

Things I Learned from the AutoPkg Maintainers

Anthony Reimer

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⌚ [jazzace](https://jazzace.com)



[maclabs.jazzace.ca/2020/06/04/
things-i-learned-autopkg.html](https://maclabs.jazzace.ca/2020/06/04/things-i-learned-autopkg.html)

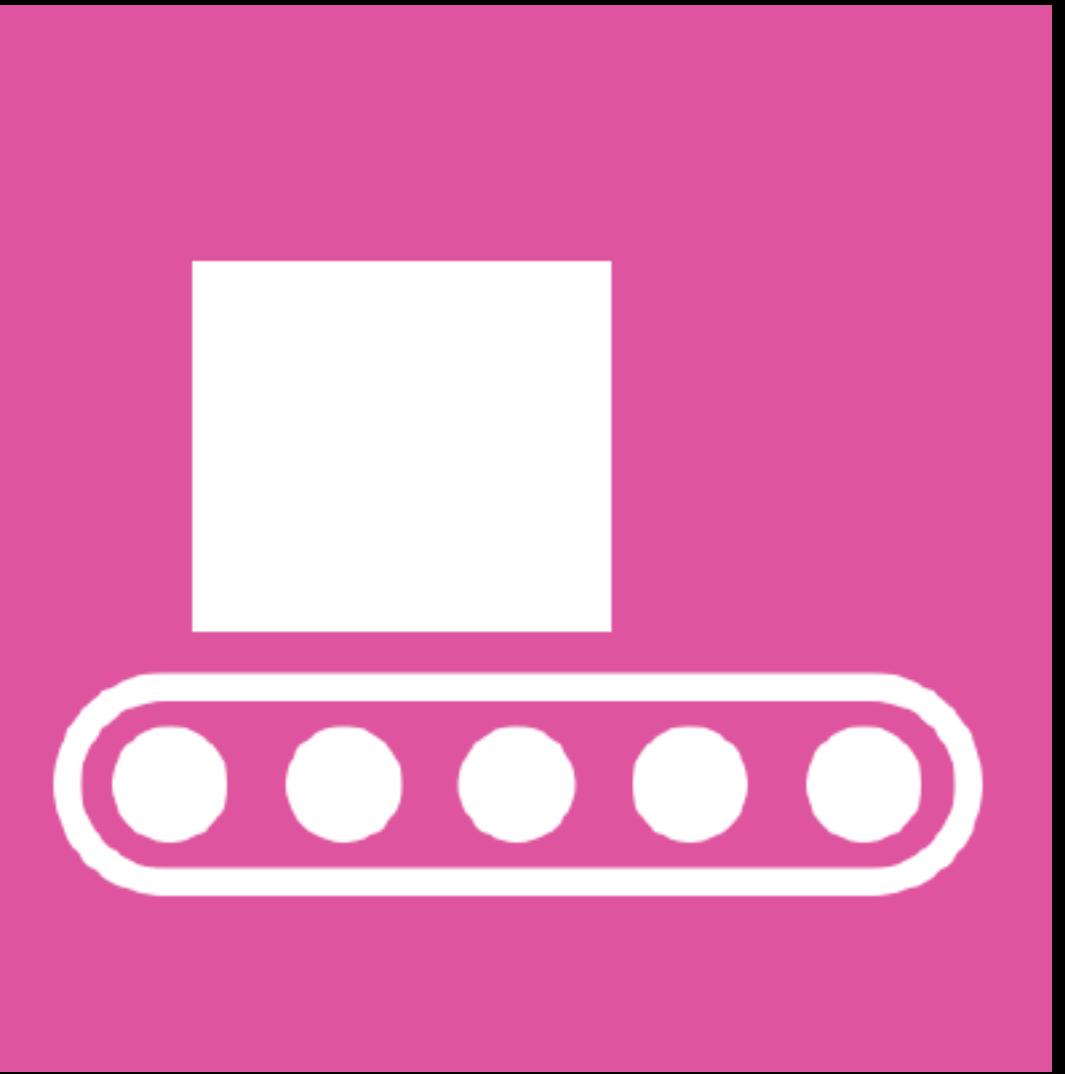


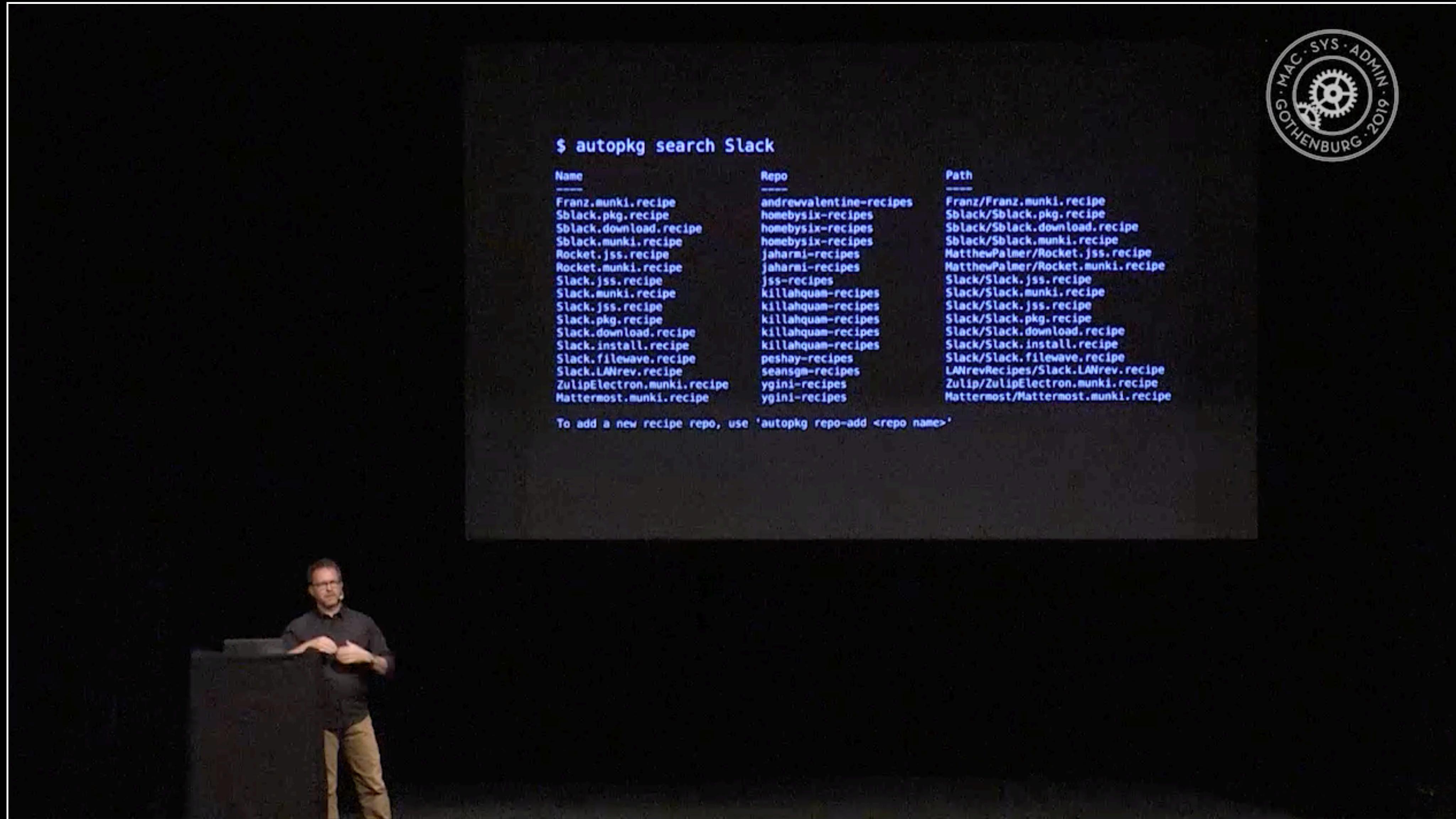
What I'm *Not* Discussing

Why you should use AutoPkg

How to get started with AutoPkg

How to start writing recipes with AutoPkg





*Greg Neagle: AutoPkg 2020
docs.macsysadmin.se/2019/*



Code

Issues 18

Pull requests 2

Actions

Wiki

Security 0

Insights

More resources

Anthony Reimer edited this page 3 hours ago · 14 revisions

Here are links to some additional resources surrounding AutoPkg and related tools:

▶ Pages 72

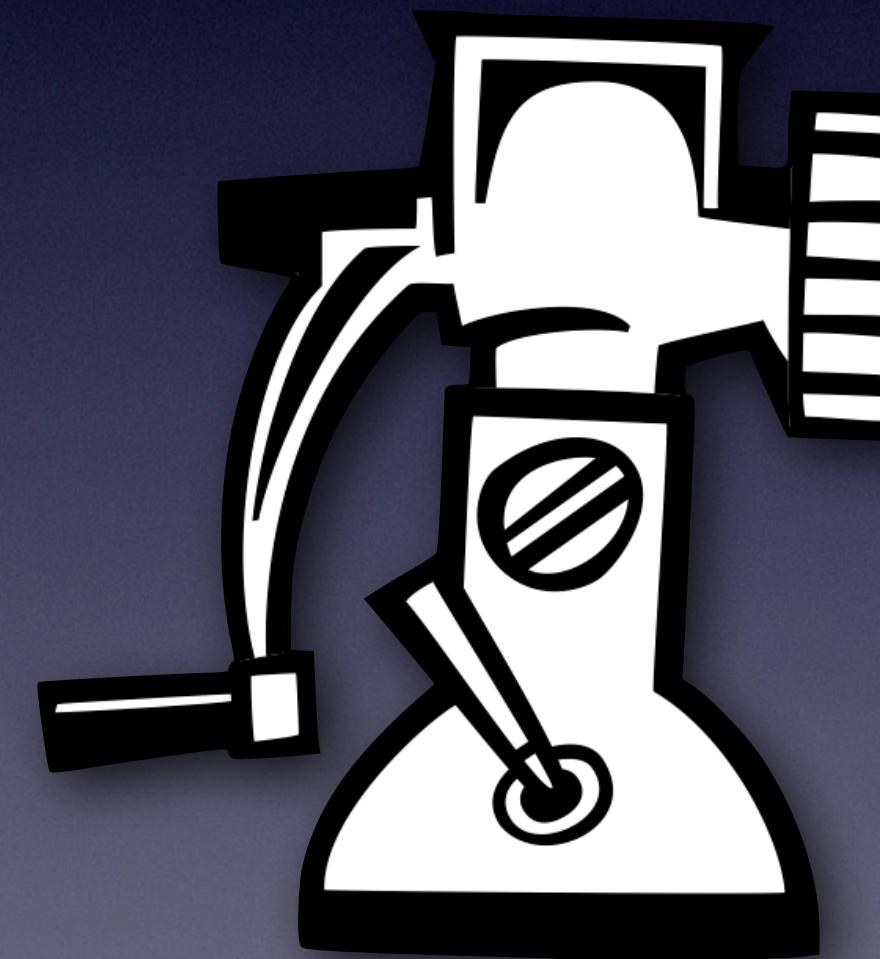
Blog posts

- Greg Neagle: [AutoPkg 2020: MacSysAdmin 2019 Links](#) - October 2019
- Rich Trouton's [posts](#) about AutoPkg on the Der Flounder blog - 2013–present
- Graham R Pugh's [blog](#) has posts about AutoPkg - 2015–present
- Anthony Reimer's Mac Labs [Blog](#) has posts about AutoPkg (marked with 📦) - 2014–present
- Alan Siu's [posts](#) about AutoPkg on his blog - 2019–present
- Alan Siu's [posts](#) about AutoPkg on the St. Ignatius College Prep Tech Blog - 2015–2017
- Greg Neagle: [Using AutoPkg for "General Purpose" Packaging](#) - July 30, 2015
- Steve Wood's [posts](#) about AutoPkg on The Geeky Gordo blog - 2013–2015
- Steve Yuroff: [AutoPkg and Jenkins under one admin account](#) - Oct. 21, 2013
- Sean Kaiser: [AutoPkg change notifications](#) - Dec. 16, 2013

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Creating Recipes



11

Writing and Understanding AutoPkg Recipes
github.com/jazzace/mactech-2019-autopkg



What I Am Discussing

Open Source Etiquette

The Zen of AutoPkg

AutoPkg Recipe Writing Tips

Making AutoPkg More Secure





Per Olofsson



Greg Neagle



Tim Sutton



Hannes Juutilainen



Elliot Jordan



Nick McSpadden



Open Source Etiquette

github.com/autopkg/autopkg/pulls?q=is%3Apr+author%3Ajazzace

is:pr author:jazzace

Pull requests Issues Marketplace Explore

Watch 108 Star 762 Fork 136

Code Issues 18 Pull requests 3 Actions Wiki Security 0 Insights

Filters is:pr author:jazzace Labels 12 Milestones 0 New pull request

Clear current search query, filters, and sorts

Author	Label	Projects	Milestones	Reviews	Assignee	Sort		
0 Open	✓ 6 Closed	Author ▾	Label ▾	Projects ▾	Milestones ▾	Reviews ▾	Assignee ▾	Sort ▾
Add verbs list-repos and processor-list #628 by jazzace was merged 20 days ago								
Update AppPkgCreator.py #449 by jazzace was merged on Feb 5, 2019								
Update description of PkgRootCreator #447 by jazzace was merged on Jan 21, 2019								
Update description text in AppPkgCreator, PkgRootCreator #438 by jazzace was closed on Jan 21, 2019								
Update ReadMe to modern terms #422 by jazzace was merged on Jun 13, 2018								
Typo fix in description of processors #149 by jazzace was merged on Feb 11, 2015								

Update description text in AppPkgCreator, PkgRootCreator
#438 by jazzace was closed on Jan 21, 2019

Update ReadMe to modern terms
#422 by jazzace was merged on Jun 13, 2018

Typo fix in description of processors
#149 by jazzace was merged on Feb 11, 2015

Keep Your PRs Clean

Update description text in AppPkgCreator, PkgRootCreator

#438

[Edit](#)**Closed**jazzace wants to merge 7 commits into [autopkg:master](#) from [unknown repository](#) [Conversation 3](#) [Commits 7](#) [Checks 0](#) [Files changed 2](#)**+3 -2** **jazzace** commented on Nov 17, 2018

Member



...

In the processor info for AppPkgCreator, there was a space missing inside the quotes after "the" and before "CFBundleShortVersionString" in the description for the version input variable (Line 60).

**Anthony Reimer** and others added 7 commits on Jun 13, 2018**Reviewers**

No reviews

Assignees

No one assigned

Labels

None yet

Projects

None yet

Milestone

No milestone

Linked issues Merge remote-tracking branch 'autopkg/master' fe25fa4 Documentation nomenclature update ... b2f27e2 list-recipes fix wen piping encoded character ... 69c94d4 Revert "list-recipes fix wen piping encoded character" ... 723cc5f Merge remote-tracking branch 'upstream/master' 033cec5 Update Code/autopkglib/AppPkgCreator.py 4b3a5f5

and before "CFBundleShortVersionString" in the description for the version input variable (Line 60).



Anthony Reimer and others added 7 commits on Jun 13, 2018



Merge remote-tracking branch 'autopkg/master'

fe25fa4



Documentation nomenclature update

...

b2f27e2



list-recipes fix wen piping encoded character

...

69c94d4



Revert "list-recipes fix wen piping encoded character"

...

723cc5f



Merge remote-tracking branch 'upstream/master'

033cec5



Update Code/autopkglib/AppPkgCreator.py

4b3a5f5



Add to PkgRootCreator description.

fa9dac9



jazzace commented on Jan 21, 2019

Author

Member



...

As per discussion on MacAdmins Slack on 2019-01-21, added text to the PkgRootCreator description to highlight that it can be used for generic directory creation.



jazzace changed the title ~~Add a space to AppPkgCreator~~ Update description text in AppPkgCreator, PkgRootCreator on Jan 21, 2019

Assignees

No one assigned

Labels

None yet

Projects

None yet

Milestone

No milestone

Linked issues

Successfully merging this pull request may close these issues.

None yet

Notifications

Customize

Unsubscribe

You're receiving notifications because you modified the open/close state.

2 participants





jazzace changed the title ~~Add a space to AppPkgCreator~~ Update description text in AppPkgCreator, PkgRootCreator on Jan 21, 2019



gregneagle commented on Jan 21, 2019

Member



Way too many changes/commits in this PR. The AppPkgCreator changes need to be squashed and a single commit (so much noise), and the PkgRootCreator change should be a different PR.



jazzace commented on Jan 21, 2019

Author

Member



I'll start from scratch.



jazzace closed this on Jan 21, 2019

Show Your Work



Sam Schmitt 11:33 AM

Tuesday, April 21st ▾

I understand why it was done, but having a bunch of commands that start with `list` and then having `repo-list` messes me up every time



Nick McSpadden f 11:33 AM

same

every time



Sam Schmitt 11:34 AM

My fingers instinctively type `list-repos`



Anthony Reimer 12:02 PM

I've set up some shell aliases to save me some typing, but my alias building skills are not good enough to properly parse `autopkg list-repos` and have it alias to `autopkg repo-list`, for example. It might be possible, though. (edited)



elios 12:05 PM

Autopkg could accept both



Anthony Reimer 12:05 PM

That would be another solution.

If that was going to be added to the code, it would make sense to offer flipped alternatives for the three verbs that have `list` in them.



Anthony Reimer 12:16 PM

I'm looking at the code. Is it as simple as adding the alternate verb(s) to the Main Routine and having them point to the correct function? I don't write in Python but even I could PR that if it is that simple.

[Code](#)[Issues 19](#)[Pull requests 3](#)[Actions](#)[Wiki](#)[Security 0](#)[Insights](#)

Add verbs list-repos and processor-list #628

 Merged

nmfspadden merged 1 commit into [autopkg:dev_fetch_parents](#) from [jazzace:master](#)  21 days ago

 Conversation 2 Commits 1 Checks 0 Files changed 1

jazzace commented on Apr 21

 Member ...

Reviewers

No review

Assignees

No one as

Labels

Alternative syntax for repo-list and list-processors

 Add verbs list-repos and processor-list 

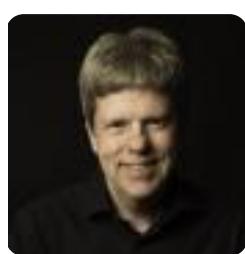
0ee0753

Conversation 2

Commits 1

Checks 0

Files changed 1



jazzace commented on Apr 21

Member

...

Reviewers

No review

Assignees

No one as

Labels

None yet

Projects

None yet

Milestone

No milestone

Linked iss

Alternative syntax for repo-list and list-processors

Add verbs list-repos and processor-list ...

0ee0753

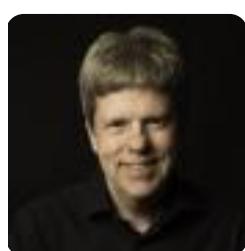


nmcspadden commented on Apr 21

Member

...

At the very minimum, you will need to put more information into your PR. Please show some actual real-world tests that your command works, what the output looks like, etc.



jazzace commented on Apr 21 • edited ▾

Author

Member

...

No problem. Running in zsh on macOS 10.15.4:

[Code](#)[Issues 19](#)[Pull requests 3](#)[Actions](#)[Wiki](#)[Security 0](#)[Insights](#)

Issue: Bug report

Report an issue with AutoPkg release. If this doesn't look right, [choose a different type](#).



Title

[Write](#)[Preview](#)

Describe the problem

A clear and concise description of what the problem is.

Preferences contents

BE SURE TO SANITIZE ANY SENSITIVE DATA SUCH AS PASSWORDS OR ADDRESSES.

Provide the output of `defaults read com.github.autopkg`, or the contents of your external `--prefs` file.

AutoPkg output

BE SURE TO SANITIZE ANY SENSITIVE DATA SUCH AS PASSWORDS OR ADDRESSES.

Provide the output of `autopkg run -vvvv <RecipeName>`, or any other command you are running. Please include as much data as possible.

Expected behavior

A clear and concise description of what you expected to happen. What specific part of the recipe or AutoPkg run did not behave correctly?

Version (please complete the following information):

- OS version: [e.g. 10.14.6, 10.15.1]
- AutoPkg Version: (generally expected that everyone should be on the latest release, but if you are using master or a specific commit, please specify)

Styling with Markdown is supported

[Submit new issue](#)

Helpful resources

[Contributing](#)[GitHub Community Guidelines](#)



Search or jump to...

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autopkg / autopkg

Watch ▾

108

Star

762

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137

Code

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Actions

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Insights

Releases

Tags

Latest release

v2.1

54d9b78

Compare ▾

AutoPkg 2.1



nmcsppadden released this 9 days ago · 1 commit to master since this release

2.1 (May 19, 2020)

NEW FEATURES

AutoPkg now supports the verbs `list-repos` and `processor-list` for convenience ([#628](#))

`autopkg info --pull / -p` now allows you to fetch all parent repos of a recipe automatically.

Example:

```
$ autopkg repo-delete recipes
$ autopkg info -p GoogleChrome.munki
Didn't find a recipe for com.github.autopkg.munki.google-chrome.
Found this recipe in repository: recipes
Attempting git clone...
```

Adding /Users/nmcsppadden/Library/AutoPkg/RecipeRepos/com.github.autopkg.recipes to RECIPE S

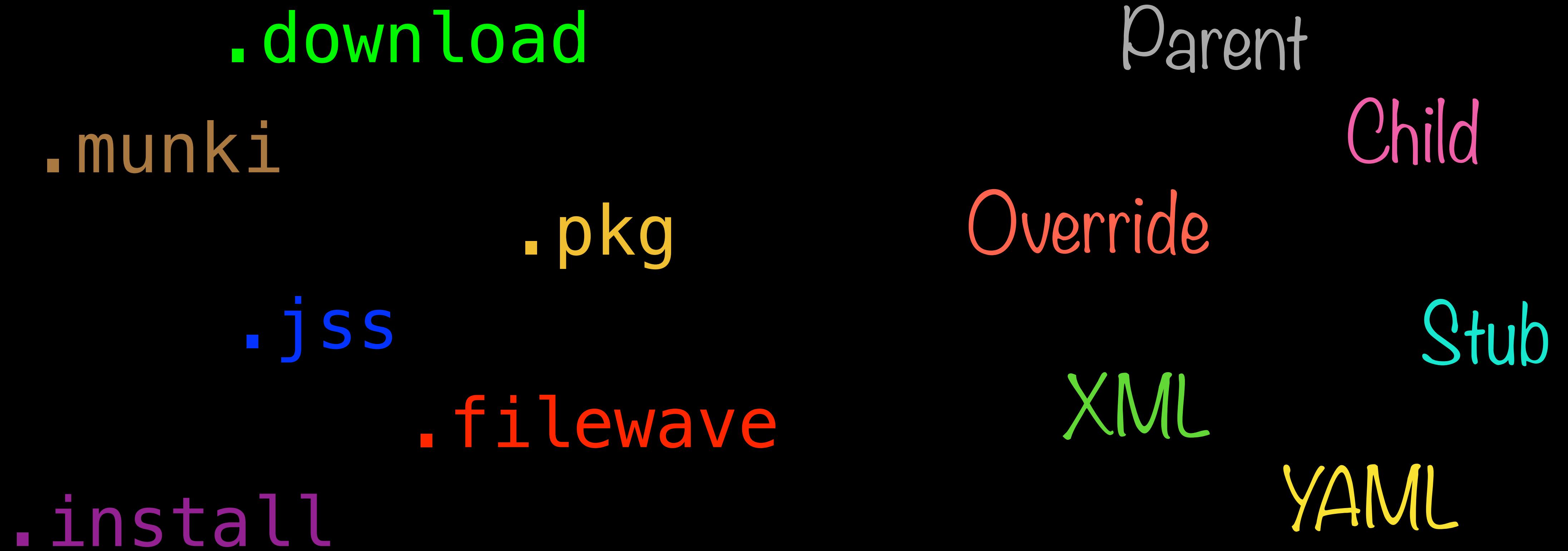
Keep Your PRs Clean

Show Your Work

The Zen of AutoPkg

Recipes

Recipes





Keep it Simple (for users)

```
<?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>Description</key>
    <string>Fetches the latest Sassafras K2 Mac installer specified by PRODUCT  
(usually Admin or Server).

```

REVISION is the major version without a decimal, for example:

7.0: 70
7.1: 71
7.2: 72
7.5: 75

This recipe supports only a REVISION of 70 and up. If REVISION is set to an empty string, the latest version will be retrieved – this is generally the desired setting.

PRODUCT must be one of the following:

Admin
Server
Client

The primary purpose of this recipe is to support Admin and Server installer downloads. If you want to customize your Client installer, you should use the SassafrasK2Client recipes. (If, however, you want an unaltered client installer, like those required to support the self-updates functionality, then this is the recipe for you!)

If you want to download more than one (e.g., both Admin and Server), make an override for each and specify a unique identifier using the -n option (e.g., autopkg make-override SassafrasK2.download -n SassafrasK2Server.download).
</string>

Everything is created/used
in context



But I want something *different*!

- Child recipe
- Engage original author (directly or by PR)
- Build something new

PRODUCT must be one of the following:

Admin
Server
Client

The primary purpose of this recipe is to support Admin and Server installer downloads. If you want to customize your Client installer, you should use the SassafrasK2Client recipes. (If, however, you want an unaltered client installer, like those required to support the self-updates functionality, then this is the recipe for you!)

If you want to download more than one (e.g., both Admin and Server), make an override for each and specify a unique identifier using the -n option (e.g., autopkg make-override SassafrasK2.download -n SassafrasK2Server.download).

They're all just *recipes*

Keep it Simple (for users)

Everything is created/used in context

AutoPkg Recipe Writing Tips

Leverage your text editor

```
<dict>
    <key>Processor</key>
    <string>URLTextSearcher</string>
    <key>Arguments</key>
    <dict>
        <key>url</key>
        <string>https://</string>
        <key>re_pattern</key>
        <string>()</string>
        <key>result_output_var_name</key>
        <string>url</string>
    </dict>
</dict>
```

FancyProduct.download.recipe

/Users/Shared/AccountSharing/AutoPkg Maintainers Resources/FancyProduct.download.recipe

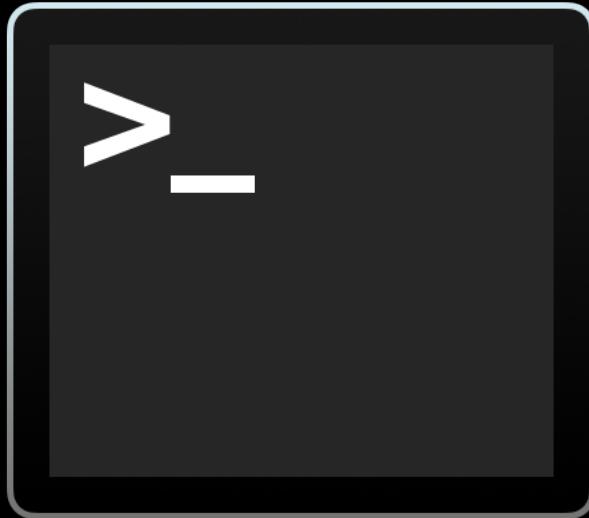
(functions)

```
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>Description</key>
6   <string>Recipe description</string>
7   <key>Identifier</key>
8   <string>local.FancyProduct</string>
9   <key>Input</key>
10  <dict>
11    <key>NAME</key>
12    <string>FancyProduct</string>
13  </dict>
14  <key>MinimumVersion</key>
15  <string>1.0</string>
16  <key>Process</key>
17  <array>
18    <dict>
19      <key>Arguments</key>
20      <dict>
21        <key>Argument1</key>
22        <string>Value1</string>
23        <key>Argument2</key>
24        <string>Value2</string>
25      </dict>
26      <key>Processor</key>
27      <string>ProcessorName</string>
28    </dict>
29  </array>
30 </dict>
```

github.com/jazzace/BBEdit-AutoPkg-Clippings

Syntax and Standards

Syntax



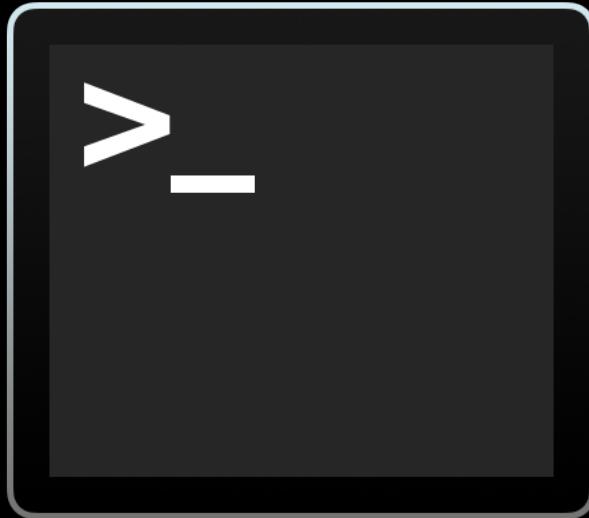
plutil -lint */path/to/recipe*



Markup > Check > Document Syntax

^⌘Y

Standards



plutil -convert xml1 /path/to/recipe



Text > Apply Text Filter > *Filter Name*

plutil -convert xml1 --o -

Standards

```
<dict>
  <key>Processor</key>
  <string>DeprecationWarning</string>
  <key>Arguments</key>
  <dict>
    <key>warning_message</key>
    <string>This recipe is no longer supported.
          Expect it to be removed at a future date.
    </string>
  </dict>
</dict>
```

Standards

```
<dict>
    <key>Arguments</key>
    <dict>
        <key>re_pattern</key>
        <string>()</string>
        <key>result_output_var_name</key>
        <string>url</string>
        <key>url</key>
        <string>https://</string>
    </dict>
    <key>Processor</key>
    <string>URLTextSearcher</string>
</dict>
```

Standards

OK, so I cheated

```
#!/bin/sh
sed s!\>Processor\</!\>AAAAProcessor\</!g | \
plutil -convert xml1 - -o - | \
sed s!\>AAAAProcessor\</!\>Processor\</!g
```

Disclaimer

From Elliot

Leverage your text editor
Clippings • Syntax • Standards

Variable names are arbitrary

```
<?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>Comment</key>
    <string>Created with Recipe Robot v1.1.2 (https://github.com/homebysix/recipe-robot)</string>
    <key>Description</key>
    <string>Downloads the latest version of 8x8 - Virtual Office.</string>
    <key>Identifier</key>
    <string>com.github.arubdesu.download.8x8-VirtualOffice</string>
    <key>Input</key>
    <dict>
        <key>DOWNLOAD_URL</key>
        <string>https://support.8x8.com/@api/deki/files/</string>
        <key>NAME</key>
        <string>8x8 - Virtual Office</string>
    </dict>
    <key>MinimumVersion</key>
    <string>1.0.0</string>
<!-- This comment gets deleted if you run plutil -convert xml1 -->
```



AP 🍻 2:37 PM

Friday, March 13th ▾

There are multiple items in a DMG I'm using FileFinder to collect information on. While I can use FileFinder to grab the name of the DMG (assigns to the `found_filename` variable) if I use this variable to then get the path and name of a PKG inside, `found_filename` gets overwritten with the temporary mountpoint of the DMG

So rather than use FileFinder to get the DMG path several times I'm trying to get it once, assign it to another variable, and then use that in subsequent FileFinder dictionaries

if that makes sense



2:40 So first run of `FileFinder` gets me this:

```
FileFinder
{'Input': {'pattern': u'/Volumes/1TB/AutoPkgr/*.dmg'}}
FileFinder: No value supplied for find_method, setting default value of: glob
FileFinder: Found file match: '/Volumes/1TB/AutoPkgr/Pro_Tools_2019.12.0_Mac.dmg' from globbed
'/Volumes/1TB/AutoPkgr/*.dmg'
{'Output': {'found_filename': u'/Volumes/1TB/AutoPkgr/Pro_Tools_2019.12.0_Mac.dmg'}}
```



elios 2:42 PM

Can't you use variable substitution in a recipe to do that?

```
foo = "%found_filename%"
```



AP 🍻 2:42 PM

Second run gets me this:

```
FileFinder
{'Input': {'find_method': 'glob',
           'pattern': u'/Volumes/1TB/AutoPkgr/Pro_Tools_2019.12.0_Mac.dmg/Codec Installers/*.pkg'}}
FileFinder: Mounted disk image /Volumes/1TB/AutoPkgr/Pro_Tools_2019.12.0_Mac.dmg
FileFinder: Found file match: '/private/tmp/dmg.HXAg4R/Codec Installers/Install Avid Codecs LE.pkg'
from globbed '/private/tmp/dmg.HXAg4R/Codec Installers/*.pkg'
FileFinder: DMG-relative file match: 'Codec Installers/Install Avid Codecs LE.pkg'
{'Output': {'dmg_found_filename': u'Codec Installers/Install Avid Codecs LE.pkg',
           'found_filename': u'/private/tmp/dmg.HXAg4R/Codec Installers/Install Avid Codecs
LE.pkg'}}
```

the problem is `found_filename` changes every time I run `FileFinder` and if it points to something inside a DMG the `found_filename` is now incorrect

```
<dict>
    <key>Comment</key>
    <string>Get the Pro Tools Codecs filename</string>
    <key>Arguments</key>
    <dict>
        <key>previous_found_filename</key>
        <string>%found_filename%</string>
        <key>pattern</key>
        <string>%found_filename%/Codec Installers/*.pkg</string>
    </dict>
    <key>Processor</key>
    <string>FileFinder</string>
</dict>
```

Defining Custom Variables

AP Orlebeke edited this page on Mar 26 · 3 revisions

[Edit](#)[New Page](#)

Defining & using custom variables in recipes

[Pages 72](#)

Overview

At the end of the day, autopkg input and output variables are just arbitrary strings that are used as a substitute for another string value.

While processors define a set of required and optional variables that can be used within its arguments, you can define your own custom variables within this structure. This is valuable when you need to use a particular processor multiple times within a recipe but need to persist the collected values, as on each subsequent processor run the previous output variable values get overwritten.

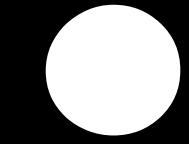
Typically, recipes do not need to persist the previous values of a given output variable. For example, a recipe needing to find multiple files ([FileFinder](#)) and copy them to a central location ([Copier](#)) in order to create a PKG, you can simply run the necessary processors for one item and repeat those processor steps for each additional item. Once you've completed the larger task of copying the files from the collected paths, storing what the previous values were for each item is unnecessary.

Defining custom variables

Defining a custom variable is as simple as supplying it as a key in the Arguments dictionary and setting its value to the previously collected output variable.

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Current Working Directory

```
% defaults read com.github.autopkg RECIPE_SEARCH_DIRS  
(  
    "",  
    "~/Library/AutoPkg/Recipes",  
    "/Library/AutoPkg/Recipes",  
    "/Users/areimer/Library/AutoPkg/RecipeRepos/  
com.github.autopkg.recipes",  
    "/Users/areimer/Library/AutoPkg/RecipeRepos/  
com.github.autopkg.jazzace-recipes"  
)
```

More details in the Wiki:

github.com/autopkg/autopkg/wiki/Recipe-Search-Order

Leverage your text editor

Syntax and Standards

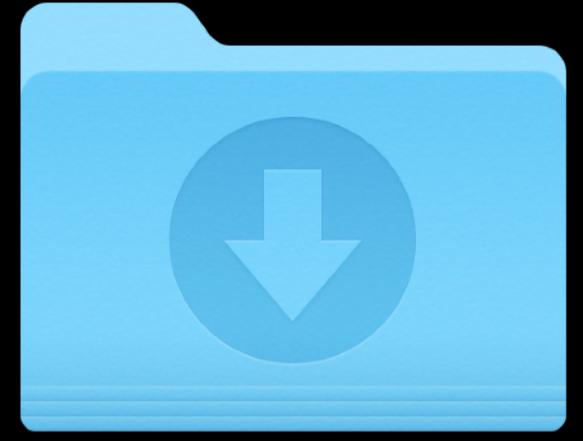
Variable names are arbitrary

Recipe Search Order (.)

Making AutoPkg More Secure

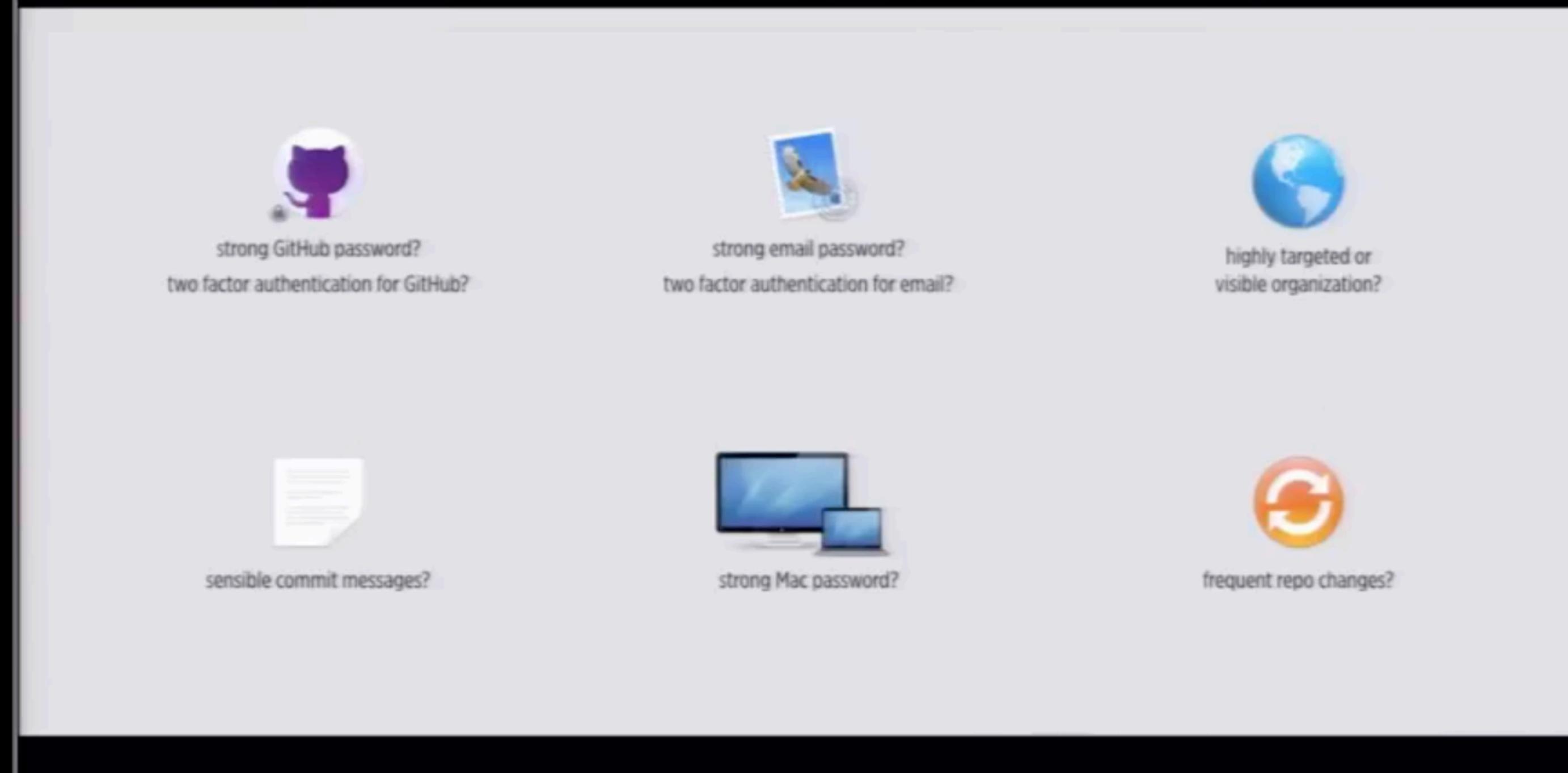
“HTTPS downloads and verifying the
signature are the most important steps
a recipe author can do to enhance
recipe security.”

Hannes Juutilainen – July 2016 on autopkg-discuss



Common Download Recipe Workflow

1. Determine the URL of the item we want to download
2. Download a copy of the item
3. EndOfCheckPhase
4. Check the code signature of the downloaded item

#7: TRUST *without* VERIFICATION

How (Not) To Do Bad Things With AutoPkg – Elliot Jordan
www.youtube.com/watch?v=Q_cvgGtJ71M

Trust Verification

CodeSignatureVerifier

Trust Verification

	July '14	June '16	June '18	May '20
Total Recipes	630	4079	5936	8156
.download	258	1156	1667	2252
.munki	267	1037	1537	2125
.pkg	95	794	1205	1734
.install	0	596	723	892
.jss	8	269	430	607
.filewave	0	14	171	269

[maclabs.jazzace.ca/2020/06/04/
things-i-learned-autopkg.html](https://maclabs.jazzace.ca/2020/06/04/things-i-learned-autopkg.html)

Anthony Reimer

 maclabs.jazzace.ca

 [AnthonyReimer](https://twitter.com/AnthonyReimer)

 jazzace

 jazzace



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CALGARY