



managing macOS, without macOS (almost)

[Lucas J. Hall](#) | [@thelukanator](#)

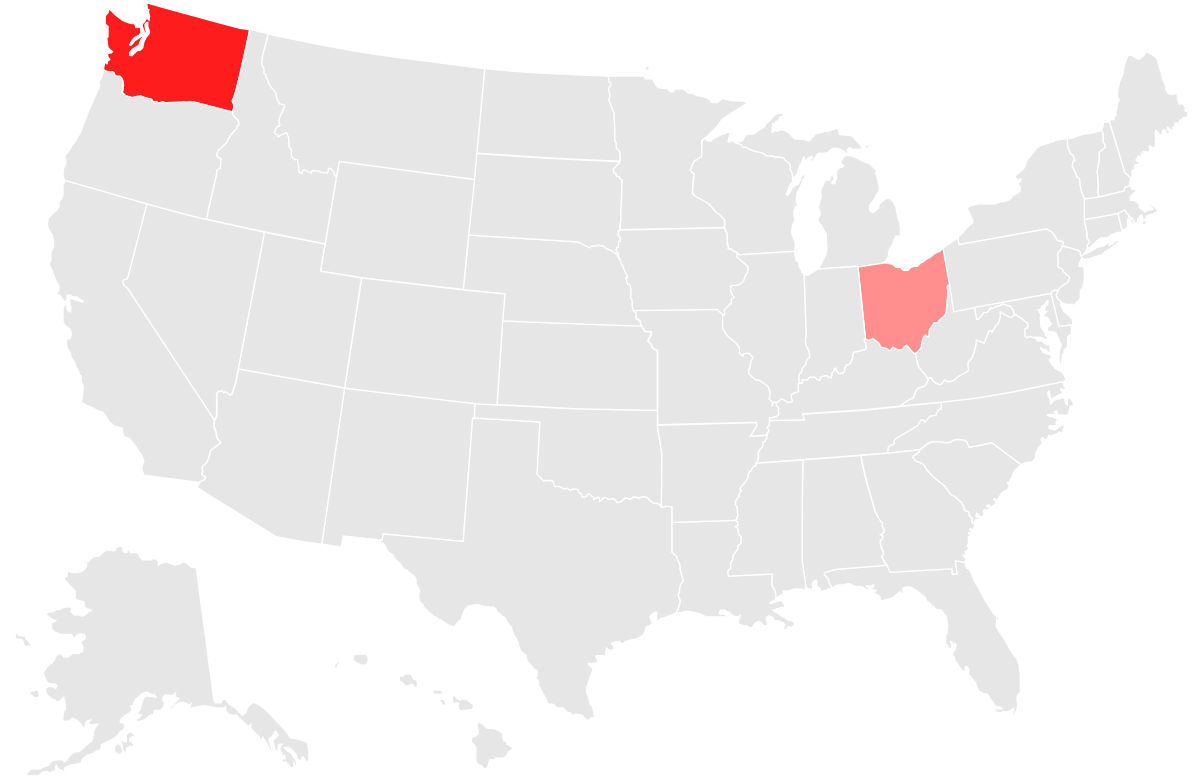


about me.

Apple Sysadmin for finance firm.

Recently relocated with my wife to the Pacific Northwest.

Previous lives included, video production, K-12 and NGO entities.





**why would I want
to *not* use macOS?**



why would I want to *not* use macOS?

It may be that you **do** want to- these are some considerations on why it may not be the best option for a common thread in your management atmosphere.



TIME

- Assuming experience with another OS, the curve may take time to adjust to
- The time it takes administer the OS itself is more cumbersome and unwieldy



Open vs Closed

- Knowing what is and will be supported
- Documented kb of underlying OS
- Bleeding edge updates and patches



LTS

- Benefits of defined release schedule
- Predefined EOL
- Documented and/or incremental releases

**fair warning, this is not
the first talk on
this topic.**



the goals of this talk.

HIGH LEVEL OVERVIEW

Approach open source tools in a way that is accessible for new administrators, small shops, folks that cannot go the paid route or are simply interested in what other tools might be out there.

CLEAN SOMETHING NEW

I hope you leave with an idea, a thought, workflow modification, resource or a tool you didn't have before this session.

lifecycle of the **client** machine.



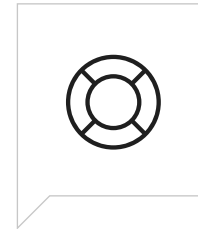
Acquisition

The physical acquisition of a new machine; the request for a new virtual machine or the sudden discovery of a mini in the closet.



Deployment

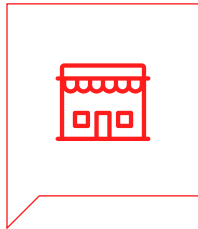
Getting a machines prepped with all things necessary to get them into the hand of a user.



Support

Keeping the machines up to date, having pertinent data at the real, being able to act decisively.

lifecycle of the **client** machine.



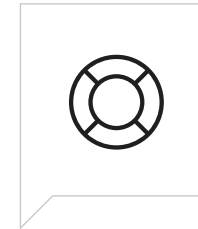
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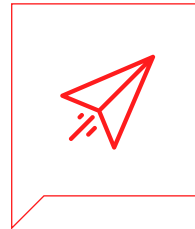
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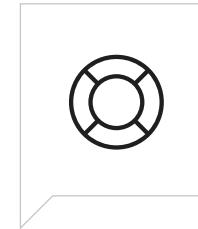
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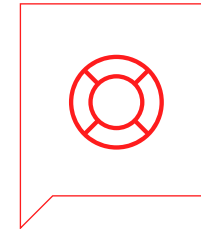
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Support

Keeping the machines up to date, having pertinent data at the ready, being able to act decisively.

the acquisition.

"Oooh shiny a new machine- now what?"





New Mac

HAND POURED SOY CANDLE



the acquisition.

"Oooh shiny a new machine- now what?"



the acquisition.



"Oooh shiny a new machine- now what?"



the acquisition.

"Oooh shiny a new machine- now what?"



The screenshot shows the Snipe-IT website interface. At the top, there's a navigation bar with links: FEATURES, DEMO, DOWNLOAD, DOCUMENTATION, MANUAL, HOSTED, NEWS, SUPPORT. Below this is a hero section with a large orange banner that says "SAVE TIME & MONEY". To the right of the banner is a monitor displaying the Snipe-IT dashboard. The dashboard has several widgets: a "Dashboard" section with four colored boxes (100, 10, 15, 25), a "Recent Activity" table, and a "Assets" section with a donut chart. Below the hero section, there are three buttons: "Download", "Sign-Up", and "Watch Video". At the bottom, there are three columns of text describing the software's features: "Everything in One Place", "Finance-Department Friendly", and "Easy to Use".

SAVE TIME & MONEY

Always know where your IT assets are, what's out for repair, and when your service contracts are up. Never re-buy a license key again because you lost track of it.

[Download](#) [Sign-Up](#) [Watch Video](#)

Everything in One Place

Managing assets with a Google doc or a shared Excel spreadsheet is more common than you think. When your company is small, it can (sort of) work for a while, but as you grow, things get messy, fast. Snipe-IT lets your admins work together to track physical assets, software licenses, accessories and consumables -- all in one place.

Finance-Department Friendly

Depreciation and asset reports are easy with one-click export to CSV and custom reporting capabilities. You can even give them permission to view and download reports within Snipe-IT without being able to edit assets. (And you can't beat the price tag - totally free to host it yourself, or choose the low-cost monthly/annual [hosted solution](#)!)

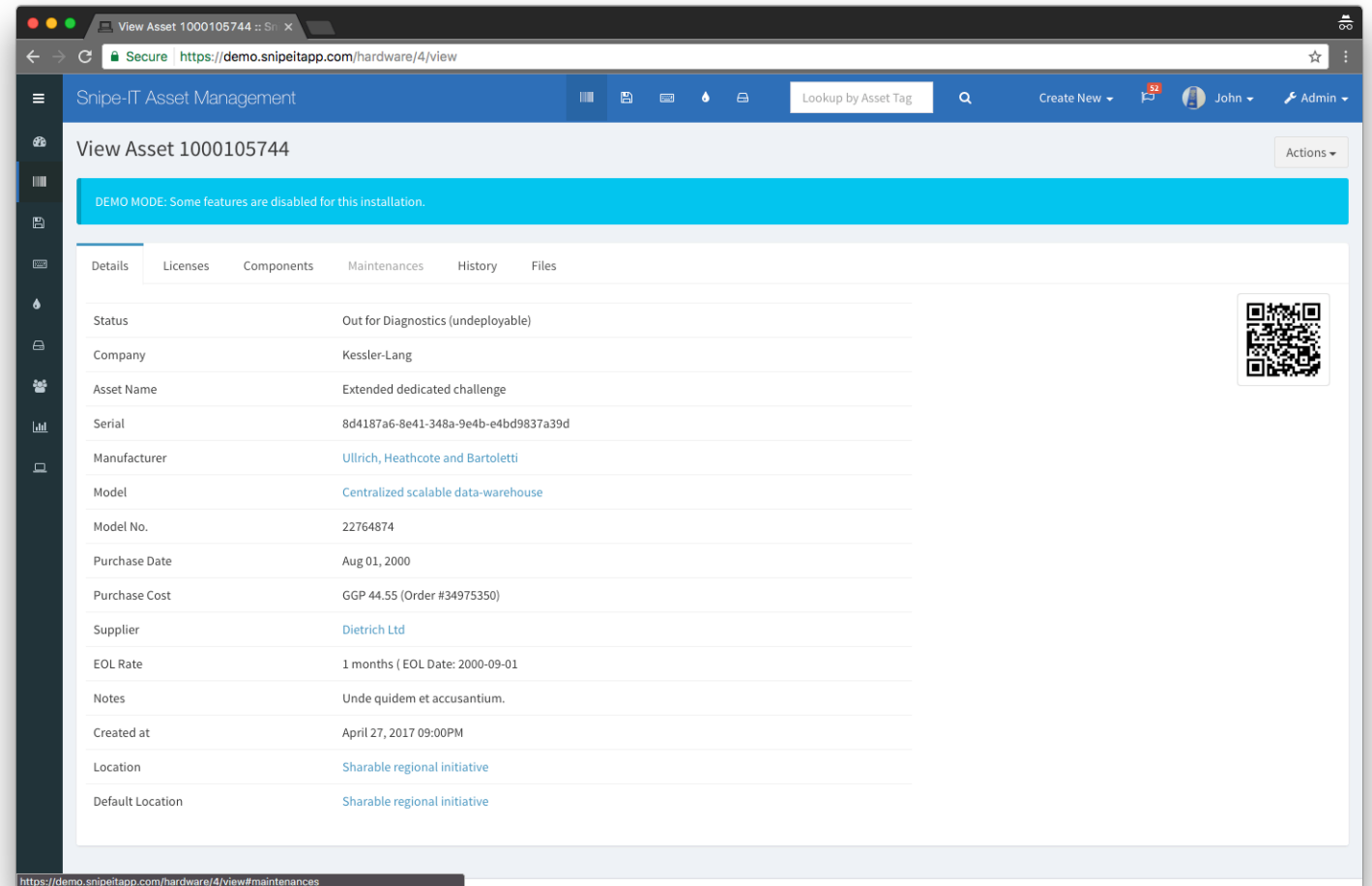
Easy to Use

Snipe-IT makes asset management easy. It was built by people solving real-world IT and asset management problems, and a solid UX has always been a top priority. Straightforward design and bulk actions mean getting things done faster. What's the good of having software if it's so hard to use, no one bothers?

[Need help?](#)

the acquisition.

"Oooh shiny a new machine- now what?"



View Asset 1000105744 :: Snipe-IT

Securehttps://demo.snipeitapp.com/hardware/4/view

Snipe-IT Asset Management

Lookup by Asset Tag

Create New

John

Admin

View Asset 1000105744

Actions

DEMO MODE: Some features are disabled for this installation.

Details

Licenses


Components

Maintenances

History

Files

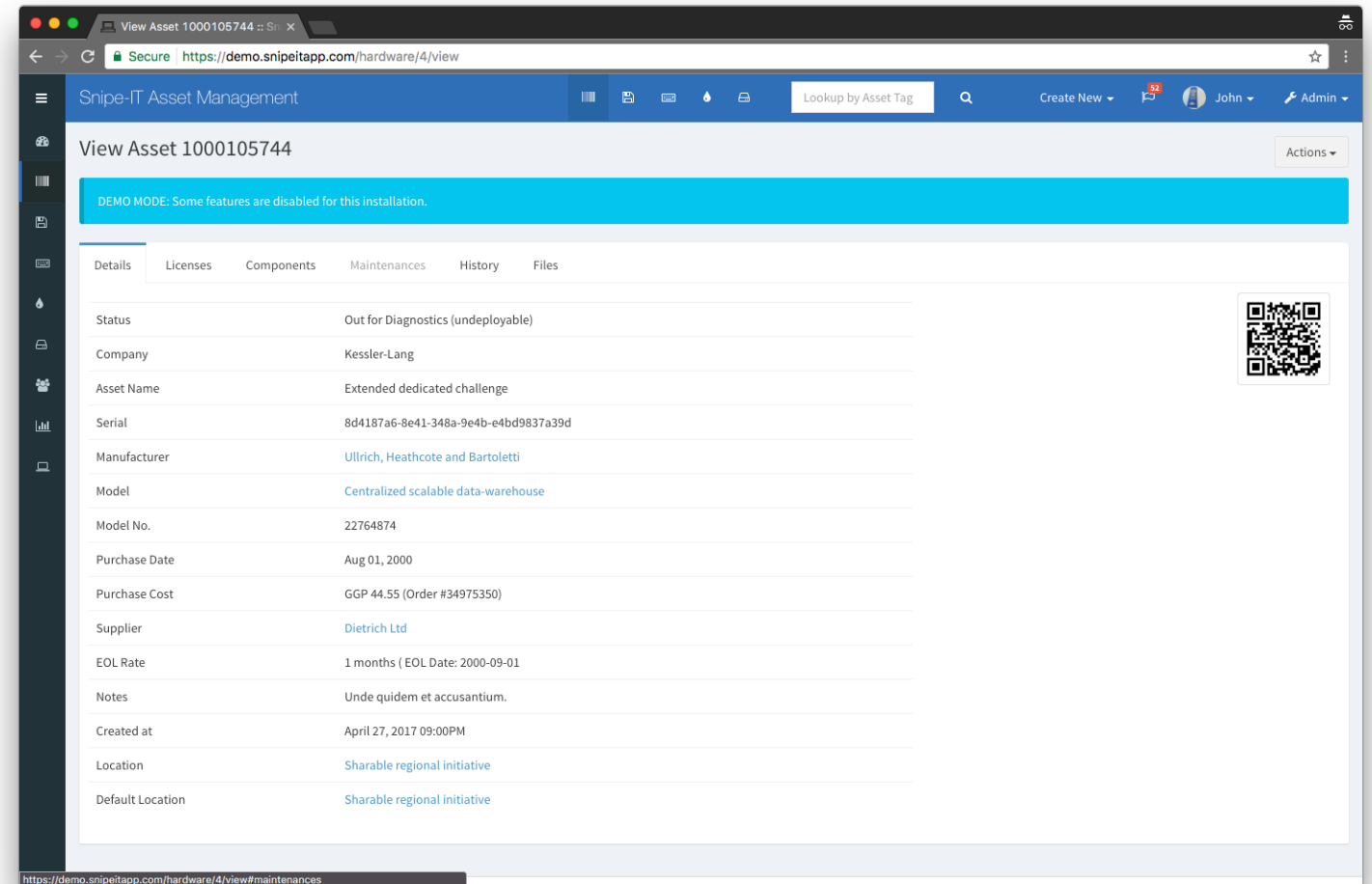
Status	Out for Diagnostics (undeployable)
Company	Kessler-Lang
Asset Name	Extended dedicated challenge
Serial	8d4187a6-8e41-348a-9e4b-e4bd9837a39d
Manufacturer	Ullrich, Heathcote and Bartoletti
Model	Centralized scalable data-warehouse
Model No.	22764874
Purchase Date	Aug 01, 2000
Purchase Cost	GGP 44.55 (Order #34975350)
Supplier	Dietrich Ltd
EOL Rate	1 months (EOL Date: 2000-09-01)
Notes	Unde quidem et accusantium.
Created at	April 27, 2017 09:00PM
Location	Sharable regional initiative
Default Location	Sharable regional initiative



https://demo.snipeitapp.com/hardware/4/view#maintenances

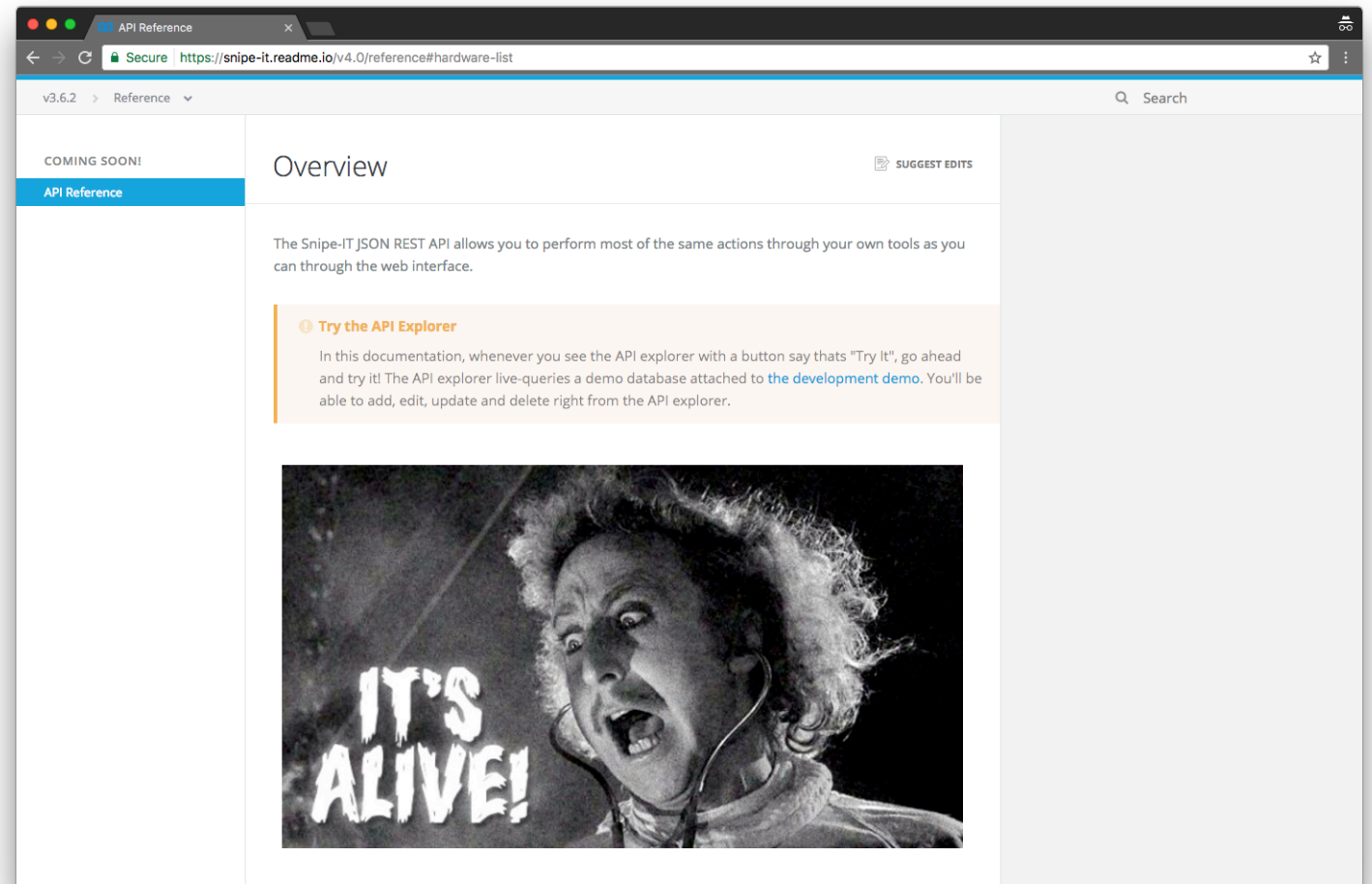
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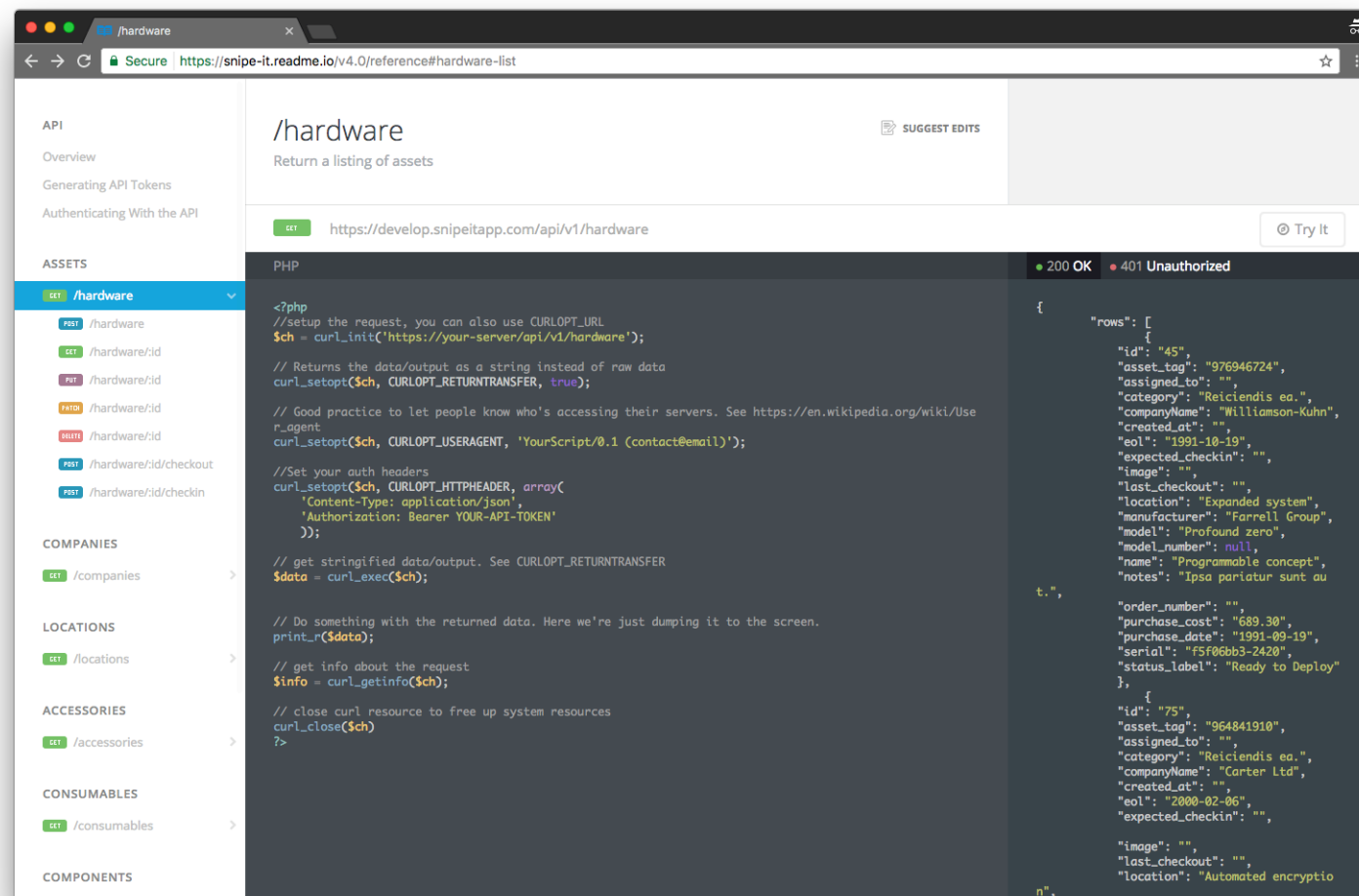
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the deployment.

"Outta' my hands, into theirs-"



the deployment.

"Outta' my hands, into theirs-"



imaging

the deployment.

"Outta' my hands, into theirs-"



imaging

Imaging will be dead (soon-ish)

"I don't normally try to foretell the future but there is one change for Mac admins that I'm pretty sure will happen: The coming of [Apple File System](#) (APFS) will mark the end of disk imaging on Macs."

Rich Trouton



Yoann Gini @ygini

22 Nov

So, DeployStudio is unable to consume Centrify accounts due to implementation errors. It's time to get rid of this software...



Deploy Studio

@deploystudio

[Follow](#)

@ygini I bet that system imaging will end with APFS. You should focus on DEP, MDM and loosely coupled directory integration.

11:49 AM - 8 Jan 2017



11

5

the deployment.

"Outta' my hands, into theirs-"

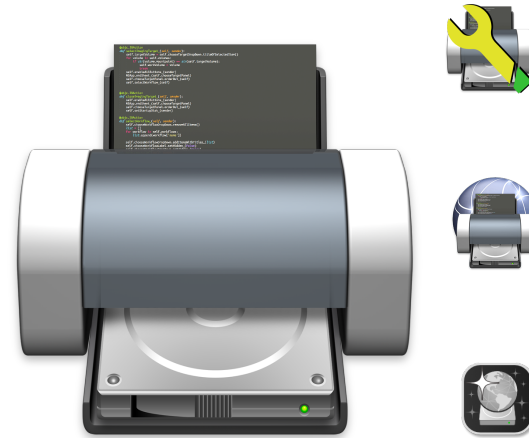


imaging



BSDpy

BSDpy is a platform-independent Apple NetBoot (BSDpy) service for organizations that have a need for Apple Mac NetBoot functionality.



Imagr

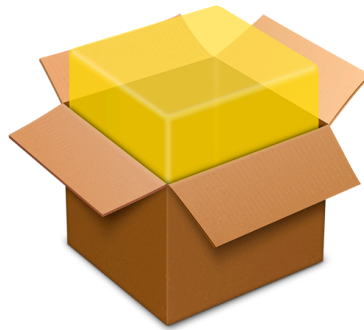
Imagr is an application designed to be run from a NetInstall environment created with AutoNBI.

the deployment.

"Outta' my hands, into theirs-"



"thin" imaging



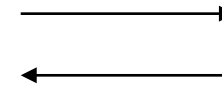
Installer pkg

Contains needed apps and settings.



Client Machine

Receives needed settings and applications and then checks in with application deployment server.



Repository Server

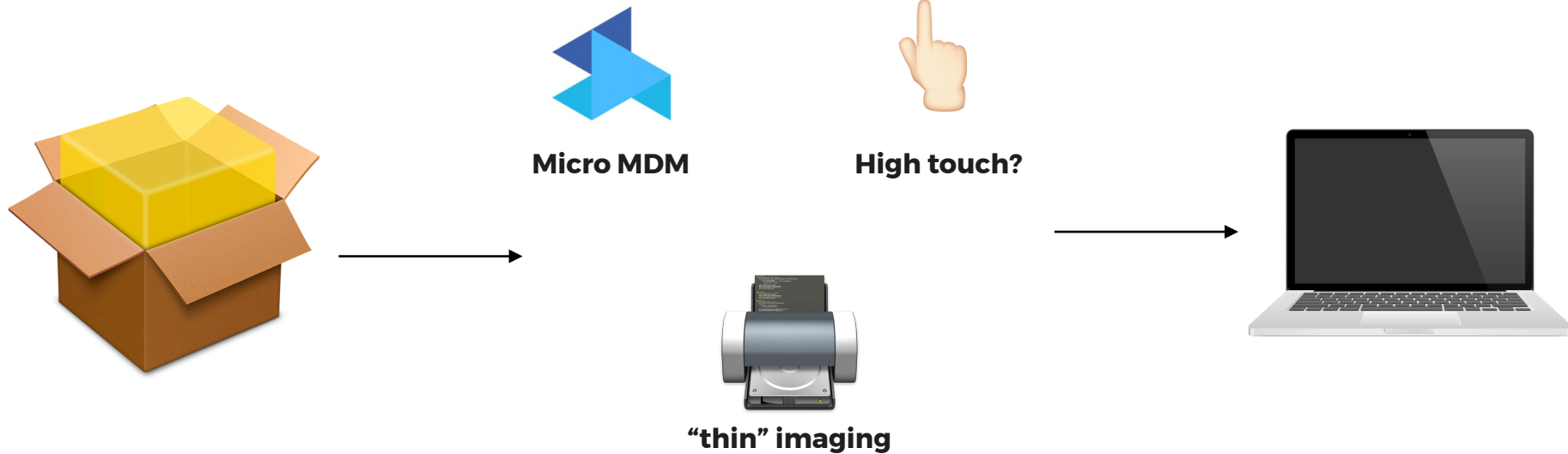
Receives needed settings and applications and then checks in with application deployment server.

the deployment.

"Outta' my hands, into theirs-"



"thin" imaging



the deployment.



"Outta' my hands, into theirs-"

imaging vs "thin" imaging

the support.

"Update all the things!"



the support.

"Update all the things!"



software deployment

**the
support.**

"Update all the things!"



software deployment



munki

the support.

"Update all the things!"



munki

Munki consists of client-side tools written largely in Python, and is available as open-source under the Apache 2 license.



software deployment

Server

Repository of internal apps and deployed items, stored on any web server.

Client

Application deployment.
Managed installs.
Optional Software.

the support.

"Update all the things!"



munki

Munki consists of client-side tools written largely in Python, and is available as open-source under the Apache 2 license.



software deployment



Server

the support.

"Update all the things!"

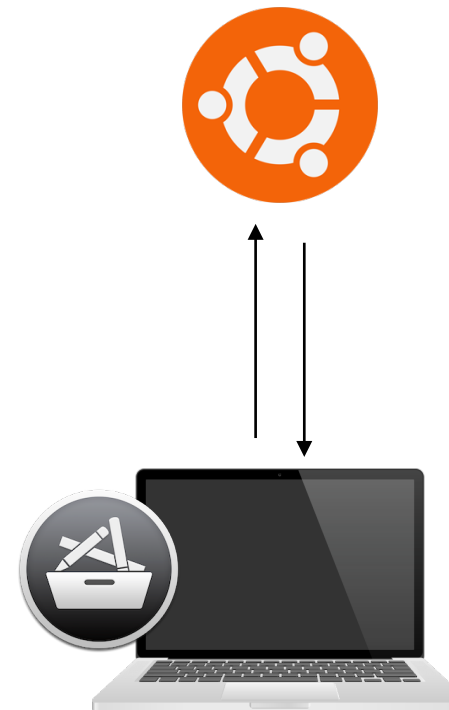


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software deployment



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software deployment

```
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   <array>
5     <dict>
6       <key>autoremove</key>
7       <false/>
8       <key>catalogs</key>
9       <array>
10        <string>testing</string>
11        <string>production</string>
12      </array>
13      <key>category</key>
14      <string>Applications</string>
15      <key>description</key>
16      <string>Adium is a free instant messaging application for Mac OS
17      X that can connect to AIM, MSN, Jabber, Yahoo, and more.</string>
18      <key>developer</key>
19      <string>Adium</string>
20      <key>display_name</key>
21      <string>Adium</string>
22      <key>icon_hash</key>
23      <string>61e8ebfe5a63b40c43d33e58b49d065e853b1b938d4ec0173375b7a7ed40f434
24      </string>
25      <key>installer_item_hash</key>
26      <string>ea1a1016a383c59198c43f37576edb0045e391f46ca5402b0f6365e9d5d7f395
27      </string>
28      <key>installer_item_location</key>
29      <string>apps/Adium-1.5.10.2.dmg</string>
30    </dict>
31  </array>
32 </plist>
```

**the
support.**

"Update all the things!"



software deployment



munki

the support.

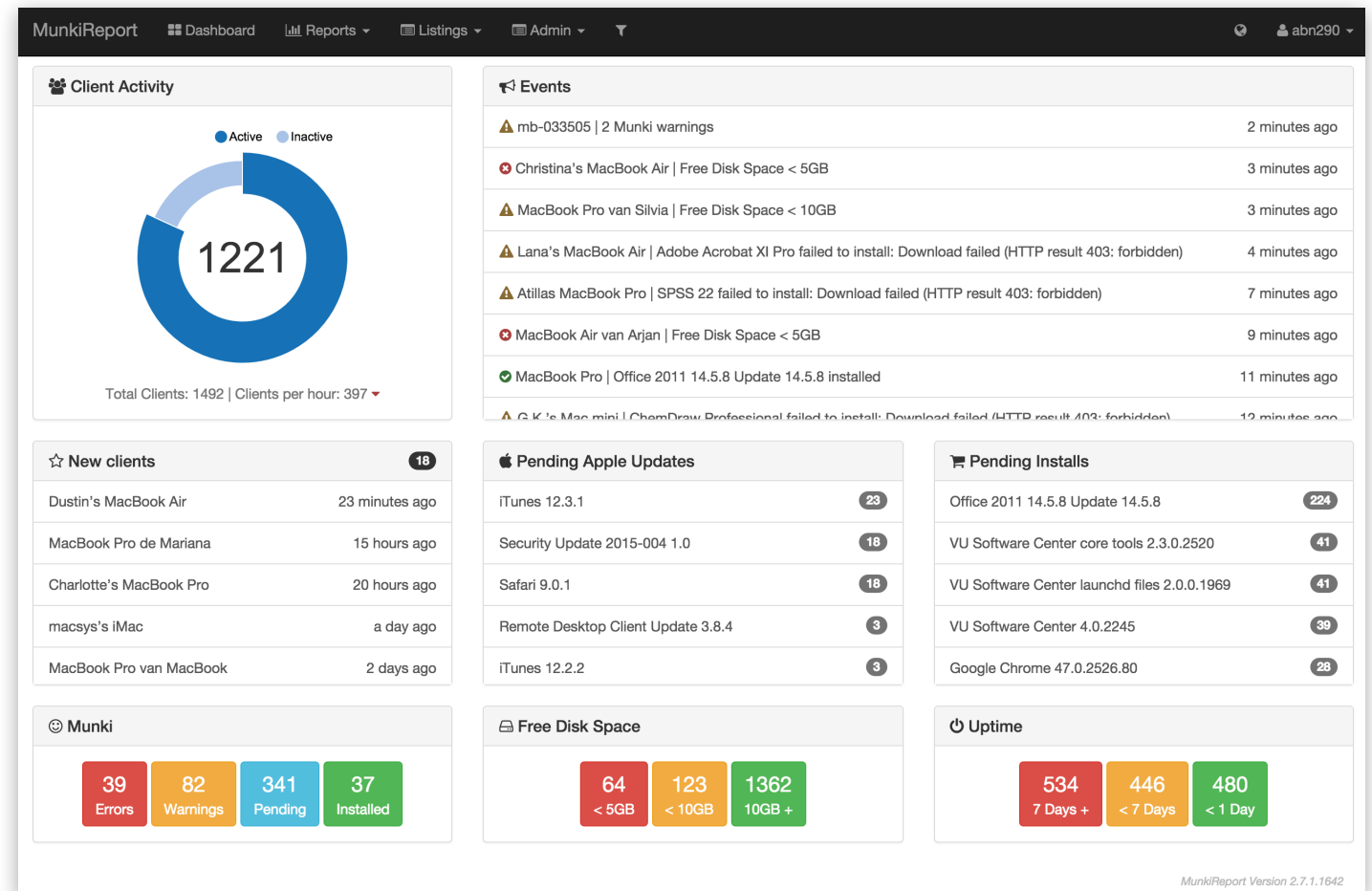
"Update all the things!"

munkireport--php

Munki consists of client-side tools written largely in Python, and is available as open-source under the Apache 2 license.



fleet visibility



the support.

"Update all the things!"

munkireport--php

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fleet visibility

Module name	Description	Comment
appusage	AppUsage Module	Requires Munki 3 or crankd to monitor application usage
ard	ARD Module	
bluetooth	Bluetooth Module	Connected bluetooth devices and battery state
backup2go	Backup2Go Module	
caching	Caching Module	OS X Server specific caching stats
certificate	Certificate Module	OS X Server specific
crashplan	Crashplan Module	
deploystudio	DeployStudio Module	
directory_service	Directory Service Module	Directory service binding type and status
disk_report	Disk Report Module	Connected drive type, size, and OS SMART status
displays_info	Displays Information Module	Connected display info
event	Events Module	Dashboard widget showing client messages
fan_temps	FanTemps Module	Fan speeds and thermal sensor temperatures
filevault_escrow	FileVault 2 Escrow Module	
filevault_status	FileVault Status Module	
findmymac	Find My Mac Module	
firmware_escrow	FirmwareEscrow Module	
fonts	Fonts Module	
gpu	GPU Module	Video card information

the support.

“Update all the things!”

munkireport--php

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event	Events Module	Dashboard widget showing client messages
fan_temps	FanTemps Module	Fan speeds and thermal sensor temperatures
filevault_escrow	FileVault 2 Escrow Module	
filevault_status	FileVault Status Module	
findmymac	Find My Mac Module	
firmware_escrow	FirmwareEscrow Module	
fonts	Fonts Module	
gpu	GPU Module	Video card information
gsx	GSX Module	Requires GSX account with Apple. See "GSX lookups" section in config.php for more configuration details.
homebrew	Homebrew Module	
homebrew_info	Homebrew Info Module	
installhistory	Installhistory Module	Apple and 3rd party install history
inventory	Inventory Module	
localadmin	Localadmin Module	Lists local admins configured on the client
location	Location Module	Requires external pinpoint project
managedinstalls	ManagedInstalls Module	munki managed installs info
munkiinfo	Munkiinfo Module	munki client configuration info
munkireport	Munkireport Module	
munkireportinfo	MunkiReport Info Module	
network	Network Module	
network_share	Network Shares Module	
power	Power Module	
printer	Printer Module	
profile	Profile Module	
sccm_status	SCCM Status Module	
security	Security Module	
servermetrics	Servermetrics Module	OS X Server specific
service	Service Module	OS X Server specific
smart_stats	SMART Stats Module	Requires 3rd party smartmontools
softwareupdate	SoftwareUpdate Module	
timemachine	Timemachine Module	
usb	USB Module	
warranty	Warranty Module	

**taking a big
step back.**





BSDpy



Munki Repo



Munkireport-PHP

Client data is imported to
Snipe-IT, or similar asset
management db.





BSDpy



Munki Repo



Munkireport-PHP

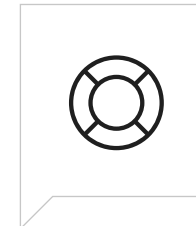
Client is imaged, via
whichever means...

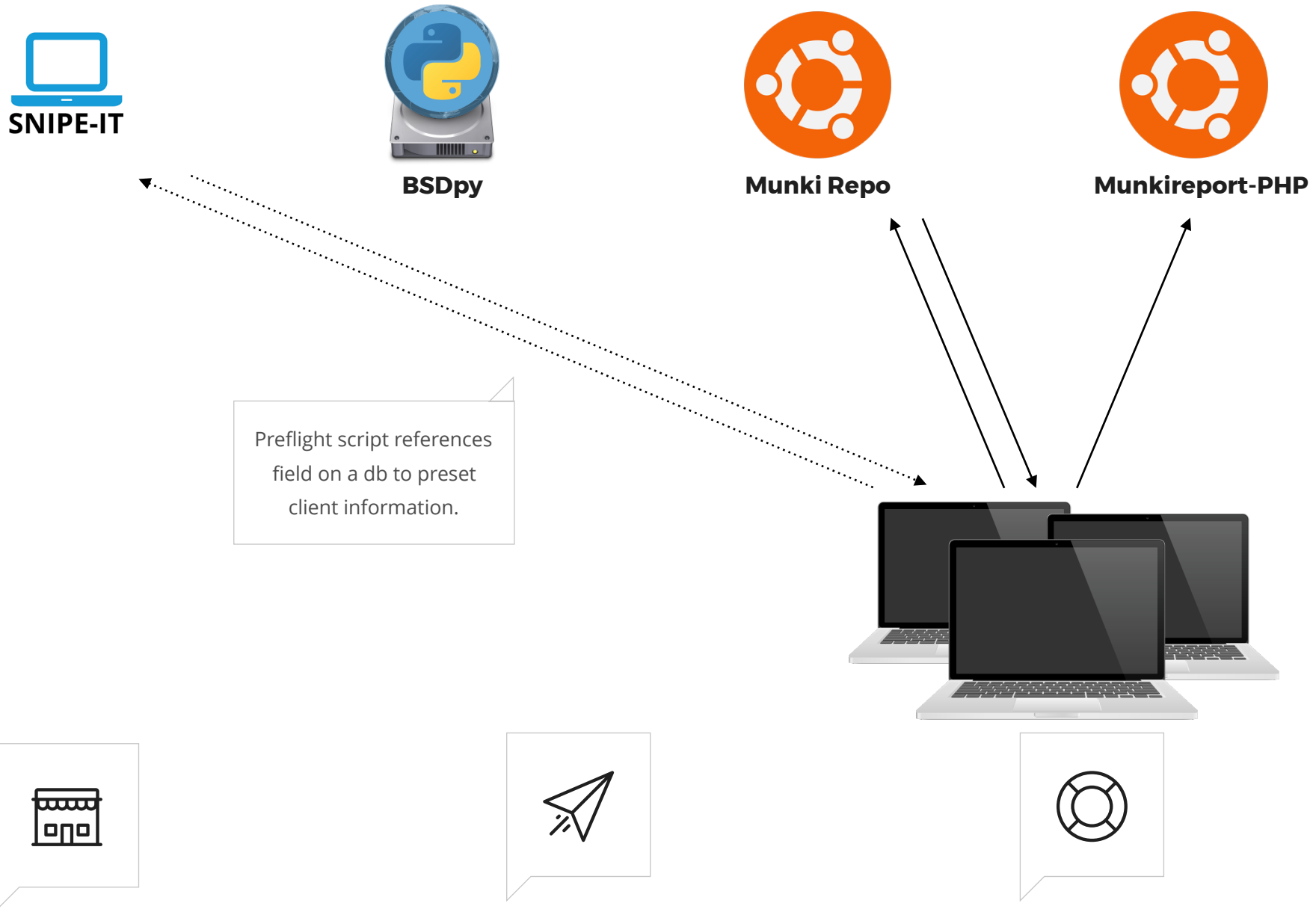


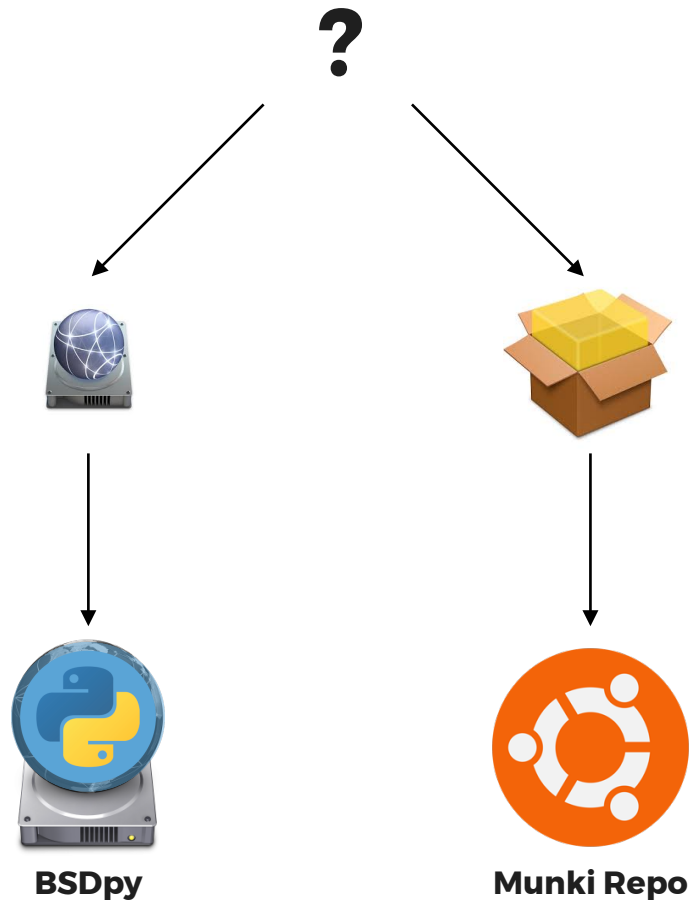


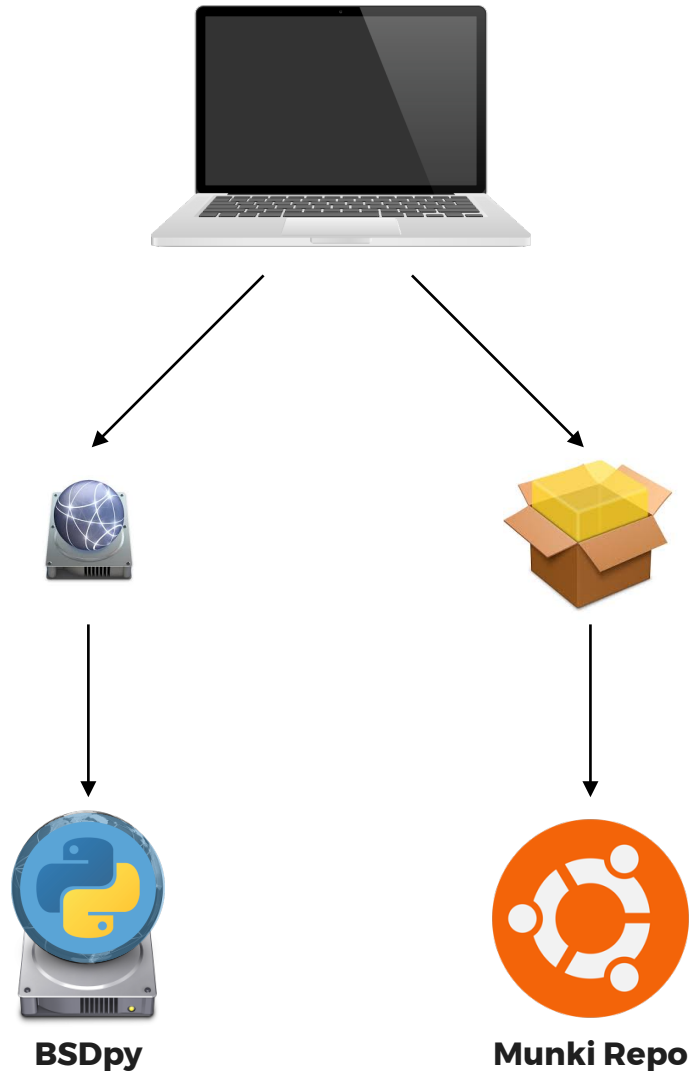
Client update requirements, pulls required applications and settings.

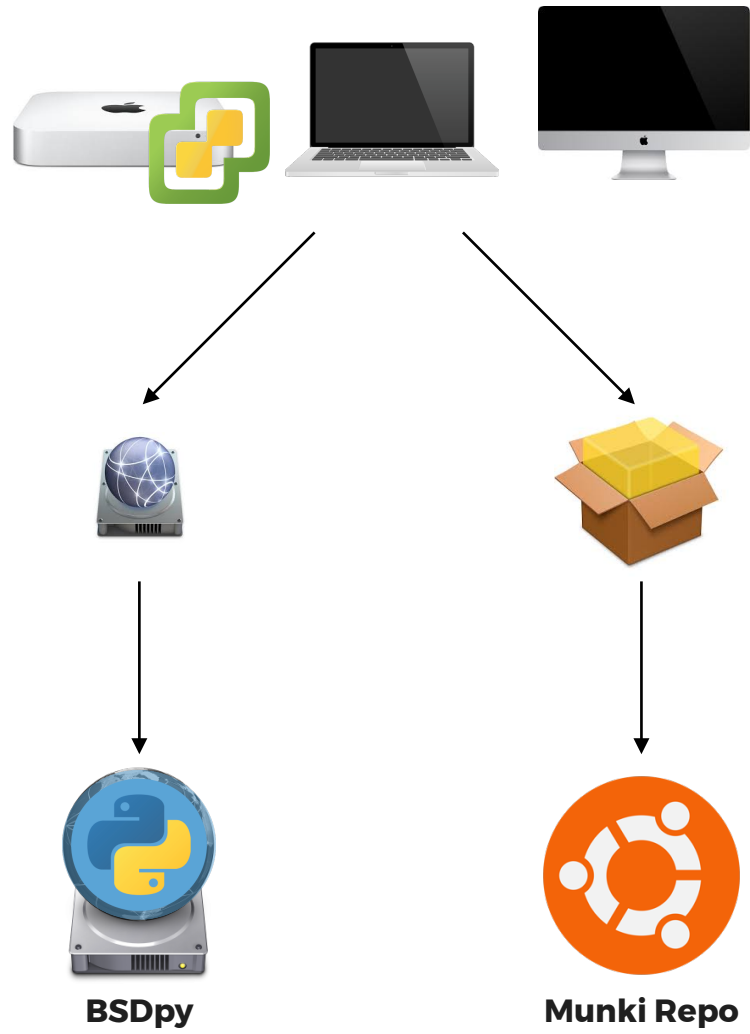
Client pushes information defined to report server.

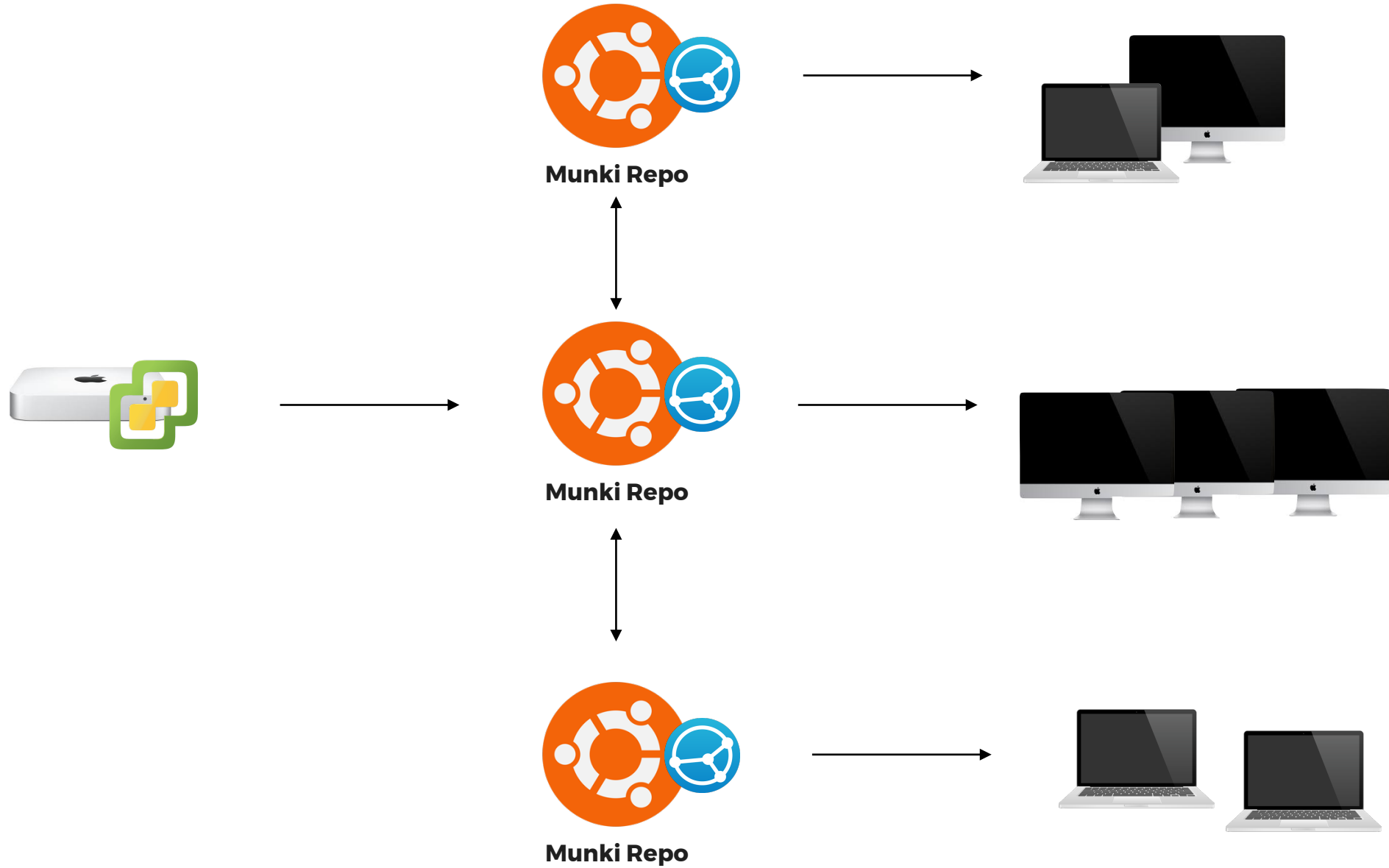














macOS **machine** tools.

"The 'almost' bit."



suspicious package

Do you know what files that OS X Installer package actually installs?



packages

Whenever you need to create an installation package or distribution for Mac OS X 10.5 or later...



Payload-Free Pkg Creator

Uses AppleScript, shell scripting and pkgbuild behind the scenes to create payload-free packages.



Git / Gitlab

App tracking, configuration changes, best practice.



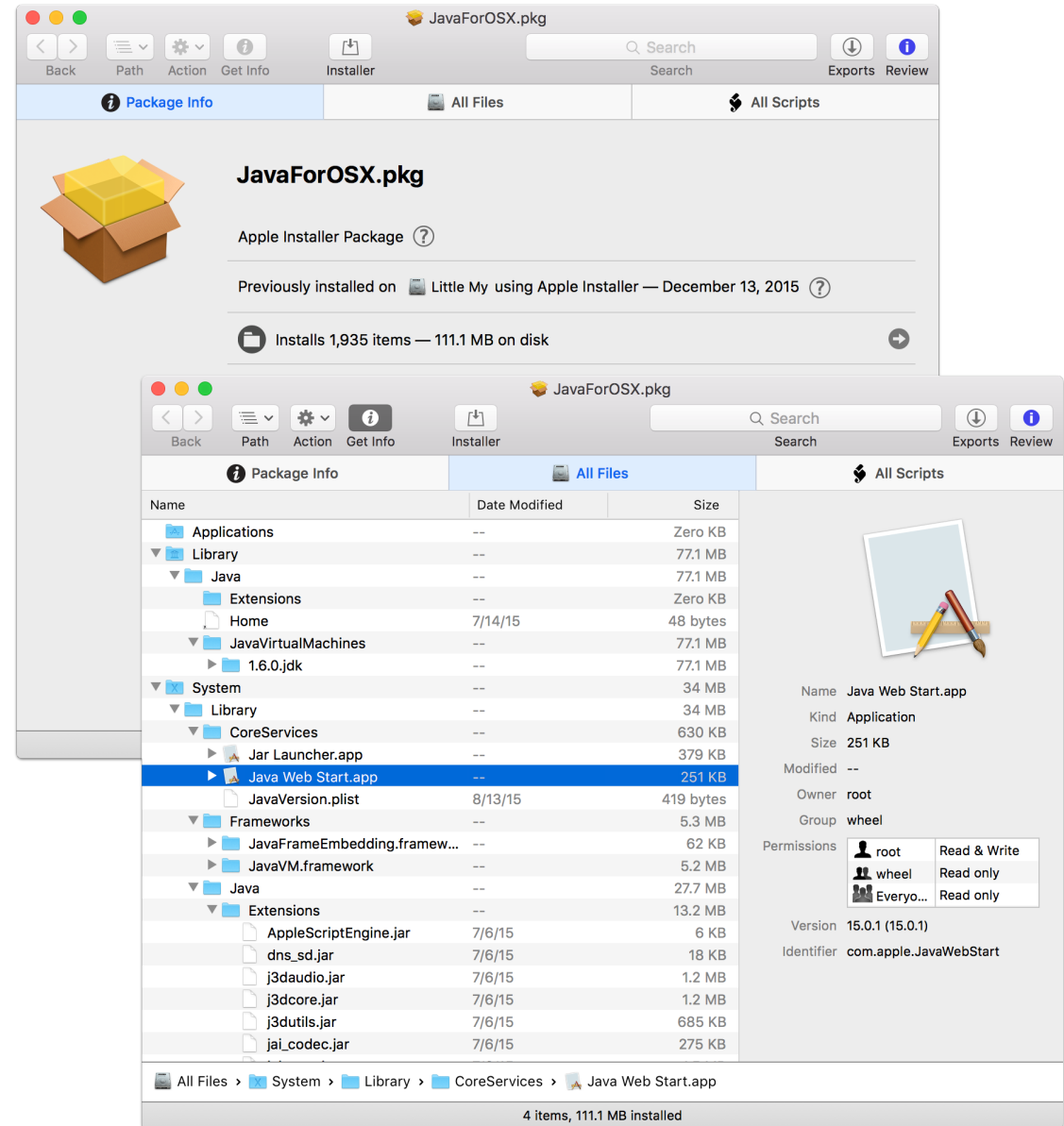
FPM

The goal of fpm is to make it easy and quick to build packages such as rpms, deps, OSX packages, etc.



suspicious package

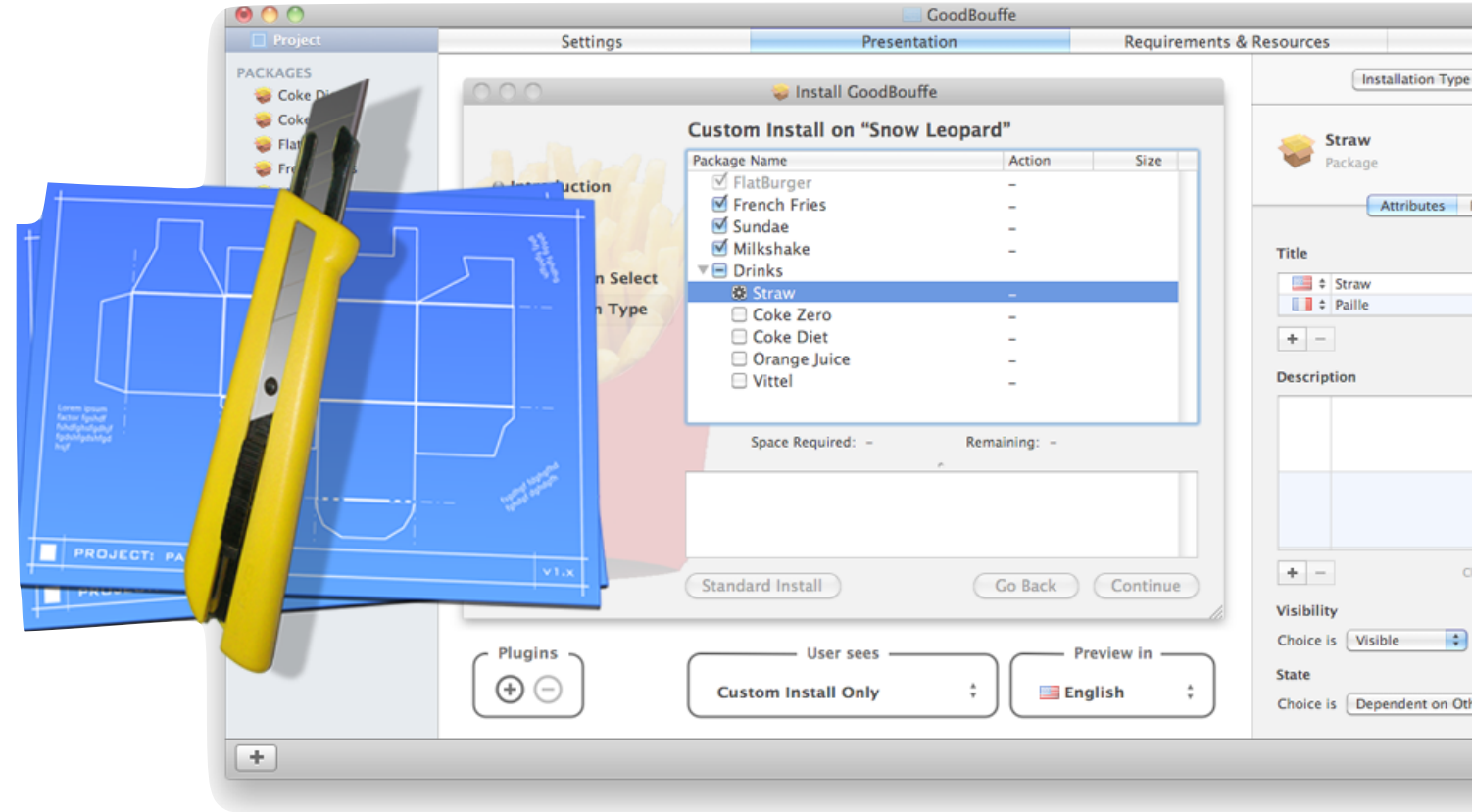
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Git / Gitlab

App tracking, configuration changes,
best practice.



GitLab.org / GitLab Community Edition

Project

Activity

Repository

Pipelines

Graphs

Issues5,483

Merge Requests413

Snippets

Pipelines

Builds

Environments

Cycle Analytics

All31,341

Running63

Branches

Tags

Status	Pipeline	Commit	Stages
running	#5233451 by latest	20916-issues-mrs-line... e3612f86 Add content_class for limited width	
running	#5233393 by latest	fix/refactor-cycle-ana... ab98279e big refactor based on MR feedback	
running	#5233299 by latest	dz-nested-groups 2b2b39f0 Add support for nested namespaces in th...	
running	#5233284 by latest	master 2f91c0ee Merge branch 'cleanup-common_utils.js'...	
running	#5233164 by latest	25106-hide-issue-mr-bu... b3d15756 adds changelog	
canceled	#5233032 by	25106-hide-issue-mr-bu... 2fedc86e adds check for logged in user in group iss...	
running	#5232996 by latest	25209-improve-length-v... 62d5439e Use :maximum instead of :within for leng...	
running	#5233284 by latest	master 2f91c0ee Merge branch 'cleanup-common_utils.js'...	

projects
worth looking
into.





Micro MDM

An experimental project to build a Mobile Device Management server for Apple devices.



NoMAD

Full functionality of a bound Mac, without the bind.



OSQuery

osquery allows you to easily ask questions about your Linux, Windows, and macOS infrastructure.



Google Santa

Google Santa is a binary whitelisting/blacklisting system for macOS.



Puppet

With Puppet you know exactly what is going on with all your software, and you get the automation needed to drive change with confidence.



Chef

Chef lets you manage them all by turning infrastructure into code.



Zentral

Open source Framework and server solution to gather, process, and monitor system events and link them to an inventory.



Micro MDM

An experimental project to build a Mobile Device Management server for Apple devices.

Connecting to DEP

Note: Bootstrapping management tools like Munki is probably the reason most of us want an MDM right now, but DEP is not necessary for MicroMDM to work. You can skip to the "Profiles and Applications Section" if you don't have a DEP account.

Got a DEP account? You can set up a virtual server for MicroMDM and sync your devices: <https://github.com/micromdm/micromdm/wiki/Connect-MicroMDM-with-DEP>

Once you're connected to DEP and can sync devices, you can assign a profile to them:

Sample profile.json. Note the list of serial numbers to assign the profile to.

```
{
  "profile_name": "Test Profile",
  "url": "https://dev.micromdm.io/mdm/enroll",
  "await_device_configured": false,
  "is_mdm_removable": true,
  "department": "IT Department",
  "org_magic": "913FABBB-0032-4E13-9966-D6BBAC900331",
  "support_phone_number": "1-555-555-5555",
  "support_email_address": "org-email@example.com",
  "skip_setup_items": [ "Registration", "AppleID", "TOS" ],
  "devices": [ "SERIAL1", "SERIAL2" ]
}
```



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OSQuery

osquery allows you to easily ask questions about your Linux, Windows, and macOS infrastructure.

```
root@vagrant-ubuntu-trusty-64:/vagrant# osqueryi
~~~~~
osquery - being built, with love, at Facebook
~~~~~
Connected to a transient in-memory database.
Use ".open FILENAME" to reopen on a persistent database.
osquery> |
```



Google Santa

Google Santa is a binary whitelisting/
blacklisting system for macOS.



Malware

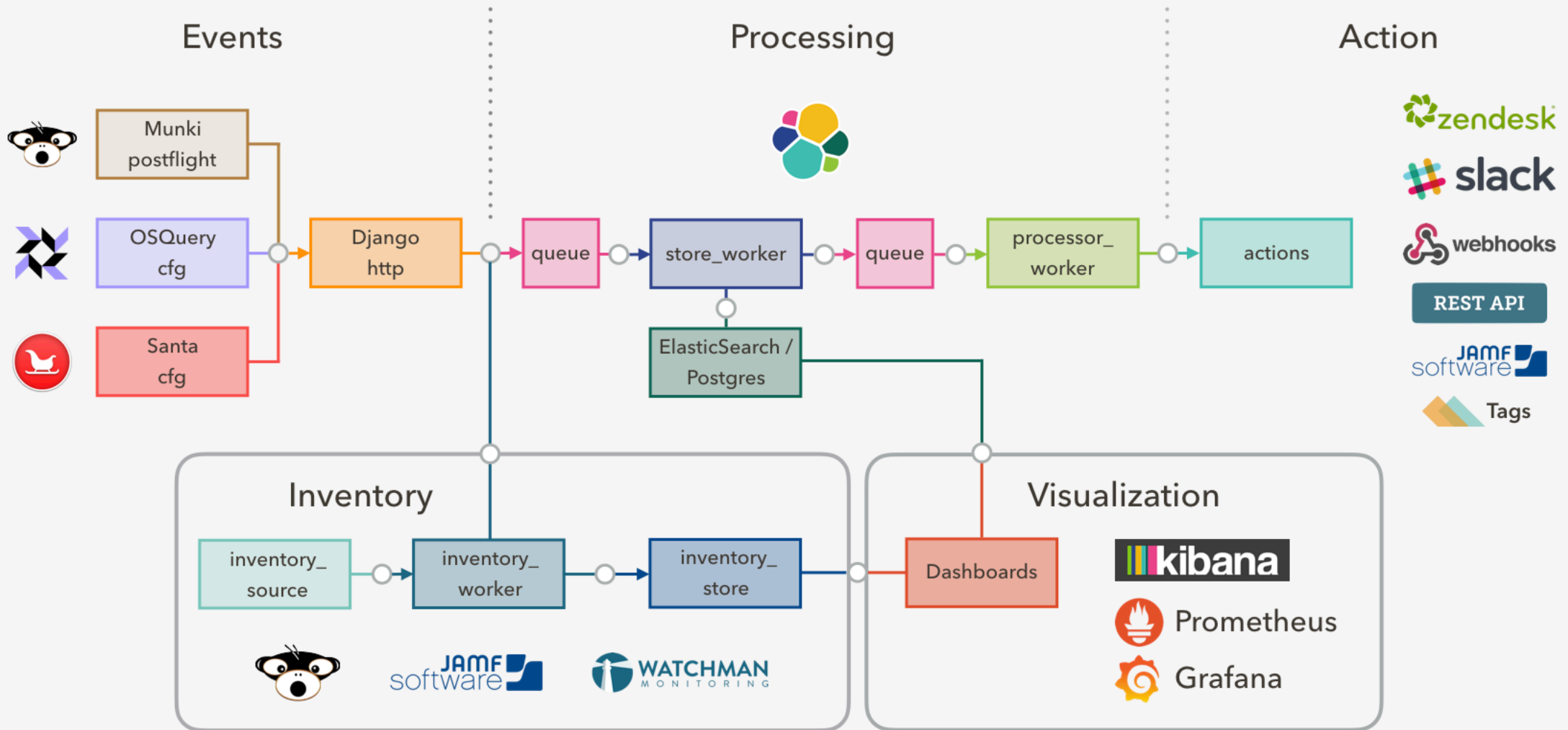


Zentral

Open source Framework and server solution to gather, process, and monitor system events and link them to an inventory.



Zentral - Event Processing





Input

Endpoint Security Tools



osquery



Google Santa

Endpoint Managed Software Solutions



Munki



Casper Suite

Inventory, Events, Metrics



WATCHMAN
MONITORING



casper
SUITE

REST API

Sal

Output

MDM



REST API

Notifications



Email



zendesk



GitHub



freshdesk



slack

Pushover



webhooks

Sub-Systems



kibana



ElasticSearch



Prometheus



Grafana



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Zentral

Open source Framework and server solution to gather, process, and monitor system events and link them to an inventory.

**find us
on slack.**

macadmins.org



In summary...

**macOS, I use it where I must,
otherwise I don't.**

the goals of this talk.

HIGH LEVEL OVERVIEW

Approach open source tools in a way that is accessible for new administrators, small shops, folks that cannot go the paid route or are simply interested in what other tools might be out there.

CLEAN SOMETHING NEW

I hope you leave with an idea, a thought, workflow modification, resource or a tool you didn't have before this session.

**that's
about
all.**

"Questions?"

referenced projects.

Snipe-IT

Snipe-IT lets your admins work together to track assets, software, accessories and consumables all in one place.

osTicket

Easily scale and streamline your customer service and drastically improve your customer's experience.

Web Help Desk

Delivers simplicity and automation to streamline help desk ticketing and IT asset management.

Imagr

Imagr is an application designed to be run from a NetInstall environment created with AutoNBI.

NBICreator

NBICreator is a NetInstall image creation tool for OS X written in Objective-C.

ImagrAdmin

ImagrAdmin is a GUI application for macOS to update and create configuration plists for Imagr.

AutoImagrNBI

An app that automates the creation of NetBoot Images for use with Imagr.

AutoNBI

A tool to automate the building and customization of Apple NetInstall Images.

BSDpy

BSDPy is a platform-independent Apple NetBoot (BSDP) service Apple Mac NetBoot functionality, without macOS.

munki

Munki is a set of tools that, used together with a webserver-based repository of pkgs, can deploy software to macOS.

Munkireport-PHP

Munkireport-php is a reporting client for munki.

Micro MDM

An experimental project to build a Mobile Device Management server for Apple devices.

referenced projects, cont'd.

Custom preflight scripts

Munki configuration using a preflight script to get the newest config information from your repo.

Google Santa

Google Santa is a binary whitelisting/blacklisting system for macOS.

OSQuery

osquery allows you to easily ask questions about your Linux, Windows, and macOS infrastructure.

Zentral

Open source Framework and server solution to gather, process, and monitor system events and link them to an inventory.

Syncthing

Syncthing replaces proprietary sync and cloud services with something open, trustworthy and decentralized.

Puppet

With Puppet you know exactly what is going on with all your software.

Chef

Chef lets you manage them all by turning infrastructure into code.

Git / Gitlab

App tracking, configuration changes, best practice.

suspicious package

Do you know what files that OS X Installer package actually installs?

packages

Whenever you need to create an installation package or distribution for Mac OS X 10.5 or later...

Payload-Free Pkg Creator

Uses AppleScript, shell scripting and pkgbuild behind the scenes to create payload-free packages.

NGINX

nginx [engine x] is an HTTP and reverse proxy server, a mail proxy server, and a generic TCP/UDP proxy server.

end presentation

