes.

See [the wiki](#) for more information and full documentation.

Discussion of the use and development of AutoPkg is [here](#).

Installation

Download and install the [latest installer package](#).

This will also set up a packaging server and a launchd job so regular users can create packages.

Configuration

Set the MUNKI_REPO preference to use recipes that can import to a Munki repository.

```
defaults write com.github.autopkg MUNKI_REPO /path/to/your/munki/repo
```

Usage

These are just a few examples. See [the wiki](#) for more usage info.

MACTECH.

Are you registered?
If not, register now.

Legend:

- MTC: Breakout Track 1
- MTC: Breakout Track 2
- MTC: General Schedule
- MTC: Special

Printer Friendly

- Jump to
- All Combined
- 2014
- November 2014
- Nov 2 – Nov 8

Pick multiple:

- MTC: Breakout Track 1
- MTC: Breakout Track 2
- MTC: General Schedule
- MTC: Special

Go

S	M	T	W	T	F	S
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

S	M	T	W	T	F	S
26	27	28	29	30	31	1
2	3	4	5	6	<u>7</u>	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

December 2014



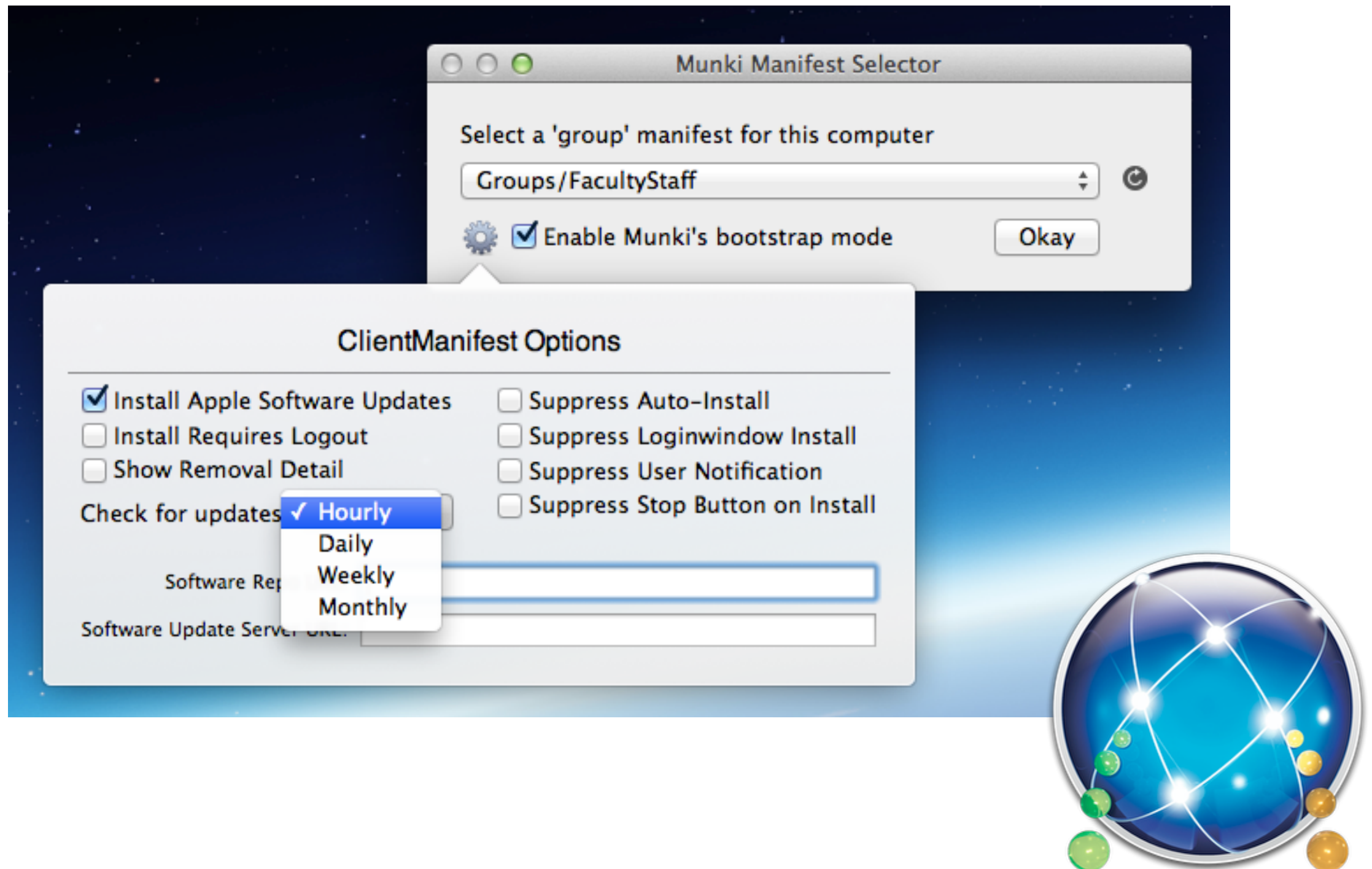
<https://github.com/munki/createOSXinstallPkg>



createOSXinstallPkg

Miscellaneous

<https://github.com/buffalo/Munki-Manifest-Selector>



https://github.com/edingc/munki-enroll

GitHub

This repository Search

Explore Features Enterprise Blog

Sign up

Sign in



edingc / **munki-enroll**

★ Star

18

🍴 Fork

3

Scripts to automatically enroll clients in Munki, allowing for very flexible manifest structures.

🔄 9 commits

🌿 1 branch

🏷 0 releases

👤 1 contributor



🌿 branch: master ▾

munki-enroll / +



Added license info.



edingc authored on Dec 7, 2012

latest commit d90b8fb495



Scripts

Added enroll script.

2 years ago



munki-enroll

Added README and changed folder structure.

2 years ago



.gitignore

Added .gitignore file.

2 years ago



LICENSE

Added license info.

2 years ago



README.md

Added README and changed folder structure.

2 years ago



README.md

Munki Enroll

A set of scripts to automatically enroll clients in Munki, allowing for a very flexible manifest structure.

<> Code

🔔 Issues

0

🔗 Pull Requests

0

📶 Pulse

📊 Graphs

HTTPS clone URL

https://github.com/edingc

You can clone with [HTTPS](#) or [Subversion](#). ?



Clone in Desktop



Download ZIP

<http://tbridge.github.io/munki-in-a-box/>

View on GitHub



Munki In a Box

A Quick Setup and Fill Repository for Munki with AutoPKG



tar.gz

.zip

Munki in a Box

Post Munki Install Simple Deployment Script

The goal of this script is to deploy a basic munki repo in a simple script based on a set of common variables. I have placed defaults in these variables, but they are easily overridden and you should decide where they go.

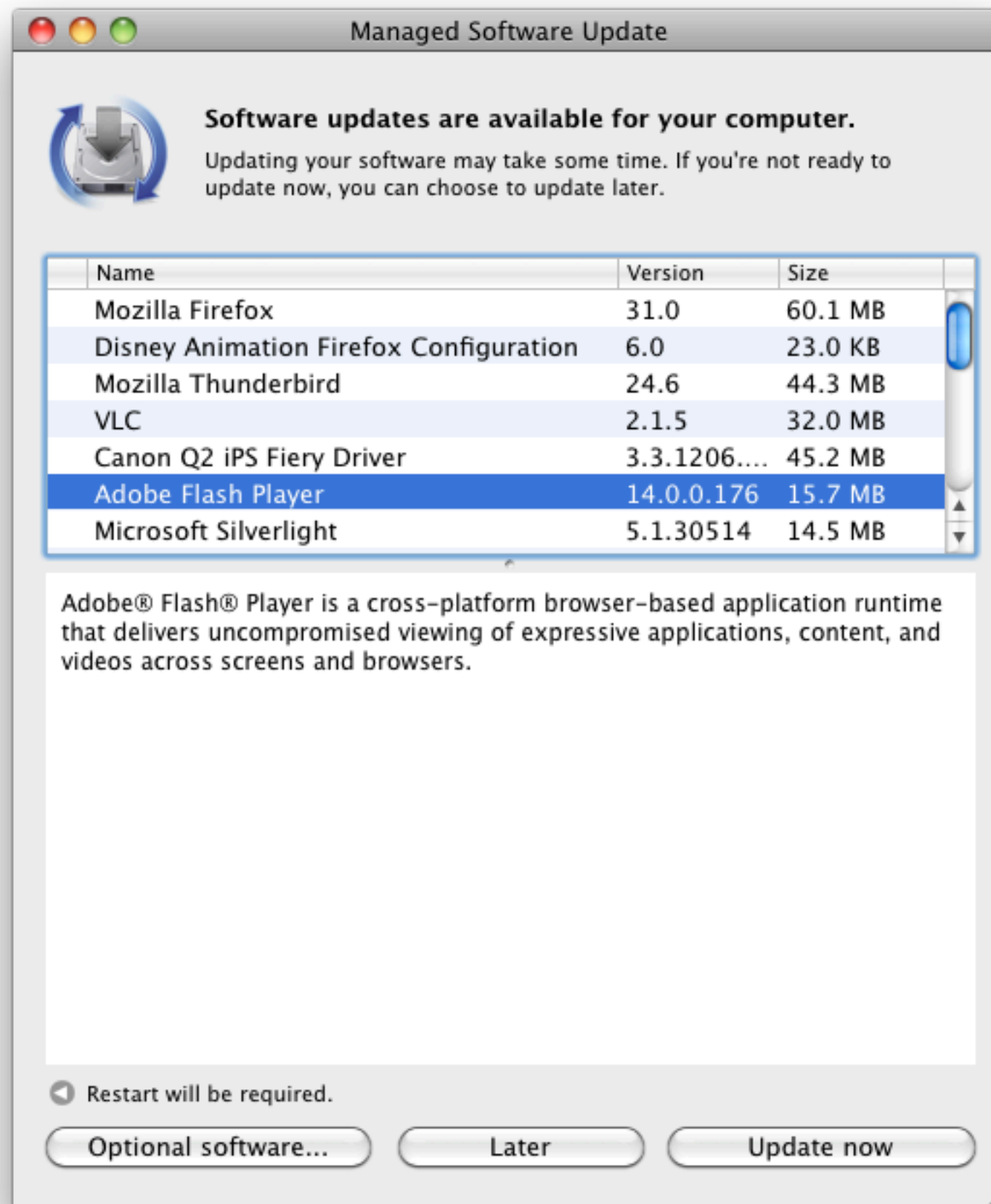
This script is based upon the [Demonstration Setup Guide for Munki](#), [Getting Started with AutoPKG](#), and other sources. My sincerest thanks to Greg Neagle, Tim Sutton, Allister Banks, Rich Trouton, Charles Edge, Hannes Juutilainen, Sean Kaiser, Peter Bukowski and numerous others who have helped me assemble this script.

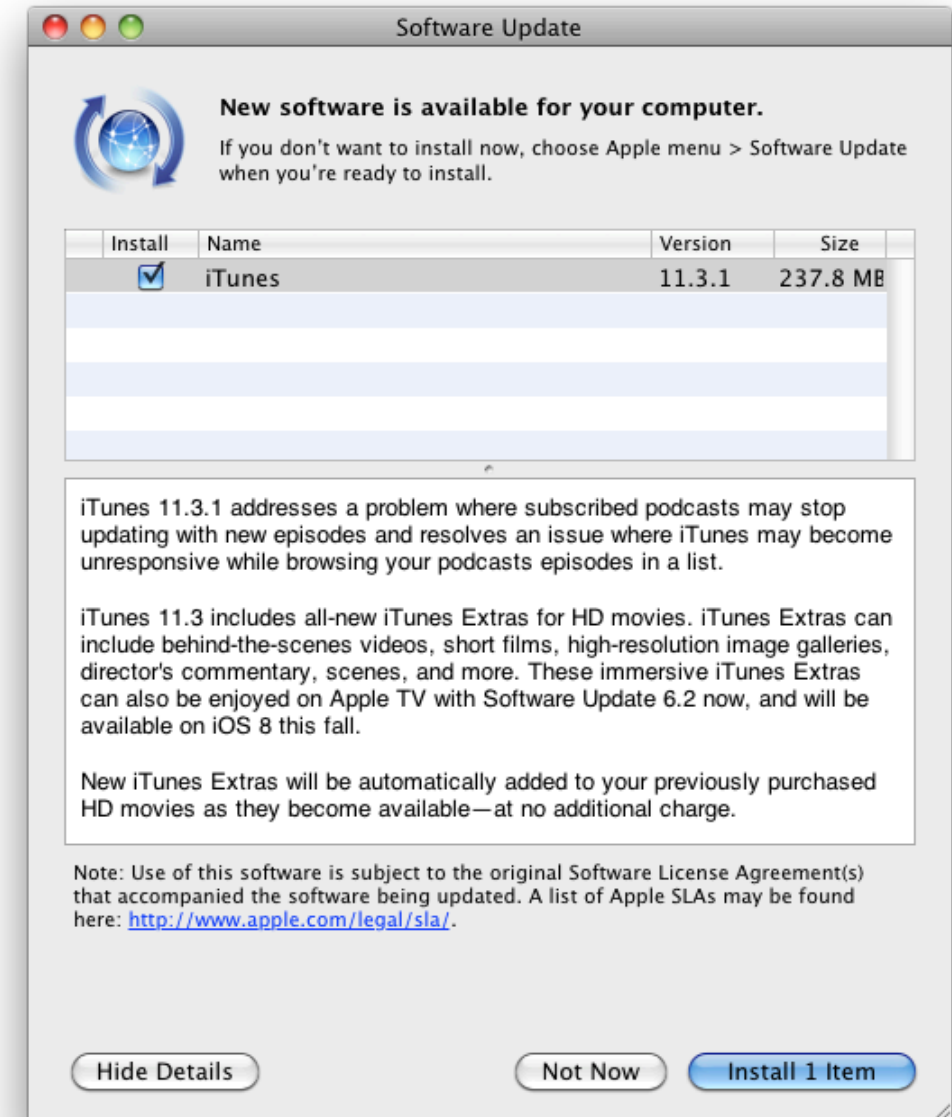
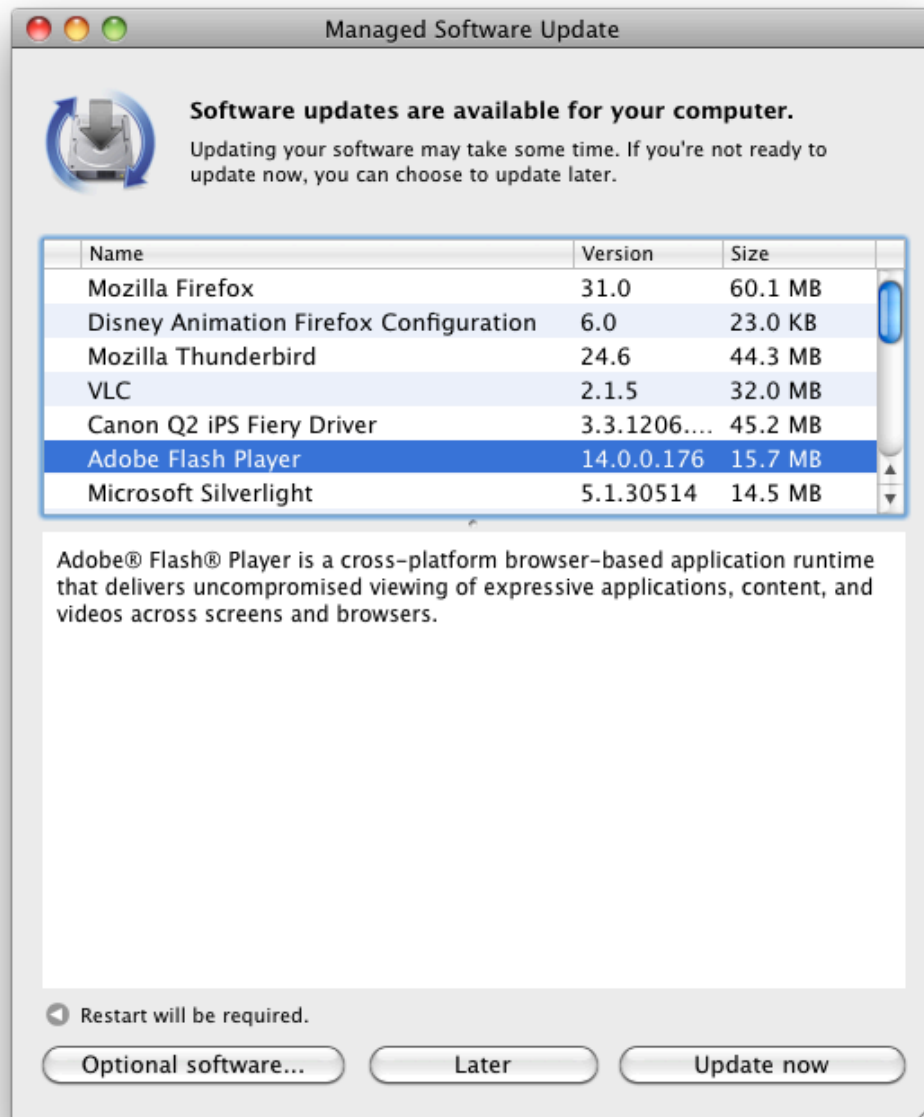
Even more

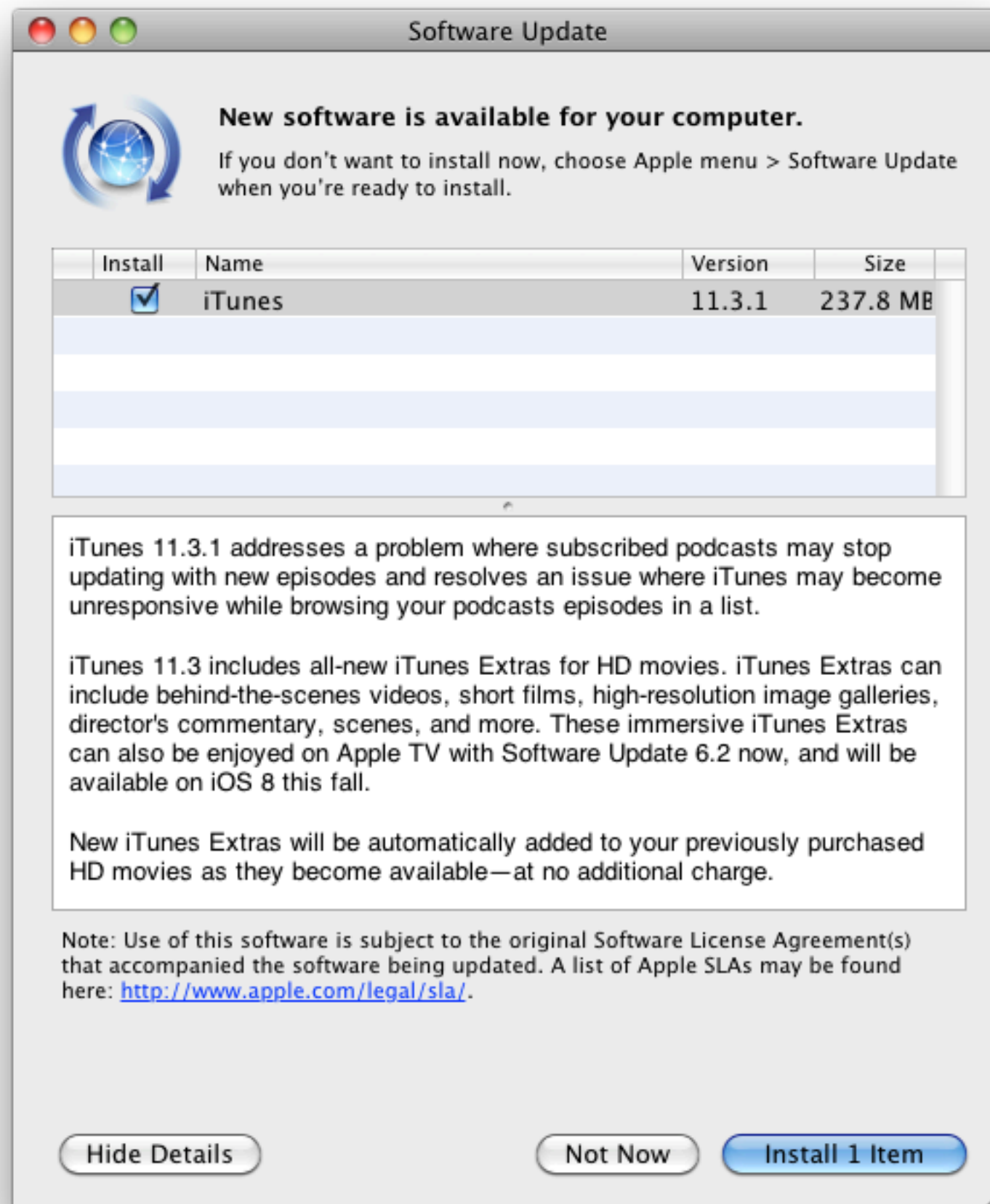
- Authorization database:
<http://grahamgilbert.com/blog/2013/12/22/managing-the-authorization-database-with-munki/>
- Configuration Profiles:
<https://github.com/timsutton/make-profile-pkg>
- Managing printers:
<https://github.com/munki/munki/wiki/Managing-Printers-With-Munki>

Back to Munki...

User interface







iTunes 11.3.1 addresses a problem where subscribed podcasts may stop updating with new episodes and resolves an issue where iTunes may become unresponsive while browsing your podcasts episodes in a list.

iTunes 11.3 includes all-new iTunes Extras for HD movies. iTunes Extras can include behind-the-scenes videos, short films, high-resolution image galleries, director's commentary, scenes, and more. These immersive iTunes Extras can also be enjoyed on Apple TV with Software Update 6.2 now, and will be available on iOS 8 this fall.

New iTunes Extras will be automatically added to your previously purchased HD movies as they become available—at no additional charge.

Note: Use of this software is subject to the original Software License Agreement(s) that accompanied the software being updated. A list of Apple SLAs may be found here: <http://www.apple.com/legal/sla/>.

Hide Details

Not Now

Install 1 Item





Featured

Top Charts

Categories

Purchases

Updates

OS X Yosemite

Every bit as powerful as it looks.

The next big release of the world's most advanced desktop operating system. Now available as a free upgrade.

Learn More >

FREE UPGRADE

1 Update Available

UPDATE ALL

X

Software Update

Restart Required

Updates are available for your computer

iBooks Update 1.0.1, iTunes 12.0.1, OS X Update Combined 10.9.5

iBooks Update 1.0.1

This version of iBooks includes bug fixes and improvements to performance and stability.

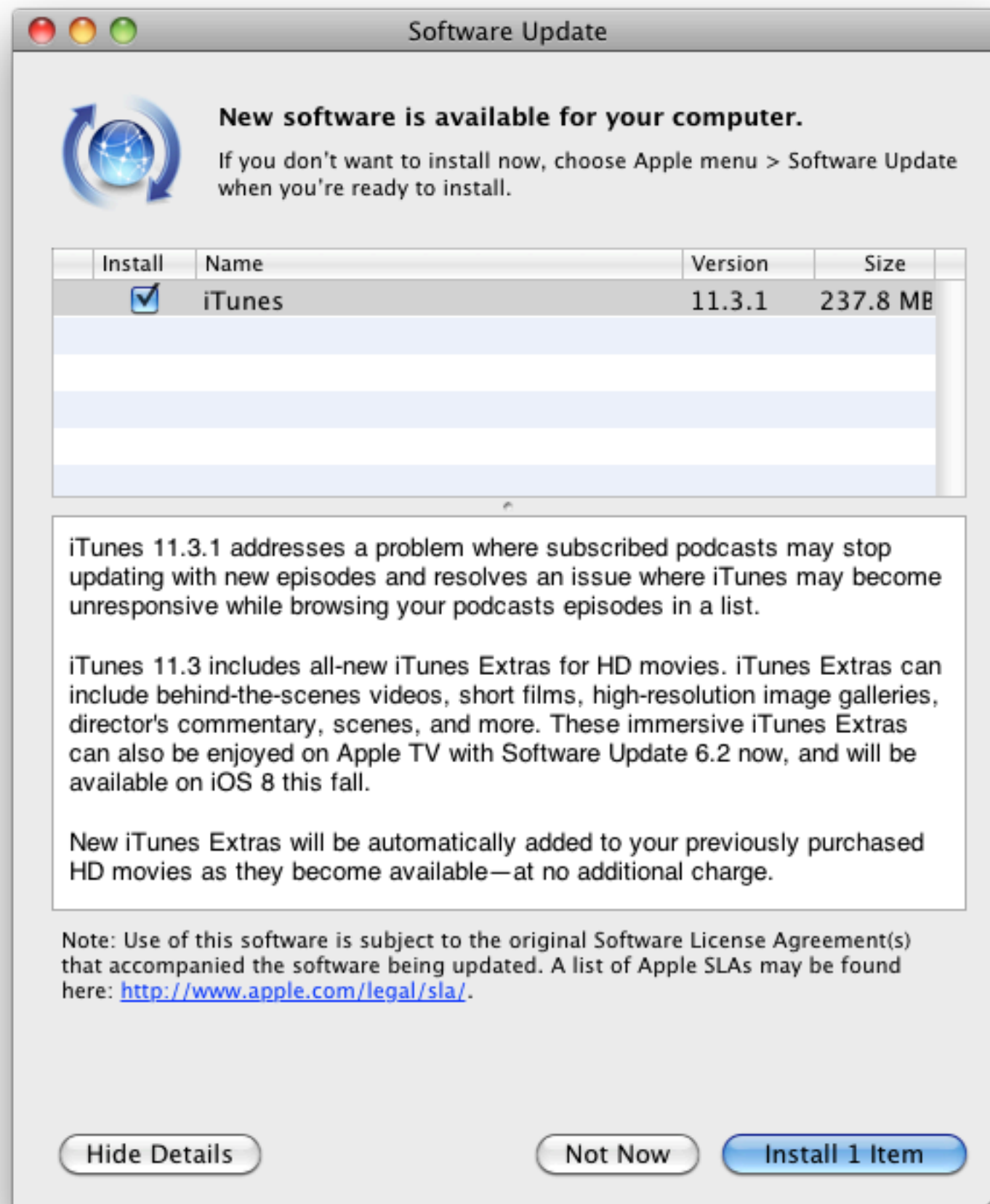
UPDATE

iTunes 12.0.1

This update includes many design and performance improvements that make iTunes easier and more enjoyable to use.

... More

UPDATE



iTunes 11.3.1 addresses a problem where subscribed podcasts may stop updating with new episodes and resolves an issue where iTunes may become unresponsive while browsing your podcasts episodes in a list.

iTunes 11.3 includes all-new iTunes Extras for HD movies. iTunes Extras can include behind-the-scenes videos, short films, high-resolution image galleries, director's commentary, scenes, and more. These immersive iTunes Extras can also be enjoyed on Apple TV with Software Update 6.2 now, and will be available on iOS 8 this fall.

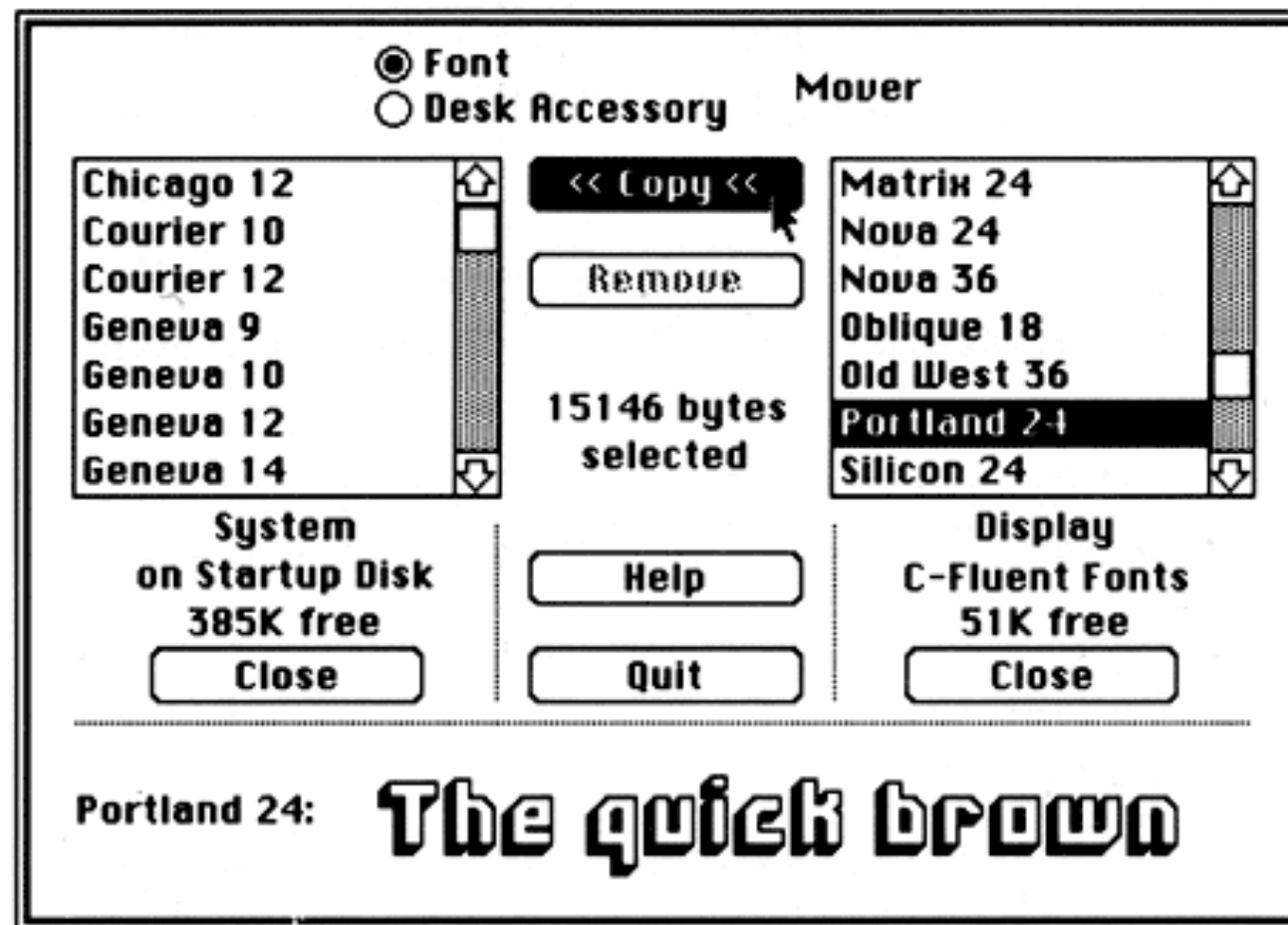
New iTunes Extras will be automatically added to your previously purchased HD movies as they become available—at no additional charge.

Note: Use of this software is subject to the original Software License Agreement(s) that accompanied the software being updated. A list of Apple SLAs may be found here: <http://www.apple.com/legal/sla/>.

Hide Details

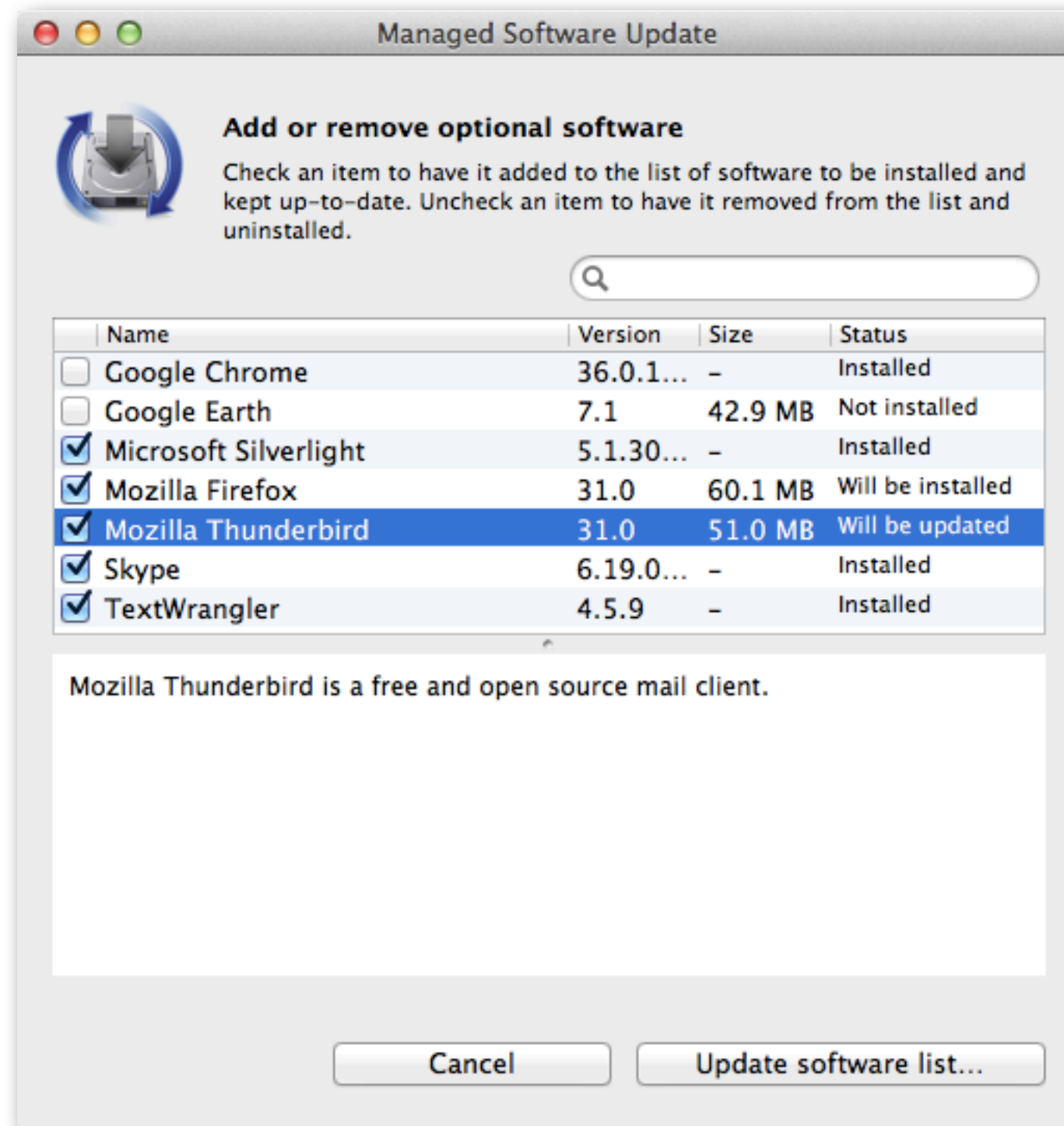
Not Now

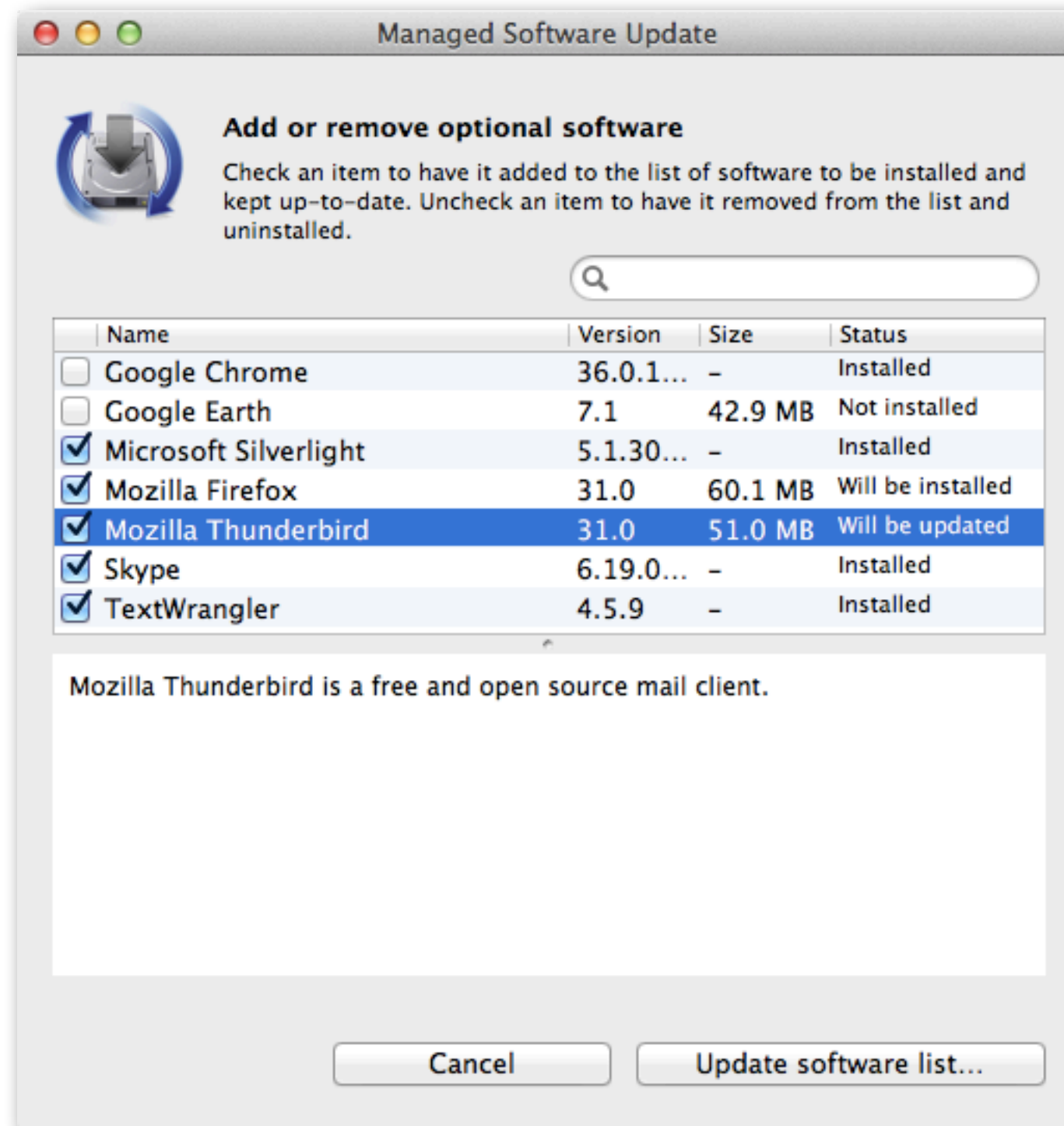
Install 1 Item



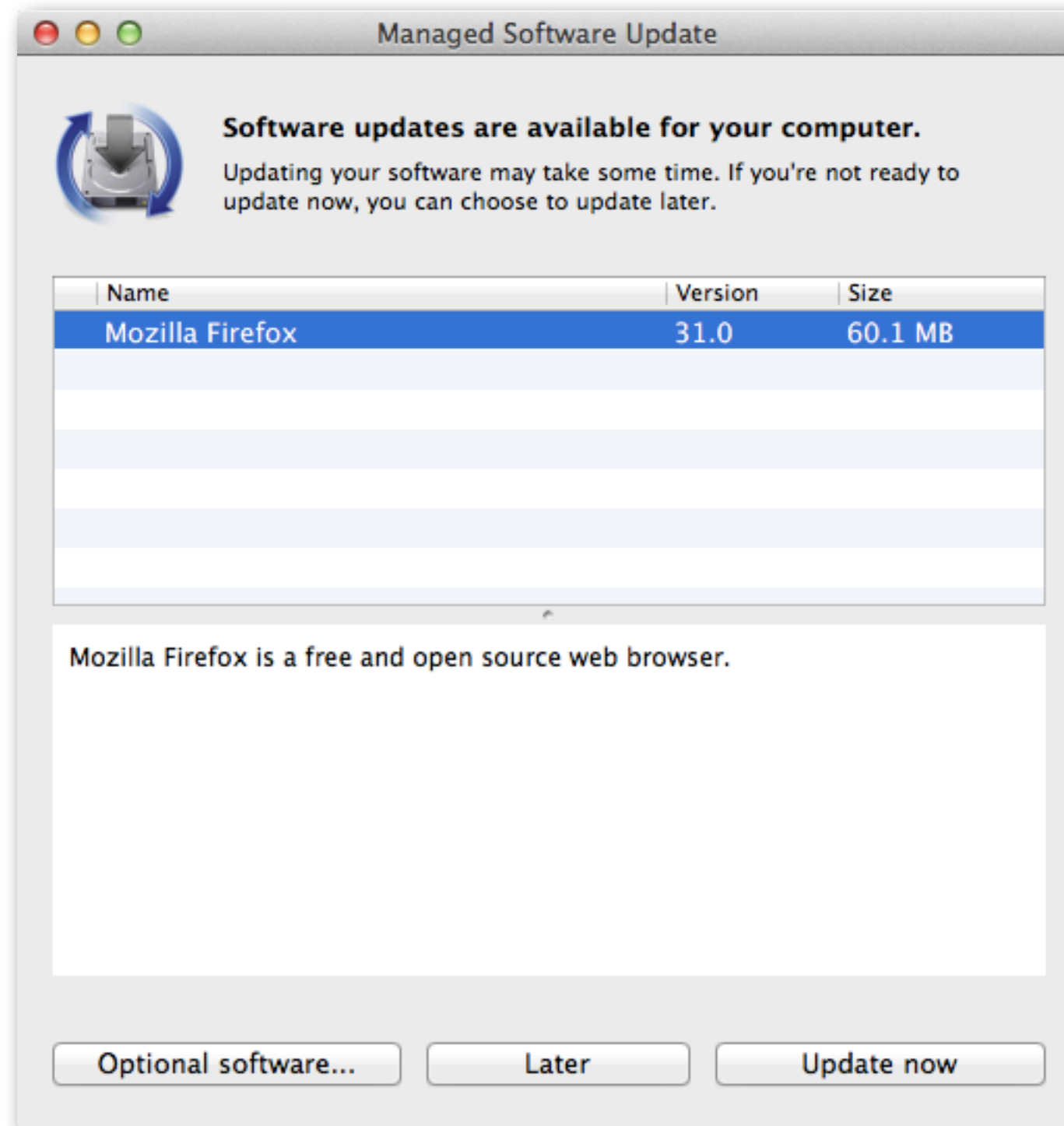
Optional software

aka "Self-Service"









Managed Software Center

Software

Categories

My Items

Updates



Remove

Mozilla Firefox

Mozilla Firefox is a free and open source web browser.


Walt Disney Animation Studio

www.disneyanimation.com/#

Google

Walt Disney Animation Studios

PROJECTS STUDIO EVENTS NEWS CAREERS TECHNOLOGY FAQs



BIG HERO 6
IN THEATERS NOVEMBER 7, 2014


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Information

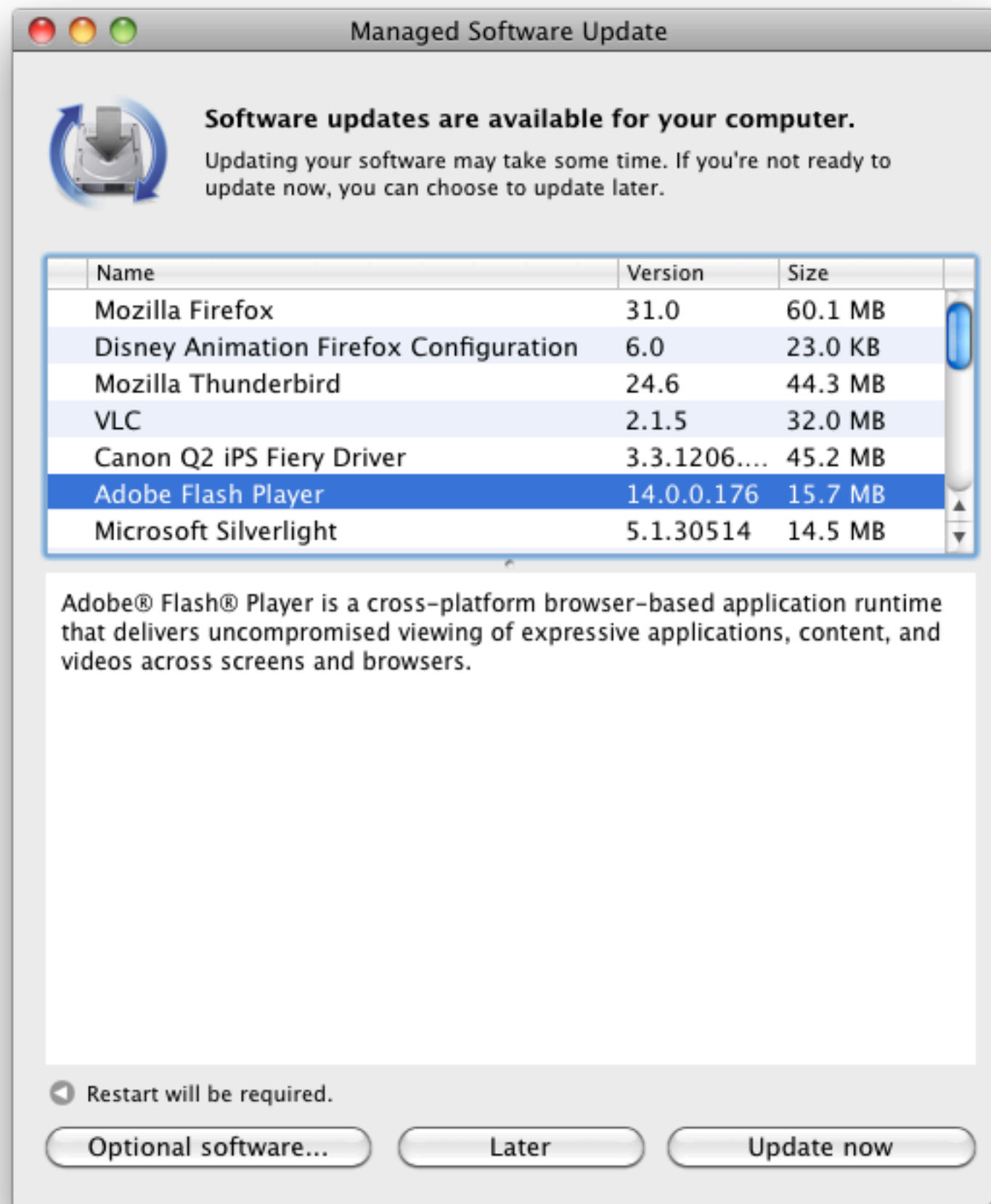
Category: Internet
Version: 31.0
Size: 60.1 MB
Developer: Mozilla

Status: Installed

More by Mozilla

 **Mozilla Thunderbird**
Communication

Software | Categories | Updates



Managed Software Center

Software


Categories

My Items

Updates


6 pending updates

UPDATE ALL

 **Evernote**
Evernote
Version 5.5.2


Evernote makes it easy to remember things big and small from your everyday life using your computer, phone, tablet and the web.

✕

 **Mozilla Firefox**
Mozilla
Version 31.0


Mozilla Firefox is a free and open source web browser.

✕

 **Google Chrome**
Google
Version 37.0.2062.94


Google's web browser.

✕

 **LibreOffice**
LibreOffice
Version 4.3.1002


LibreOffice is the free power-packed Open Source personal productivity suite for Windows, Macintosh and Linux, that gives you six feature-rich applications for all your document production and data processing needs: Writer, Calc, Impress, Draw, Math and Base.

✕

 **Skype**
Microsoft
Version 6.19.0.450

Internet voice and video chat application


✕

 **TextWrangler**
Bare Bones
Version 4.5.10

TextWrangler is the powerful general purpose text editor, and Unix and server administrator's tool. TextWrangler is the "little brother" to BBEdit, a leading professional HTML and text editor.


✕

Other available updates

 **Adium**
The Adium Team
Version 1.5.10


Adium is a free instant messaging application for Mac OS X that can connect to AIM, MSN, Jabber, Yahoo, and more.

+

 **OmniGraffle Professional**
Omni Group
Version 5.4.4

Need a diagram, process chart, quick page-layout, website wireframe or graphic design? OmniGraffle can help you make eye-popping graphic documents quickly by keeping lines connected to shapes even when they're moved, providing powerful styling tools, importing and exporting Microsoft Visio files, and magically organizing diagrams with just one click. Whether you need a quick sketch or an epic technical figure, OmniGraffle keeps it gorgeously understandable.

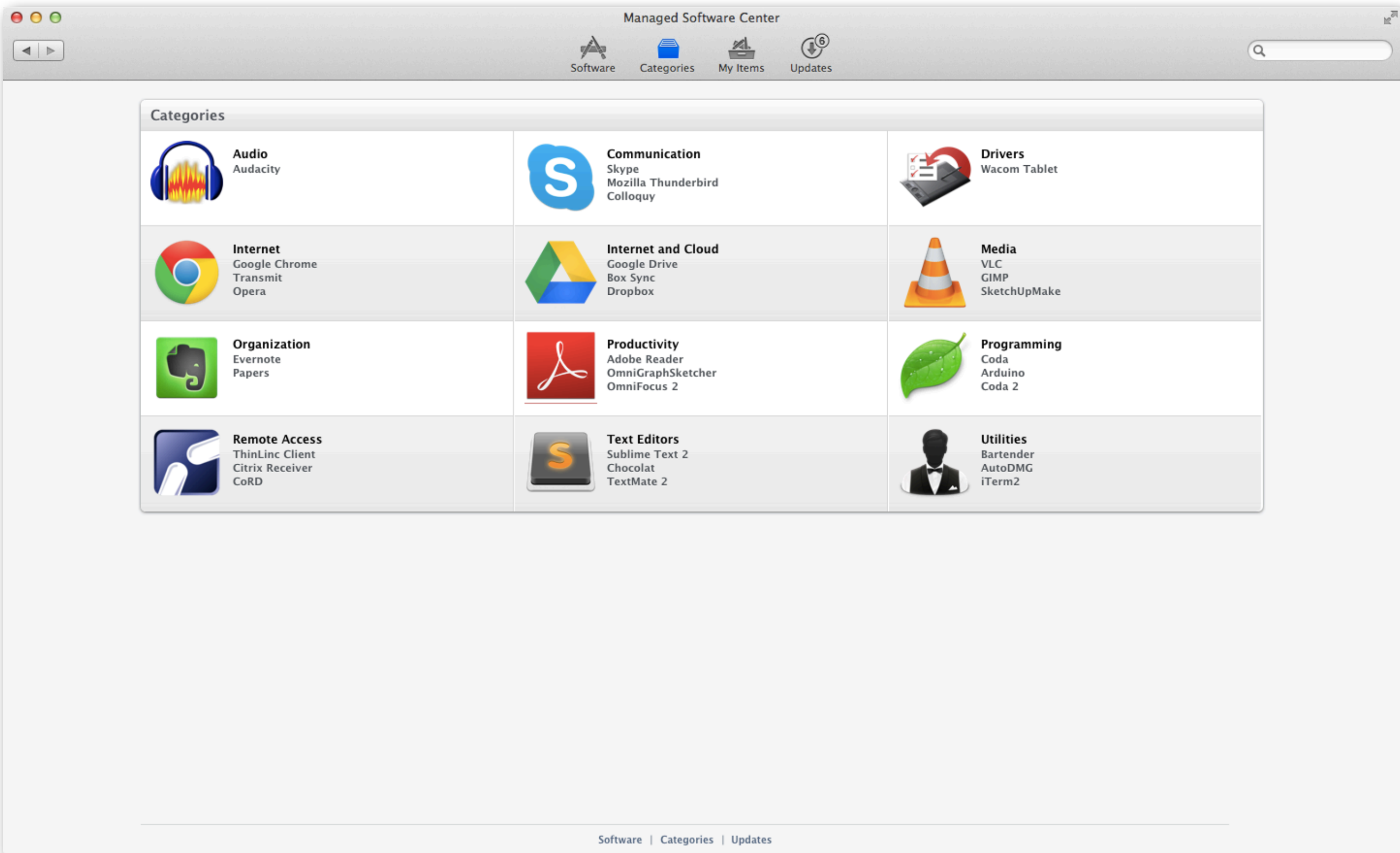
+

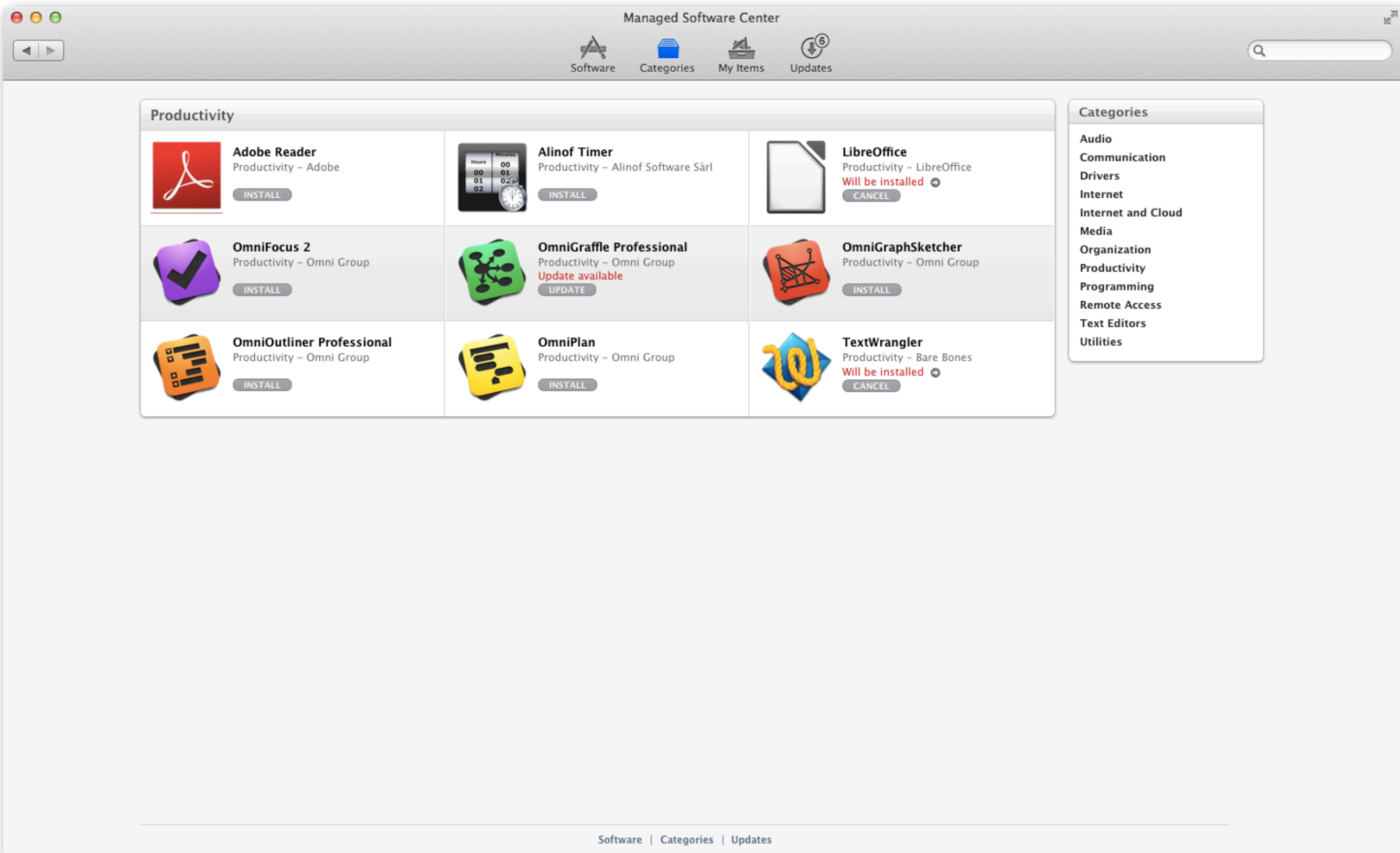
 **TextMate 2**

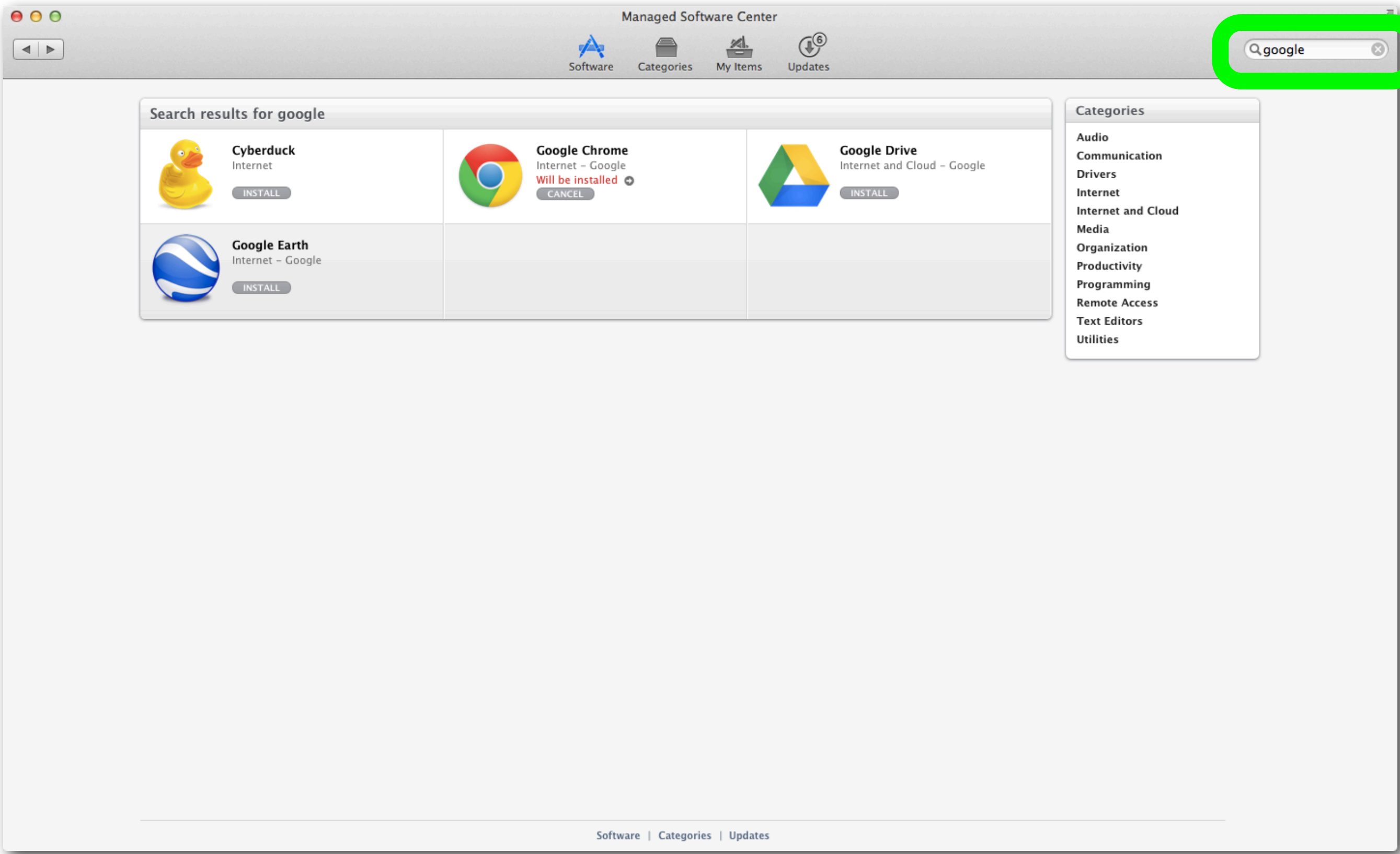
TextMate brings Apple's approach to operating systems into the world of text editors. By bridging UNIX underpinnings and GUI, TextMate

+

Discovery








Managed Software Center

Software

Categories

My Items

Updates



Remove

Google Chrome

Google's web browser.

Walt Disney Animation Studios

www.disneyanimation.com/#

PROJECTS


STUDIO

EVENTS

NEWS

CAREERS


TECHNOLOGY




BIG

IN THEATERS NOVEMBER 7


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More in Internet



FileZilla



Google Earth
Google




MarsEdit
Red Sweater



Fetch – Full featured file manager
Fetch Softworks

More by Google



Google Drive
Internet and Cloud

Thursday, November 6, 14





OS X

Design

Continuity

Better Apps

What is OS X

How to Upgrade

Upgrade Now



OS X Yosemite

Every bit as powerful as it looks.

An elegant design that feels entirely fresh, yet inherently familiar. The apps you use every day, enhanced with new features. And a completely new relationship between your Mac and iOS devices. OS X Yosemite changes how you see your Mac. And what you can do with it. Upgrade for free at the Mac App Store.

Upgrade Now

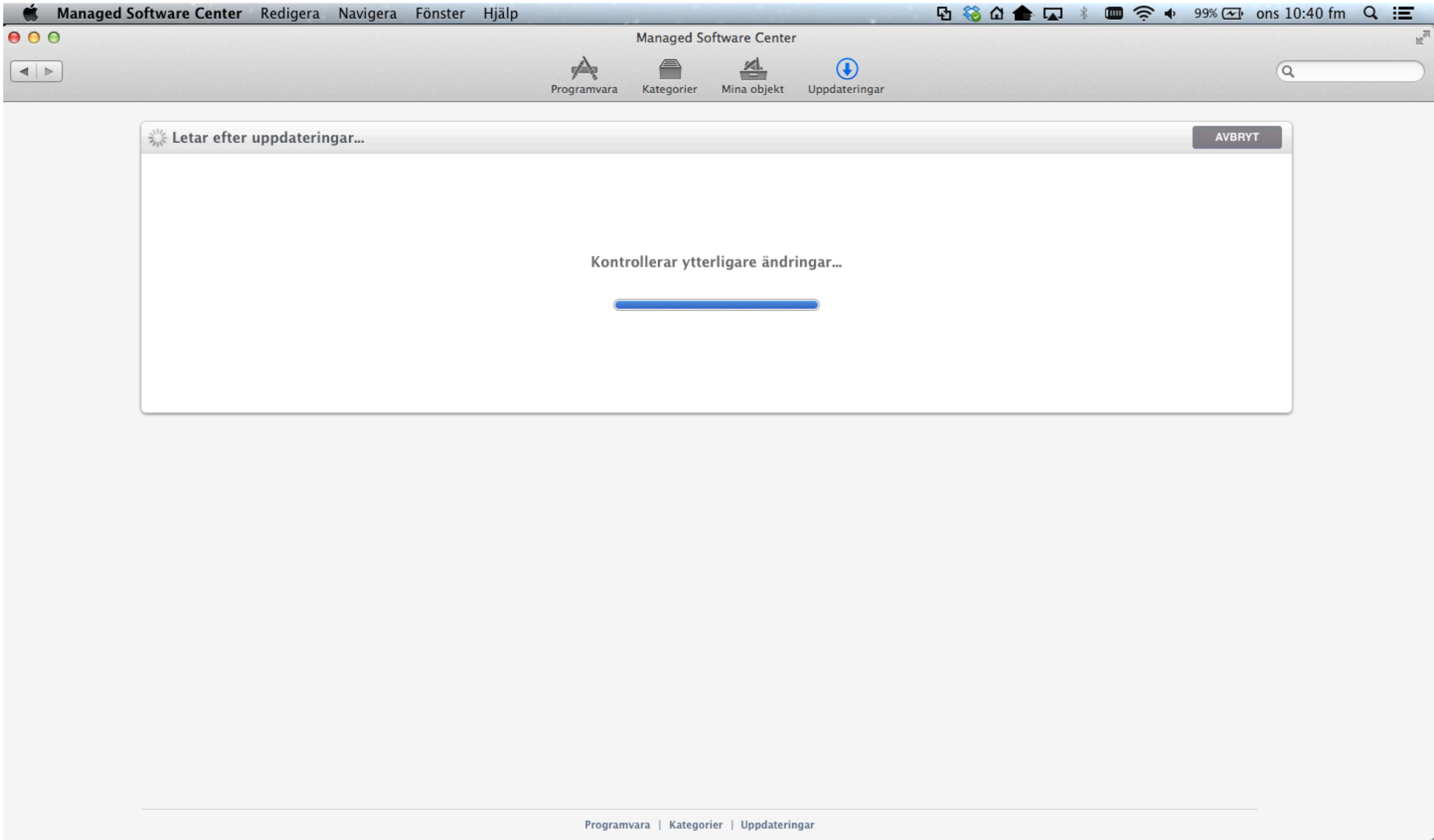


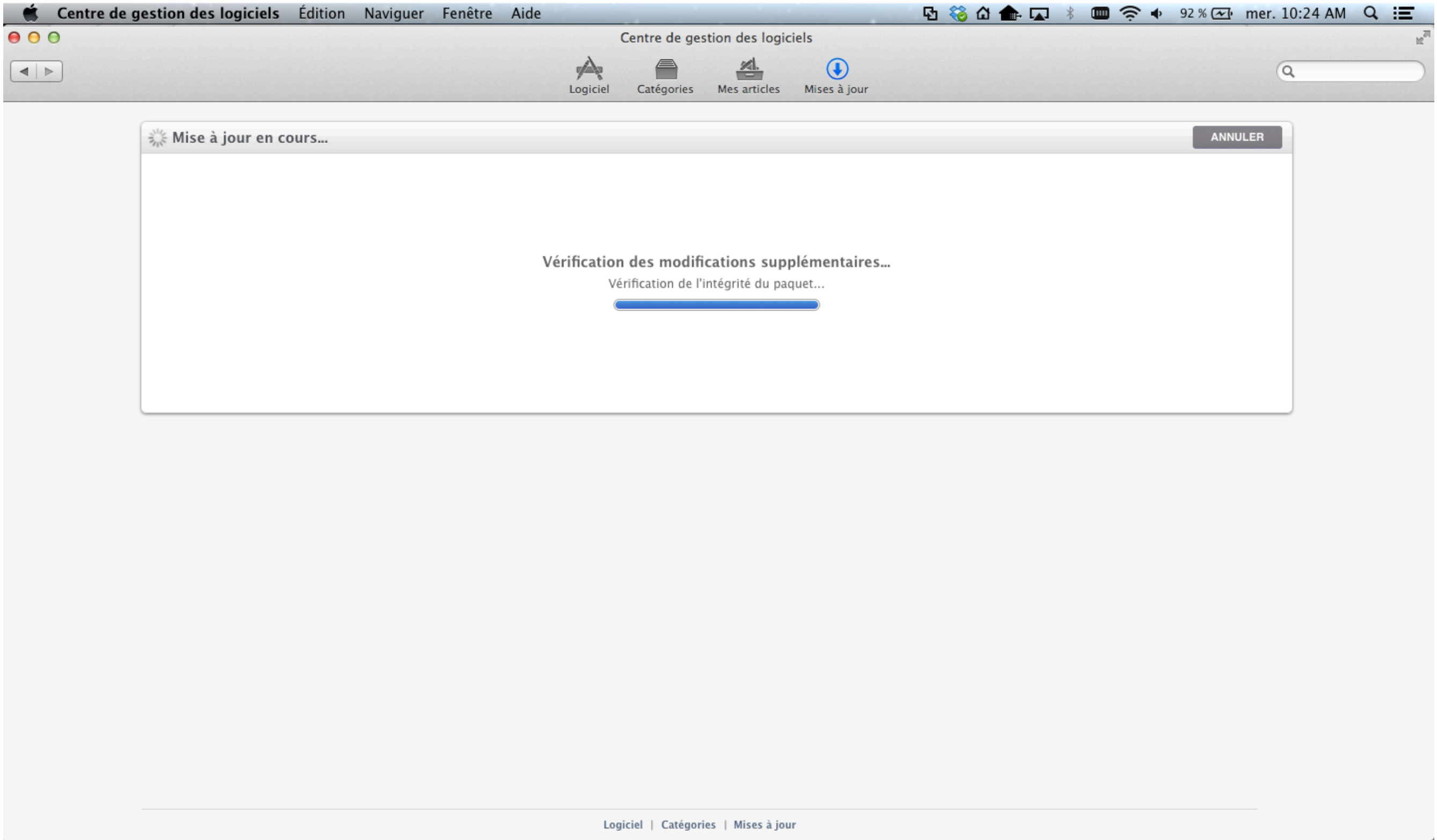
Managed Software Center



Demo

Localizations





Danish
German
Spanish
English
French
Italian
Dutch
Norwegian
Russian (partial)
Swedish
Finnish

Dansk
Deutsch
Español
English
Français
Italiano
Nederlands
Norsk Bokmål
Русский (partial)
Svenska
Suomi



















Customization

Managed Software Center

Your source for software for your Mac.

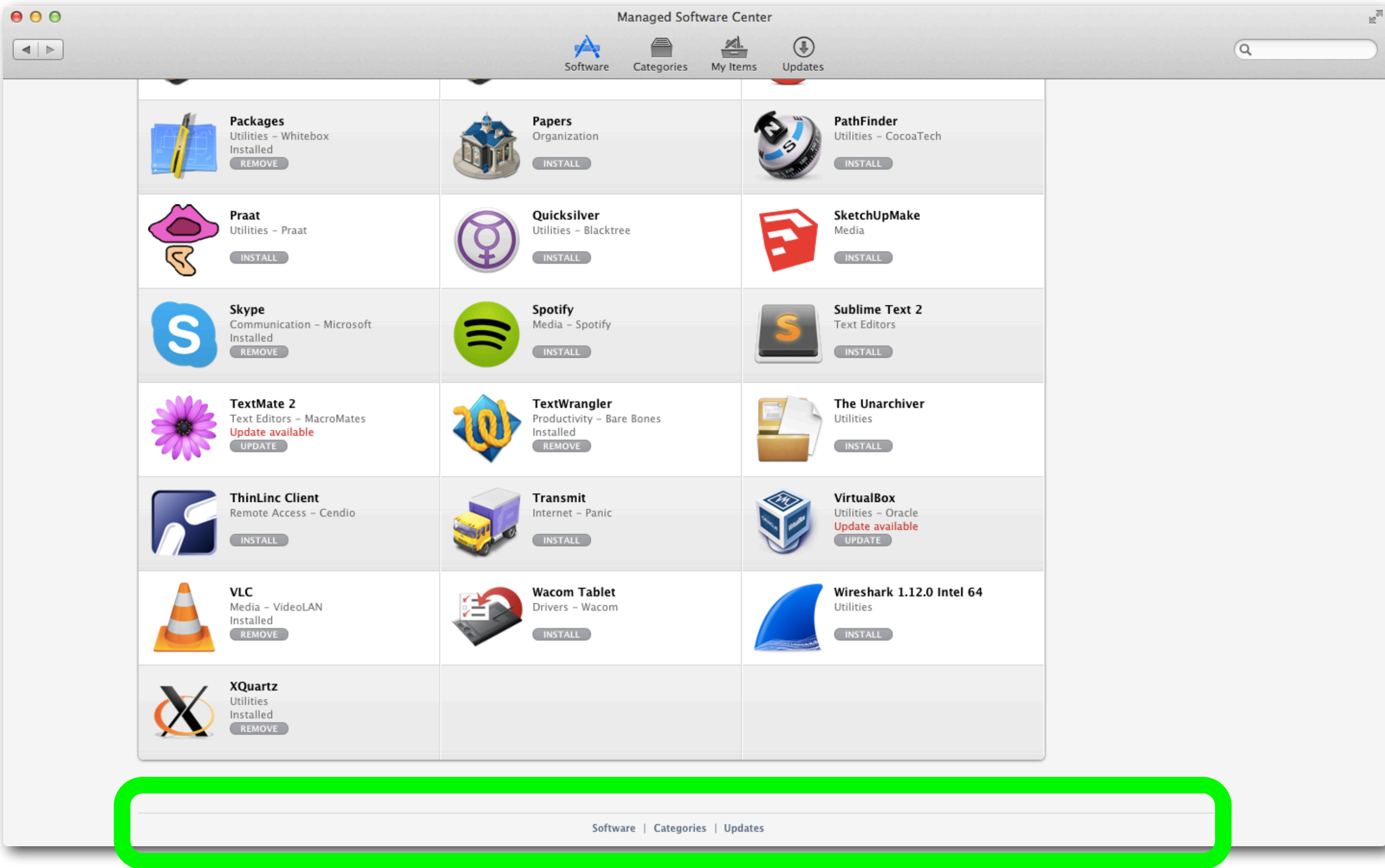


All items

 Adium Communication – The Adium Team Update available UPDATE	 Adobe Flash Player Internet – Adobe Installed REMOVE	 Adobe Reader Productivity – Adobe INSTALL
 Alinof Timer Productivity – Alinof Software Sàrl INSTALL	 Arduino Programming – Arduino INSTALL	 Atom Text Editors – GitHub, Inc. INSTALL
 Audacity Audio – The Audacity Team INSTALL	 AutoDMG Utilities – MagerValp INSTALL	 Bartender Utilities – Surtees Studios INSTALL
 BBEdit Text Editors – Bare Bones INSTALL	 Box Sync Internet and Cloud – Box INSTALL	 Caffeine Utilities – Lighthouse Software INSTALL
 Chicken Remote Access INSTALL	 Chocolat Text Editors INSTALL	 Citrix Receiver Remote Access – Citrix INSTALL
 Coda Programming – Panic	 Coda 2 Programming – Panic	 Colloquy Communication

Categories

- Audio
- Communication
- Drivers
- Internet
- Internet and Cloud
- Media
- Organization
- Productivity
- Programming
- Remote Access
- Text Editors
- Utilities




Managed Software Center

Software


Categories

My Items

Updates



All items




Adium

Communication – The Adium Team

Update available


UPDATE



Alinof Timer

Productivity – Alinof Software Sàrl


INSTALL



Audacity

Audio – The Audacity Team


INSTALL



BBEdit

Text Editors – Bare Bones


INSTALL



Chicken


Remote Access

INSTALL



Coda

Programming – Panic




Adobe Flash Player

Internet – Adobe

Installed


REMOVE



Arduino

Programming – Arduino


INSTALL



AutoDMG

Utilities – MagerValp


INSTALL



Box Sync

Internet and Cloud – Box


INSTALL



Chocolat


Text Editors

INSTALL



Coda 2


Programming – Panic



Adobe Reader

Productivity – Adobe


INSTALL



Atom

Text Editors – GitHub, Inc.


INSTALL



Bartender

Utilities – Surtees Studios


INSTALL



Caffeine

Utilities – Lighthouse Software


INSTALL



Citrix Receiver

Remote Access – Citrix

INSTALL



Colloquy

Communication

Quick Links

Welcome

Support

All Categories

What's new in Mavericks

Apple

Search Google

Search Bing

Apple support

Mac

OS X

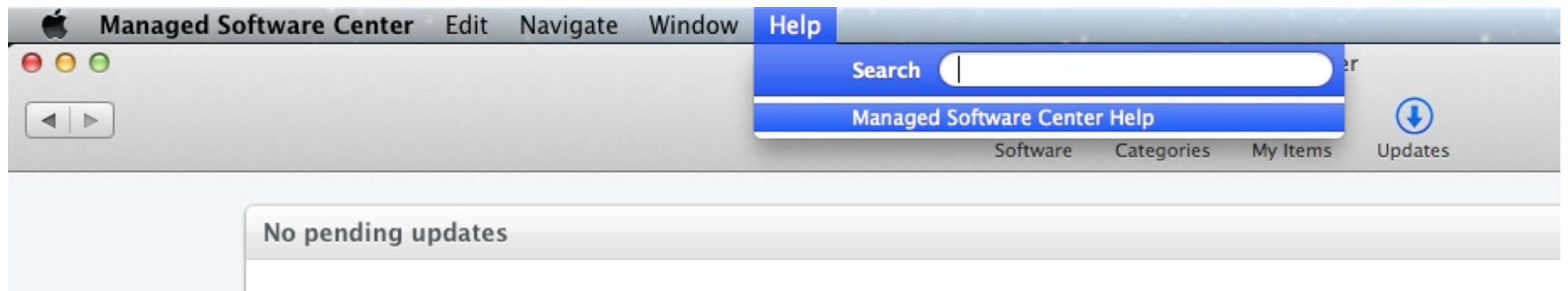
Mac Apps

Thursday, November 6, 14

Demo

Custom Help

`sudo defaults write /Library/Preferences/ManagedInstalls HelpURL`
`"http://goo.gl/cL0Skr"`





Coming soon

Munki 2.1:

- Eliminate dependency on `curl`
Support client certificates out-of-the-box on 10.9+
- Better support for Adobe CCP packages
Functional uninstalls!

seque

- Lines of code to support all installs other than Adobe (i.e. packages and drag-n-drop DMGs):
1277
- Lines of code to support Adobe installs:
1412 (and climbing)

Munki 2

Workshop?
Demo?
Hands-on?



The logo for Acorn 4 Media - Flying Meat features a stylized acorn with a textured, brown cap and a smooth, light-brown nut. To the right of the acorn, the text "Acorn 4" is displayed in a bold, black, sans-serif font, with "Media - Flying Meat" in a smaller, regular font below it. A grey, rounded rectangular button with the word "INSTALL" in white, uppercase letters is positioned below the text.



Acorn 4

Media – Flying Meat

INSTALL



Adium
Communication – The Adium Team
Update available
UPDATE



Adobe Flash Player
Internet – Adobe
Installed
REMOVE



Adobe Reader
Productivity – Adobe

INSTALL



Alinof Timer
Productivity – Alinof Software Sàrl

INSTALL



Apache OpenOffice
Productivity

INSTALL



AppCode
Uncategorized

INSTALL



Arduino
Developer – Arduino



Atom
Text Editors – GitHub, Inc.

INSTALL



Audacity
Uncategorized

INSTALL



AutoDMG
Uncategorized

INSTALL



Bartender
Uncategorized

INSTALL



BEdit
Uncategorized

INSTALL



Box Sync
Cloud Storage – Box



Caffeine
Utilities - Lighthouse Software

- Cloud Storage
- Communication
- Developer
- Drivers
- Internet
- Media
- OS
- Organization
- Productivity
- Remote Access
- Text Editors
- Uncategorized
- Utilities
- Virtualization



Software



Categories



My Items



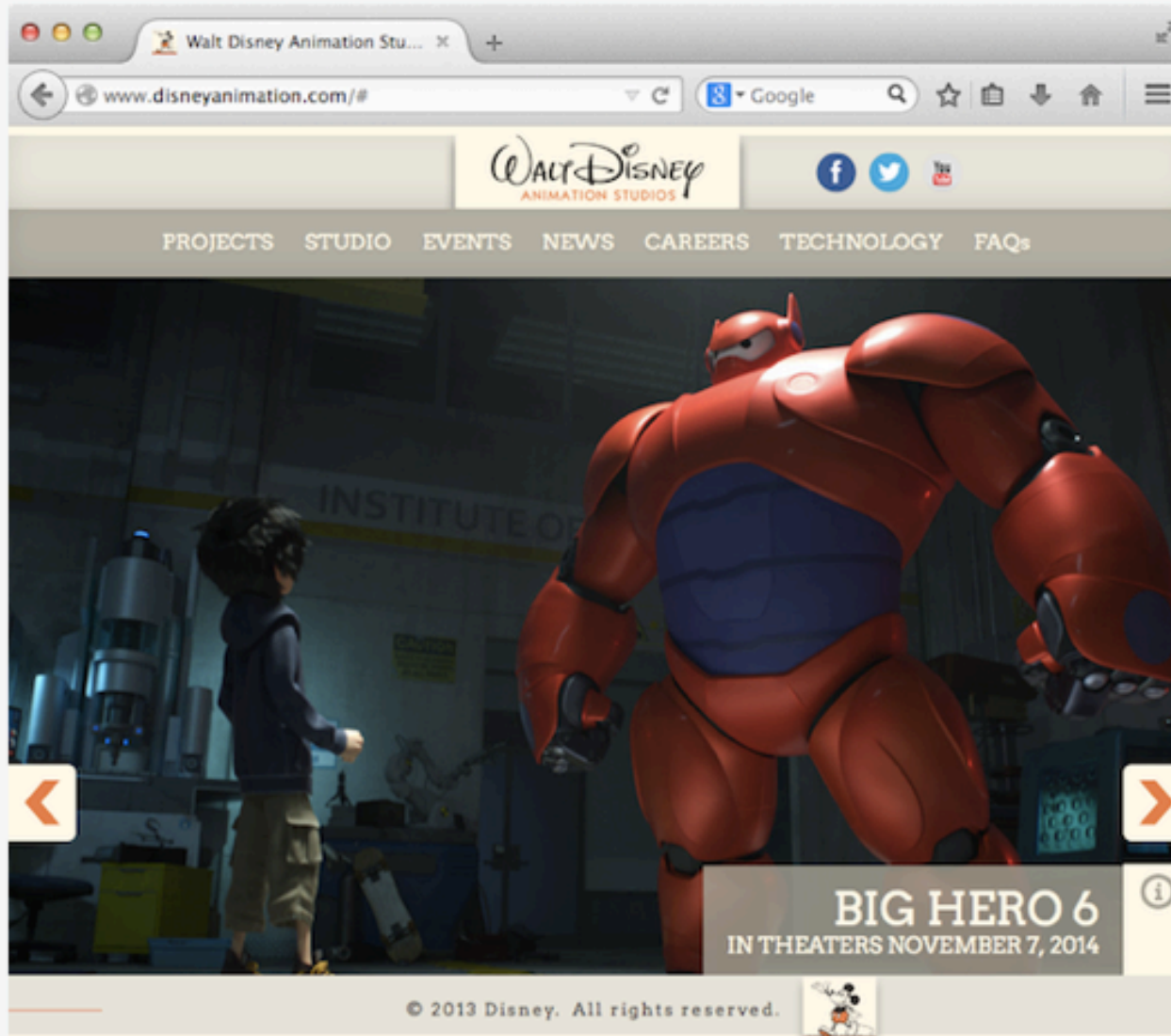
Updates



Remove

Mozilla Firefox

Mozilla Firefox is a free and open source web browser.



Information

Category: Internet

Version: 33.0.2

Size: 64.2 MB

Developer: Mozilla

Status: Installed

More in Internet



MarsEdit
Red Sweater



Cyberduck



Google Earth
Google



FileZilla

More by Mozilla



Mozilla Thunderbird
Communication



<http://managingosx.wordpress.com>