

OS X in Educational Environment

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Users, you and managed OS X?

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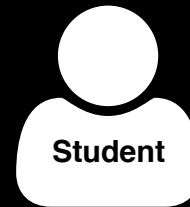
- IT Services is a division of University Services (like HR Services, Financial Services, etc.)
 - "The University Services of the University of Jyväskylä offers support, assistance and services for the education, research and other operations of the University."
- IT is highly centralized, no dedicated personnel in faculties or departments
- For desktops and laptops, IT Services supports Windows, Linux and OS X

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Active user accounts



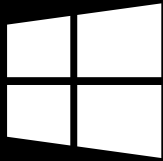
2 500



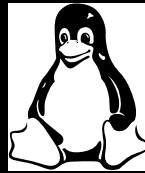
15 000

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Operating systems



100 servers
5000 clients



250 servers
300 clients



1 server
500 clients

Staff vs. students

Single user vs. multiple users

The following is mostly for single user machines

Management Principals

Everyone eats the same food

If you can't use your own machine in a "fully managed" mode, how can you expect your normal users to do so?

Our job is to support

End users are here to research and educate, not to figure out why their machine is not working...

Try to work like a normal user

The best way to uncover hidden problems is just using your mac

Be flexible

If a researcher needs X to do his/her job, it's not our job to force Y.
(Common sense should be applied though...)

Why we manage

Things don't always "just work"



Why we manage

- The machine has to be safe but also usable
- Users probably have better things to do than worry about Flash or Java updates

Why we manage

- We are regulated and have common needs regardless of the OS
- Things change. We need to be able to change configuration if needed.
- We need to be able to respond to security issues

What we manage

What we manage

- Apple software updates
 - Important things should be tested before larger deployment
 - We need to control when updates are available to clients
 - Sometimes we need to force...
 - Serve with Reposado, install with Munki

What we manage

- Third party software and updates
 - Important things should be tested before larger deployment
 - We need to control when updates are available to clients
 - Sometimes we need to force...
 - Serve with Apache, install with Munki

What we manage

- Support personnel needs remote access
 - Apple Remote Desktop is enabled by default (and kept enabled)
 - SSH on demand

What we manage

- Configuration - Puppet
 - Used for trickier and non-standard things
 - Configures Munki
 - Reports to PuppetDB

What we manage

- Configuration - Munki
 - Installs printers, modifies authorizationdb, installs firewall packages, etc.
 - Configure things by installing a package or running a script
 - Keeps Puppet working
 - Reports to Munkireport-php

What we manage

- Configuration profiles
 - Used when we need to set something in user domain

What we manage

- User authentication from Active Directory
 - Single sign-on (SSO) simplifies things for the user
 - Users are not admins by default, but...

What we manage

- Munki - <https://code.google.com/p/munki/>
- Munkireport-php - <https://github.com/munkireport/munkireport-php>
- MunkiAdmin - <https://github.com/hjuutilainen/munkiadmin>
- Curl for Munki - <https://github.com/hjuutilainen/curl-for-munki>
- Puppet Open Source - <http://puppetlabs.com/puppet/puppet-open-source>
- Reposado - <https://github.com/wdas/reposado>
- DeployStudio - <http://www.deploystudio.com/Home.html>
- AutoPkg - <https://github.com/autopkg/autopkg>
- Cisco Meraki Systems Manager MDM - <https://meraki.cisco.com>

What we don't manage

No blacklists or whitelists

We don't block, we enable

Interesting things...

Bootstrapping a client

Bootstrapping a client

- Get the machine to a state where it can install packages
 - Boot from network to DeployStudio
 - Boot from external disk to DeployStudio
 - Take a new machine and turn it on
 - Take an existing machine and turn it on

Install Munki and Puppet

Plain old standard package install from vendor provided packages

Create administrator account

Created with CreateUserPkg.app by @magervalp

Install a client setup package

Payload-free package which:

- Configures network interfaces
- Configures date and time
- Tells the machine it has a Finnish keyboard
- Sets some initial preferences which we want to be there but do not want to manage continuously (set-and-forget)

Configure Puppet

Payload-free package which:

- creates `/etc/puppet/puppet.conf` with correct settings
- creates and loads a launch daemon to run Puppet

Configure Munki

Payload-free package which:

- creates an initial configuration
- requests Munki to run on next reboot

Reboot

Munki runs until there are no more available updates

The first Puppet run

Makes sure the machine has the latest configuration.

Reconfigures Munki to use client certificate authentication, installs a custom curl binary and points the client to a new Munki repository.

Firewall

Firewall

- We manage PF packet filter (10.7+) and IPFW (10.6)
 - <https://github.com/hjuutilainen/pf-conf>
 - <https://github.com/hjuutilainen/ipfw-conf>

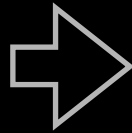
Firewall



Main rules

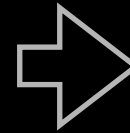
Managed and constantly overwritten

Includes the main configuration, main rules
and common macros



Custom rules

For manual editing (if needed)



Custom rule files

Directory for adding rules programmatically

NetBoot

MacSysAdmin 2013

-

Building an enterprise Mac client

Daniel Svensson, IKEA

Tomorrow

-

NetBoot Deconstructed
Duncan McCracken



Munki

Munki

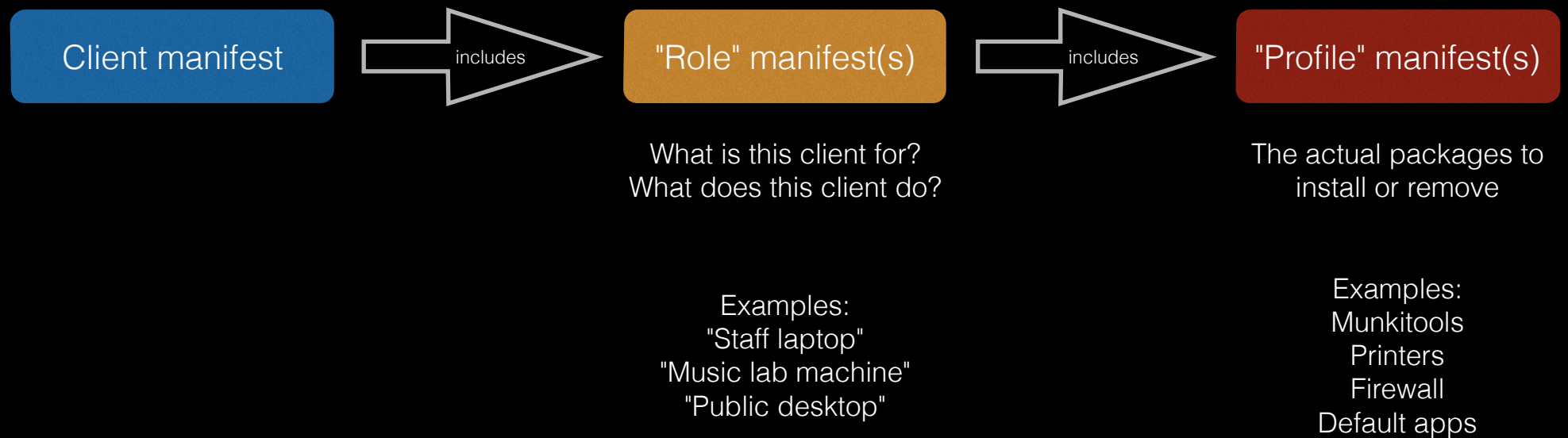
- Every machine has a unique ClientIdentifier...
- ...but corresponding manifest doesn't have to exist
- Server is a bit smarter than the average web server (just a bit...)

I know that Munki automatically requests manifests with predefined names if ClientIdentifier is not set.
But I like to be specific and make sure the clients always request the same manifest. Also I don't like 404 errors in server logs...

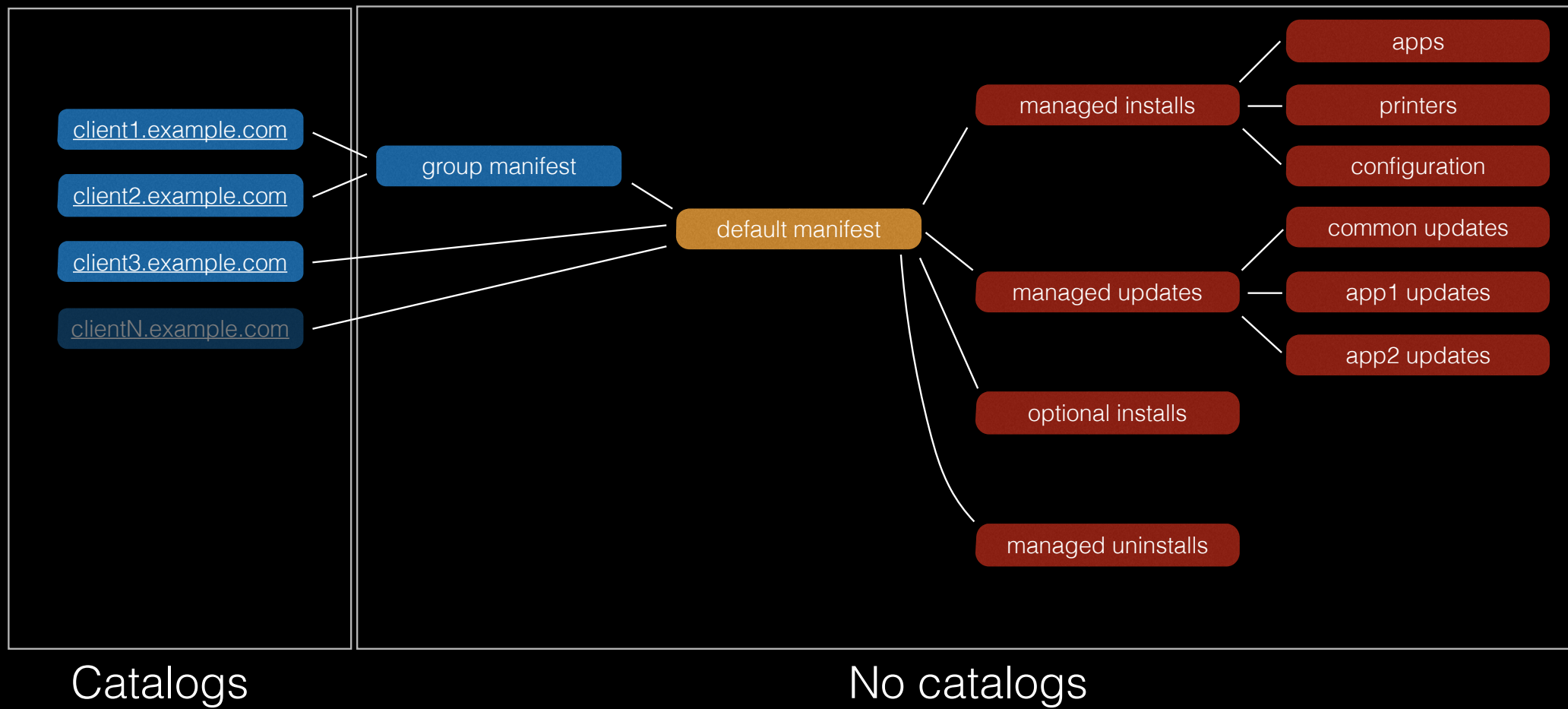
```
RewriteEngine on  
RewriteCond    %{REQUEST_FILENAME} !-f  
RewriteRule    ^(.+) jyu-default-host [L]
```

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
  <key>catalogs</key>
  <array>
    <string>production</string>
  </array>
  <key>included_manifests</key>
  <array>
    <string>group-manifests/jyu-default</string>
  </array>
</dict>
</plist>
```

Manifest abstraction



Based on Puppet roles and profiles concept
<http://www.craigdunn.org/2012/05/239/>



Git

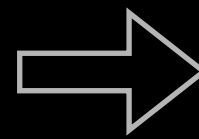
Everything goes to version control

Admin

Admin

Admin

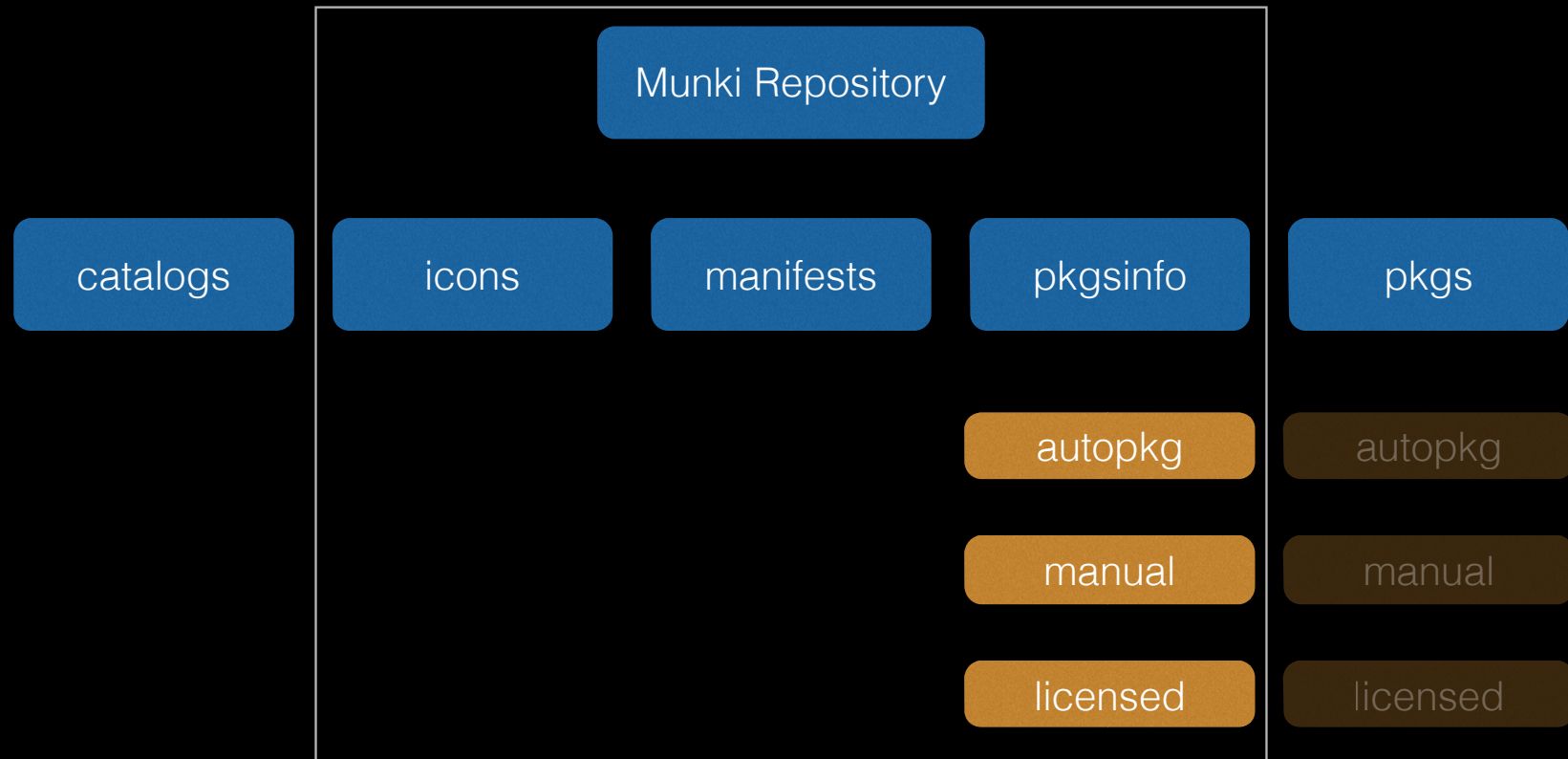
AutoPkg server



Munki server

Munki server

Munki server



Gitolite - <http://gitolite.com>

...

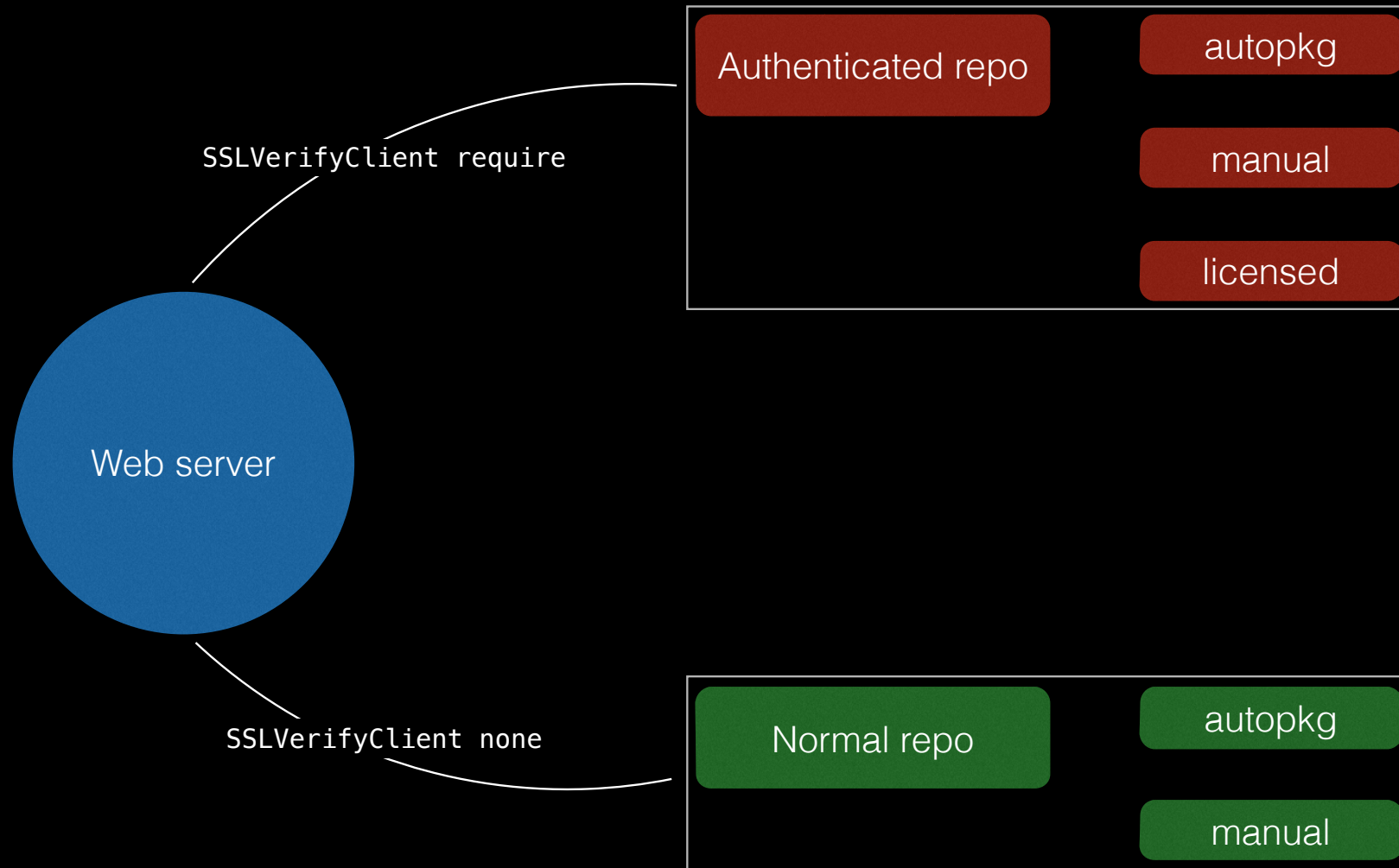
```
repo    macadmin/munki-auth-pkgsinfo-autopkg
        RW+ = @macadmins
        RW+ = autopkg@autopkgserver
        R   = @munkiservers
```

```
repo    macadmin/munki-auth-pkgsinfo-licensed
        RW+ = @macadmins
        R   = @munkiservers
```

```
repo    macadmin/munki-auth-pkgsinfo-manual
        RW+ = @macadmins
        R   = @munkiservers
```

```
repo    macadmin/munki-auth-manifests
        RW+ = @macadmins
        R   = @munkiservers
```

...





MunkiAdmin

MunkiAdmin

- Started in 2010
- Designed to complement your current workflow
- Doesn't require any configuration or changes to the repository
- <https://github.com/hjuutilainen/munkiadmin>

MunkiAdmin - Packages

View

Open

Save

Reload

Make

REPOSITORY

All Packages

Last 30 Days

INSTALLER TYPES

Copy from Disk Image

Installer Package

No Package

Apple Update Metadata

Adobe Installer

CATEGORIES

Uncategorized

Apple Updates

Developer Tools

Education & Research

File Sharing

Graphics & Design

Internet

Music

Office

Printers

TeX

Text Editors

Utilities

Video

Virtualization

DEVELOPERS

Unknown

Adobe Systems, Inc.

Apple Inc.

Avid Technology, Inc.

Bare Bones Software, Inc.

Any

Name	Display Name	Version	Modified
091-7170	AIRPORT Utility	6.3.1	8.9.2014 15:50
091-7277	Java for OS X 2013-004	1.0	8.9.2014 15:50
091-7280	Java for Mac OS X 10.6 Update 16	16.0	8.9.2014 15:50
091-7360	Java for Mac OS X 10.6 Update 17	17.0	8.9.2014 15:50
091-7363	Java for OS X 2013-005	1.0	8.9.2014 15:50
Adium	Adium	1.5.10	13.7.2014 20:23
AdobeAIR	Adobe Integrated Runtime	14.0.0.110	13.7.2014 20:34
AdobeAIR	Adobe Integrated Runtime	14.0.0.178	8.9.2014 15:50
AdobeAIR	Adobe Integrated Runtime	15.0.0.249	16.9.2014 10:08
AdobeFlashPlayer	Adobe Flash Player	14.0.0.125	13.7.2014 20:23
AdobeFlashPlayer	Adobe Flash Player	14.0.0.145	8.9.2014 15:50
AdobeFlashPlayer	Adobe Flash Player	14.0.0.176	8.9.2014 15:50
AdobeFlashPlayer	Adobe Flash Player	15.0.0.152	16.9.2014 10:08
AdobeReader	Adobe Reader XI	11.0.07	13.7.2014 20:23
AdobeShockwavePlayer	Adobe Shockwave Player 12.0	12.1.2.152	13.7.2014 20:34
AdobeShockwavePlayer	Adobe Shockwave Player 12.1	12.1.3.153	8.9.2014 15:50
AIR Creative Collection	AIR Creative Collection	11.0	8.9.2014 15:48
Alfred2	Alfred 2	2.3	13.7.2014 20:23
Alfred2	Alfred 2	2.4	8.9.2014 15:50
Annotation	Annotation	1.0.41	8.9.2014 15:48
AnyConnect	Cisco AnyConnect Secure Mo...	3.1.04074	8.9.2014 15:48
AnyConnect	Cisco AnyConnect Secure Mo...	3.1.05160	8.9.2014 15:48
AnyConnect	Cisco AnyConnect Secure Mo...	3.1.05178	8.9.2014 15:50
Apple Configurator	Apple Configurator	1.5	8.9.2014 15:48
Apple Remote Desktop	Apple Remote Desktop	3.7.2	13.7.2014 20:23
Aquamacs	Aquamacs	2.5	13.7.2014 20:23
Atom	Atom	0.125.0	8.9.2014 15:50
Atom	Atom	0.126.0	16.9.2014 10:08
Atom	Atom	0.127.0	16.9.2014 10:08
Audacity	Audacity	2.0.5.0	13.7.2014 20:34
AutoDMG	AutoDMG	1.4.3	13.7.2014 20:34

Summary

Pkginfo keys 10

Architectures 0

Blocking apps 0

Catalogs 3

Choices XML 0

Installs 0

Items to copy 0

Receipts 0

Requires 0

Update for 0

Pkginfo

Location OS-X-Update...31-0628.plist

Created 8.9.2014 15:50

Modified 8.9.2014 15:50

Last opened 17.9.2014 10:03

Installer

Location Choose...

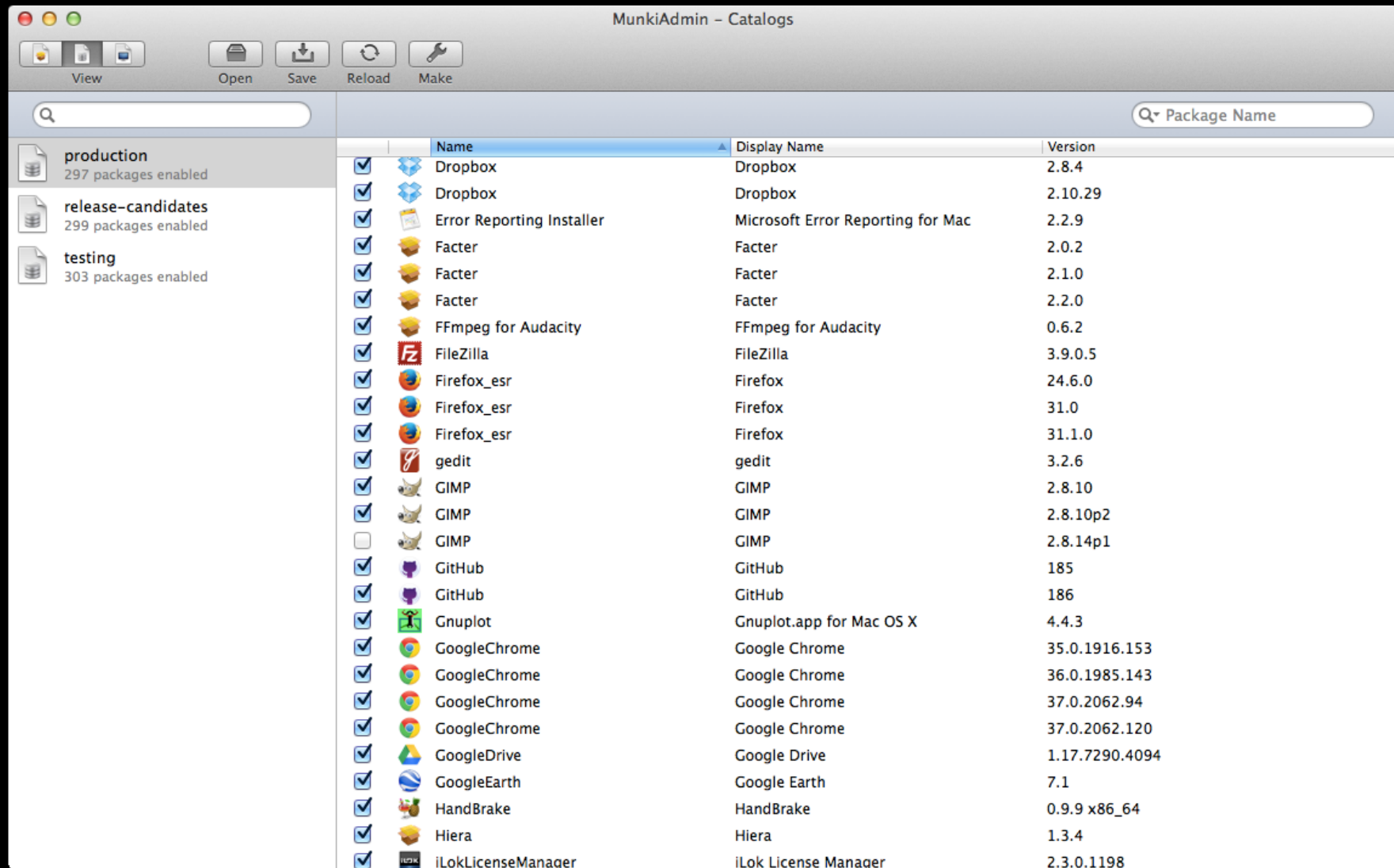
Created

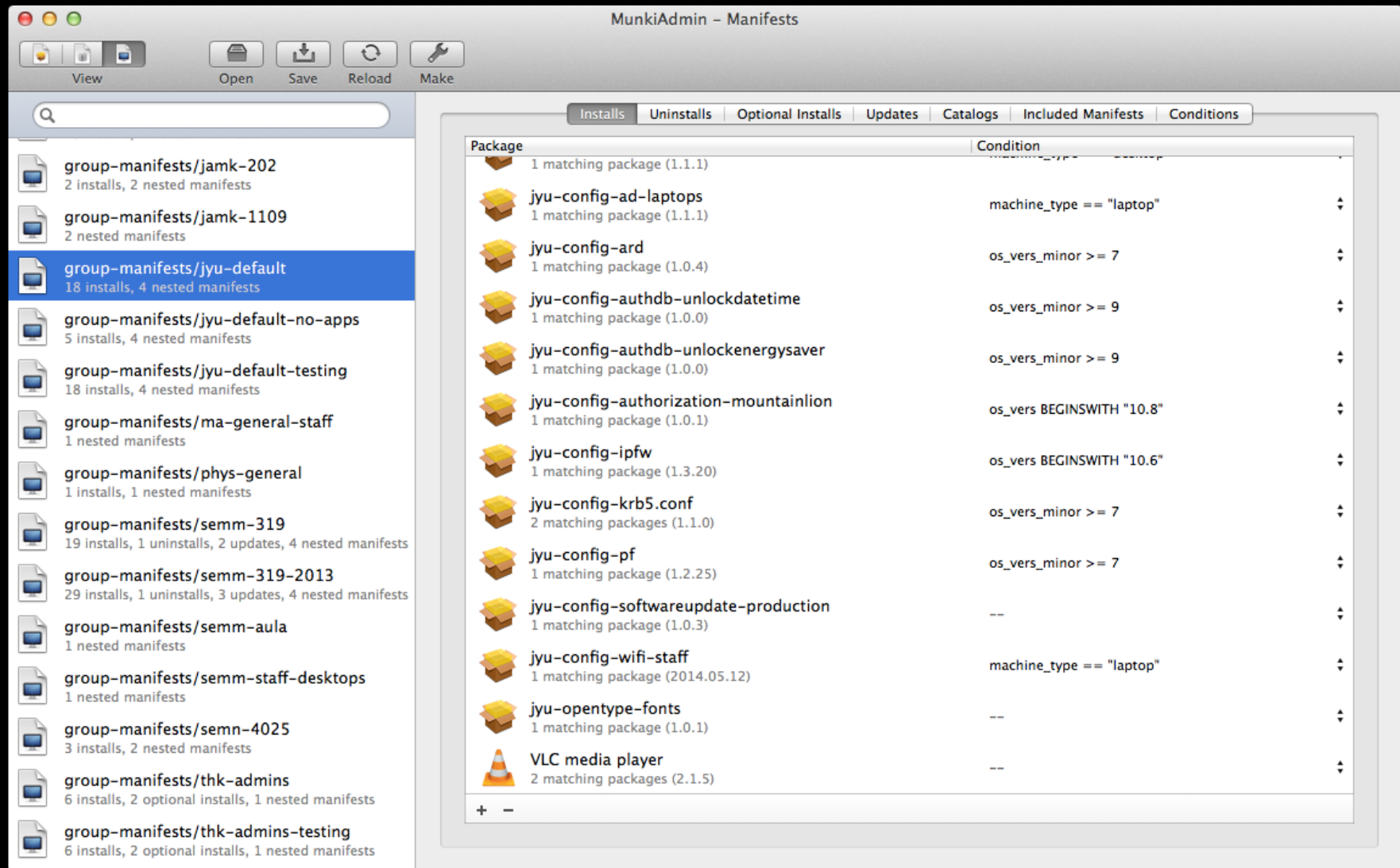
Modified

Last opened

?

Properties...





Demo time...

MunkiAdmin future

- Importing and creating new items
- Manifests UI
- AutoPkg support

GitHub issues

will get my attention



Per Olofsson
@MagerValp



[@hjuutilainen](#) now take a deep breath and bump the version number to 1.0.

4:55 PM - 6 May 2014



Next version is going to be 1.0

```
<key>installer_type</key>  
<string>apple_update_metadata</string>  
<key>name</key>  
<string>031-04362</string>
```





SUS Inspector

SUS Inspector

PRODUCTS

All Products

Deprecated Products

Last 30 Days

PRODUCT GROUPS

Firmware

iLife

iWork

Java

Printers

Pro Applications

Safari

Security Updates

System Updates

CATALOGS

Mavericks

Mountain Lion

Lion

Snow Leopard

Leopard

773 products

Any

Title	Version	Post Date	Size	Product ID	Status
Digital Camera RAW Compatibility Update	5.07	eilen	7 MB	031-07292	Active
Gatekeeper Configuration Data	14.0	eilen	8,3 MB	031-07691	Active
Chinese Word List Update	2.17	eilen	162 KB	031-07449	Active
iTunes	11.4	10.9.2014	201,2 MB	zzzz031-06976	Active
iTunes	11.4	10.9.2014	240,6 MB	zzzz031-06977	Active
Compatibility Update for 10.9	1.0	8.9.2014	101 KB	031-03120	Active
Safari	7.0.5	21.8.2014	53,8 MB	031-03084	Active
MacBook Air EFI Firmware Update	2.8	20.8.2014	4,4 MB	031-06356	Active
Safari	6.1.6	13.8.2014	54,5 MB	031-05867	Active
Safari	6.1.6	13.8.2014	53 MB	031-05870	Active
Safari	7.0.6	13.8.2014	53,8 MB	031-05873	Active
EPSON Printer Software Update	2.18	31.7.2014	1,2 GB	031-01042	Active
MacBook Air EFI Firmware Update	2.9.1	30.7.2014	3,9 MB	031-06028	Active
iTunes Producer	3.1.0	28.7.2014	401,4 MB	031-5154	Active
XProtectPlistConfigData	1.0	11.7.2014	10 KB	031-05311	Active
OS X Update	10.9.4	7.7.2014	375 MB	031-04361	Active
OS X Update Combined	10.9.4	7.7.2014	958 MB	031-04362	Active
CoreLSKD Configuration Data	8	7.7.2014	9 KB	031-04978	Active
Security Update 2014-003	1.0	30.6.2014	134 MB	zzz031-02313	Active
Security Update 2014-003	1.0	30.6.2014	185 MB	zzz031-02315	Active
Security Update 2014-003	1.0	30.6.2014	139 MB	zzz031-02337	Active
ProApps Codecs	1.0.5	27.6.2014	2,5 MB	031-2844	Active
BootCamp	1.0	18.6.2014	289,3 MB	091-6229	Active
MacBook Air SMC Firmware Update	2.0	9.6.2014	425 KB	031-03042	Active
iAd Producer	4.2	22.5.2014	313,6 MB	031-0588	Active
BootCamp	1.0	14.5.2014	629,4 MB	031-02368	Active
Canon Inkjet Printer Software Update	3.0	8.5.2014	257,8 MB	031-3274	Active

iTunes - Version 11.4

Name

Display Name

Version


Catalogs ☒ testing ☒ production

Blocking Apps

Restart Action


Force After ☐ 24. 9.2014 23.00 ☐ Unattended Install

Description



Pkginfo Preview

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST
1.0//EN" "http://www.apple.com/DTDs/
PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
  <key>catalogs</key>
  <array>
    <string>testing</string>
    <string>production</string>
  </array>
  <key>display_name</key>
  <string>iTunes</string>
  <key>installer_type</key>
  <string>apple_update_metadata</string>
  <key>name</key>
  <string>zzzz031-06977</string>
  <key>version</key>
  <string>11.4</string>
</dict>
</plist>
```



4 products selected

User visible information

☒ Product name as the display name

☒ Product version

☐ Description: Plain text

Installation

☐ Unattended install

☐ Force install after: 24. 9.2014 23.00

☐ Restart action: None

☒ Catalogs: testing production

☐ Blocking apps:

Cancel Save pkginfo files...

SUS Inspector

- Details about Apple software updates
- Create pkginfo files for Munki:
 - Save to file
 - Create a munkiimport command
 - Send to MunkiAdmin
- <https://github.com/hjuutilainen/sus-inspector>



Thank you!