
jamf
NATION
User Conference
2018

Leveraging DEPNotify and Jamf Pro for Device Deployment

Or: How I learned to stop imaging and use Device Enrollment
Or or: LDEPNAJPFDD

_C_

John Mahlman

Network Systems Administrator
The University of the Arts, Philadelphia

- Over 10 years in Mac IT
- Write bad code
- Brew good beer
- Play Tabletop Games
- Love Philly sports teams

Find me: @jmahlman (slack, git, jamfnation)
Website: https://yearofthegeek.net

Just a bit about me. I'm a "Network Systems Administrator" at The University of the Arts in Philadelphia, I've been there since December 2015.

I have over 10 years of Mac IT experience, I write somewhat bad code as you will see today, I brew some good beer, and I play tabletop games.

I am also jmahlman on various platforms.

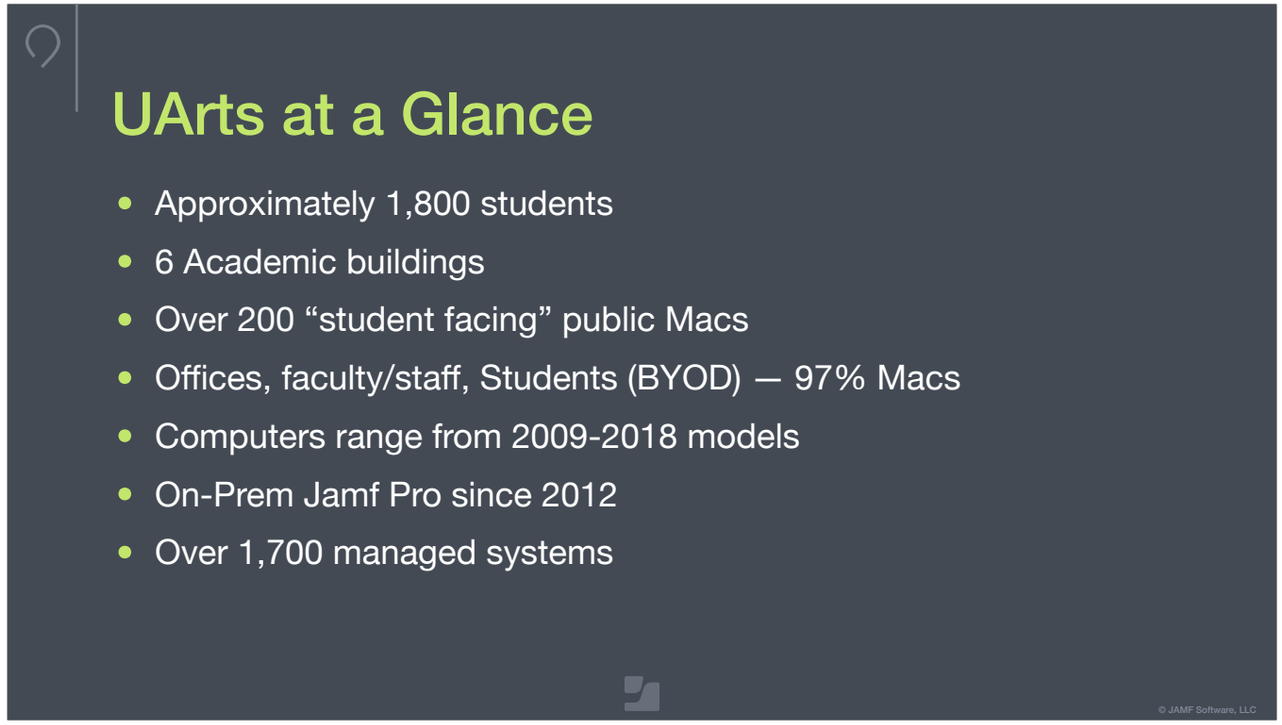
And my website is there, yearfothegeek.net. I don't post often but it's basically where I go to put my processes up for future reference and hopefully to help people out.

LDEPNAJPFDD

Presentation agenda:

- The recent past (Imaging)
- What happened? *It* happened…
- Options we considered
- Find the process
- What we built
- What's next?

Here's a basic rundown of what I'm going to go over today. Past, present, and future?



As mentioned, I work for The University of the Arts in Philadelphia. Here are some stats at a glance.

_C_ We have around 1800 students _C_ spread across 6 buildings. We’re a majority Mac campus, only a handful of windows machines…so

_C_ We have over 200 “student facing” machines in a little over 20 labs, 40 smart-classrooms, and a few other rooms such as studios and production suites.

_C_ We also manage office systems, faculty and staff laptops which are university provided, and finally student BYOD systems.

_C_ We have a lot of variation in systems…2009-2018 models are in use with operating systems from 10.9 to 10.13. Thankfully most, if not all of those 2009-2011 systems and 10.9-10.10 systems are being upgraded or removed. This year.

_C_ We’ve had on-prem jamf pro since 2012 _C_ with over 1700 systems at any time in there.

Where did we start?

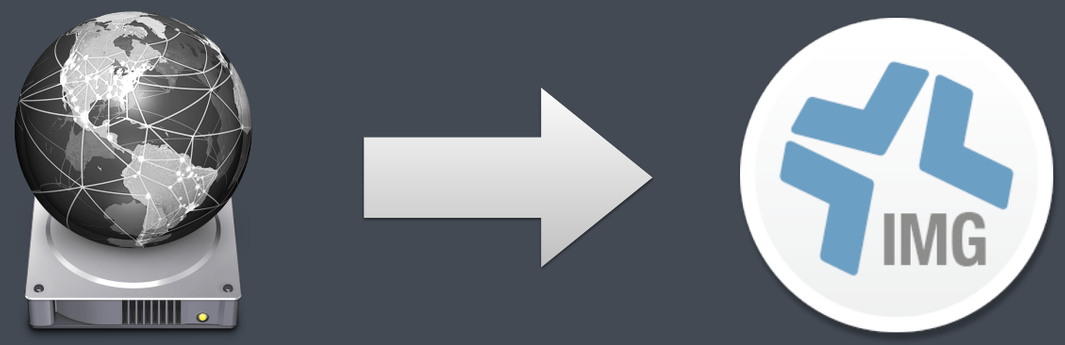
Let’s go back in time a few years..er..months…weeks?

_C_

Imaging… (not too long ago)

~$ sudo bless --netboot --nextonly --server bsdp://<server>

~$ sudo shutdown -r now



Not too long ago..the imaging process looked like this…

_C_ You sent out this command or something like it to a bunch of machines using ARD or jamf remote or a policy and your machine would boot to a netboot set _C_ that was on a server then your imaging application (jamf imaging) would take over.

And walk in the next day or whatever and your machines would be imaged.

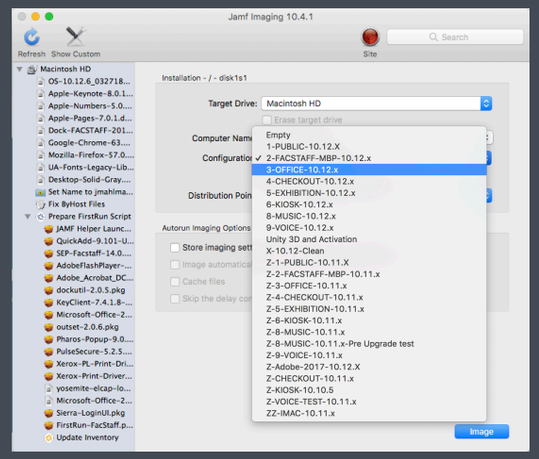
We did this a lot actually, during summer maintenance we would scope a bunch of labs with our netboot policy, have autorun set and we didn’t have to babysit anything.

Imaging… (not too long ago)

Send command or
Set policy….

Go home…

Have beverage!



Imaging would load the configuration based on the machine record or pre-stage, or our helpdesk manually chose one and it just worked.

And things were good. Set it, forget it, drink!

Imaging… (not too long ago)

Send command or
Set policy….

Go home…

Have beverage!

And then *it* happened…

You all know what I’m talking about…

_C_ You know what I’m talking about…

It happened

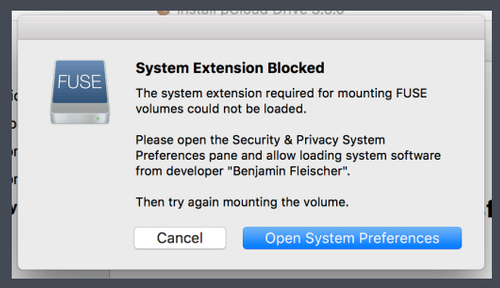
“Apple doesn't recommend or support monolithic system imaging as an installation method, because the system image might not include model-specific information such as firmware updates.”

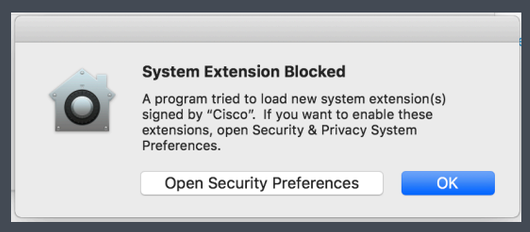
Apple, https://support.apple.com/en-us/HT208020
(Obtained 8/7/18)

Apple gave us this update.

But I mean, just because it’s not recommended doesn’t mean it wouldn’t work..or..

User Approved Kernel Extension Loading (UAKEL, Ukulele)





Ah, yeah…10.13.3 gave us UAKEL.

User Approved MDM (UAMDM)

And then UAMDM. Which was nice because it helped with UAKEL but we still couldn't automate this really..

But there were some workarounds with upgrades and grandfathering.

Apple T2 chip/Secure Boot

“Secure Boot offers three settings to make sure that your Mac always starts up from a legitimate, trusted Mac operating system…Full Security is the default Secure Boot setting…”

Apple, https://support.apple.com/en-us/HT208330
(Obtained 8/7/18)

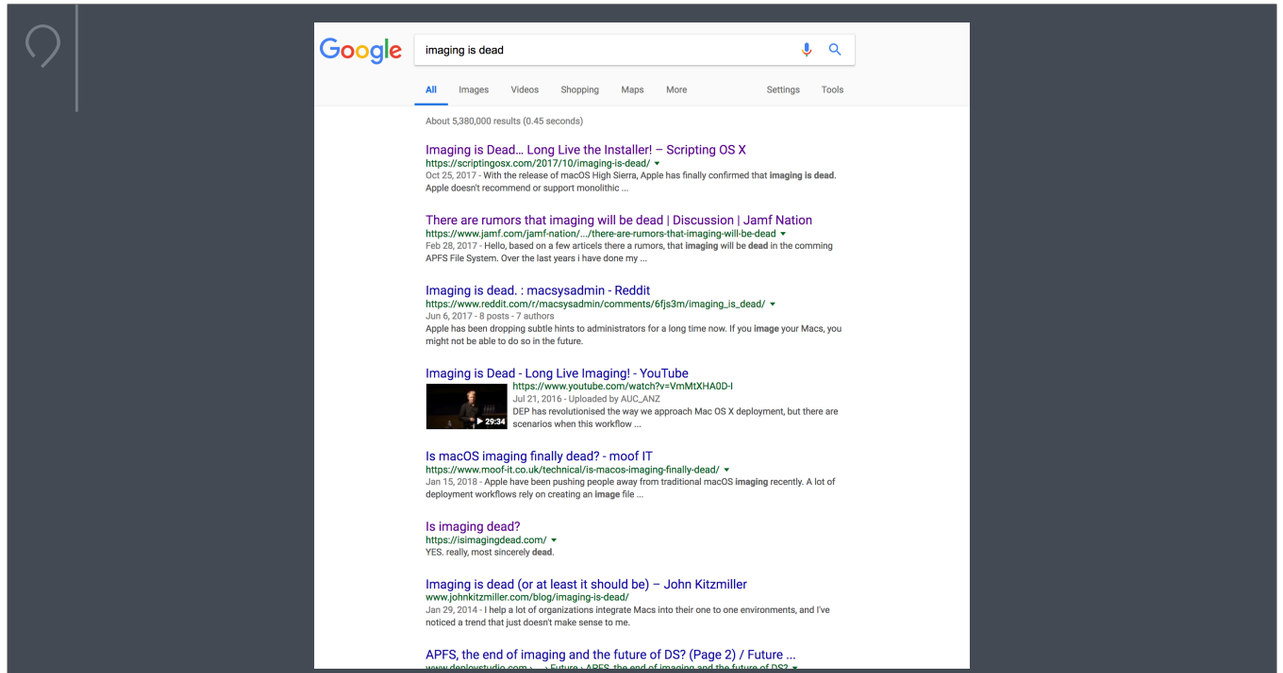
Ah, right. The T2 chip and Secure boot.

These essentially killed any automated imaging..so the question that’s been asked for a while now _C_

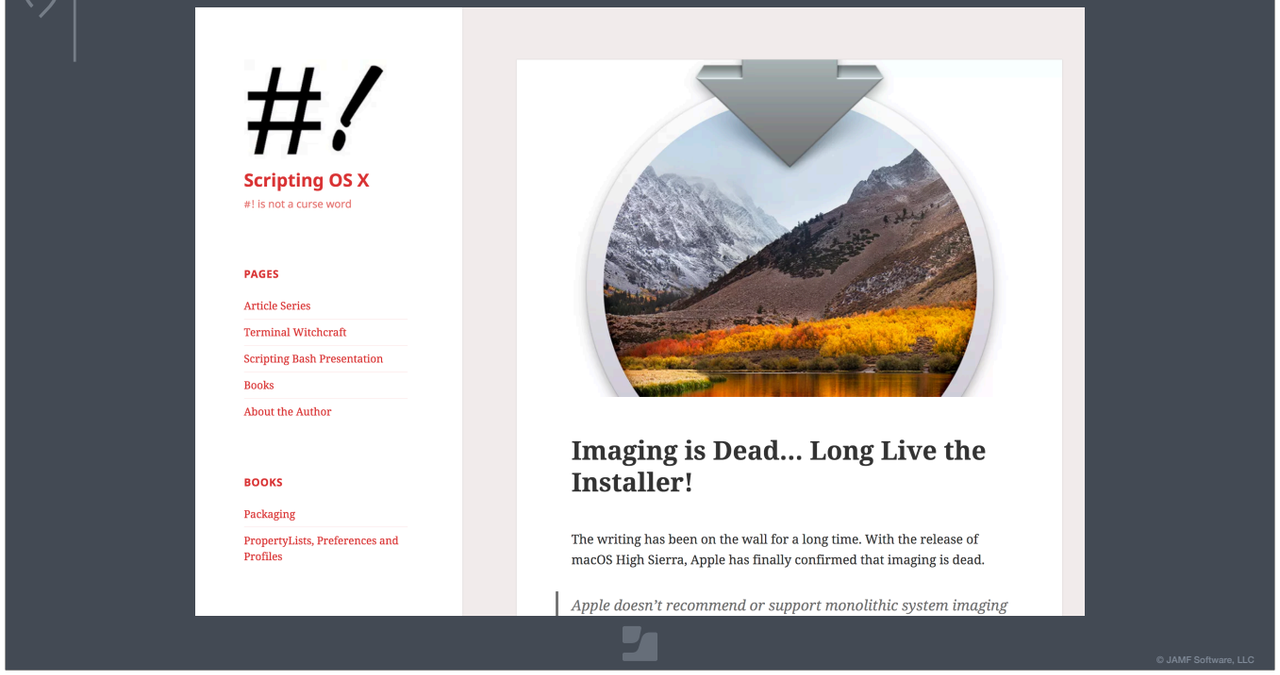
Is imaging dead?

Let’s google!

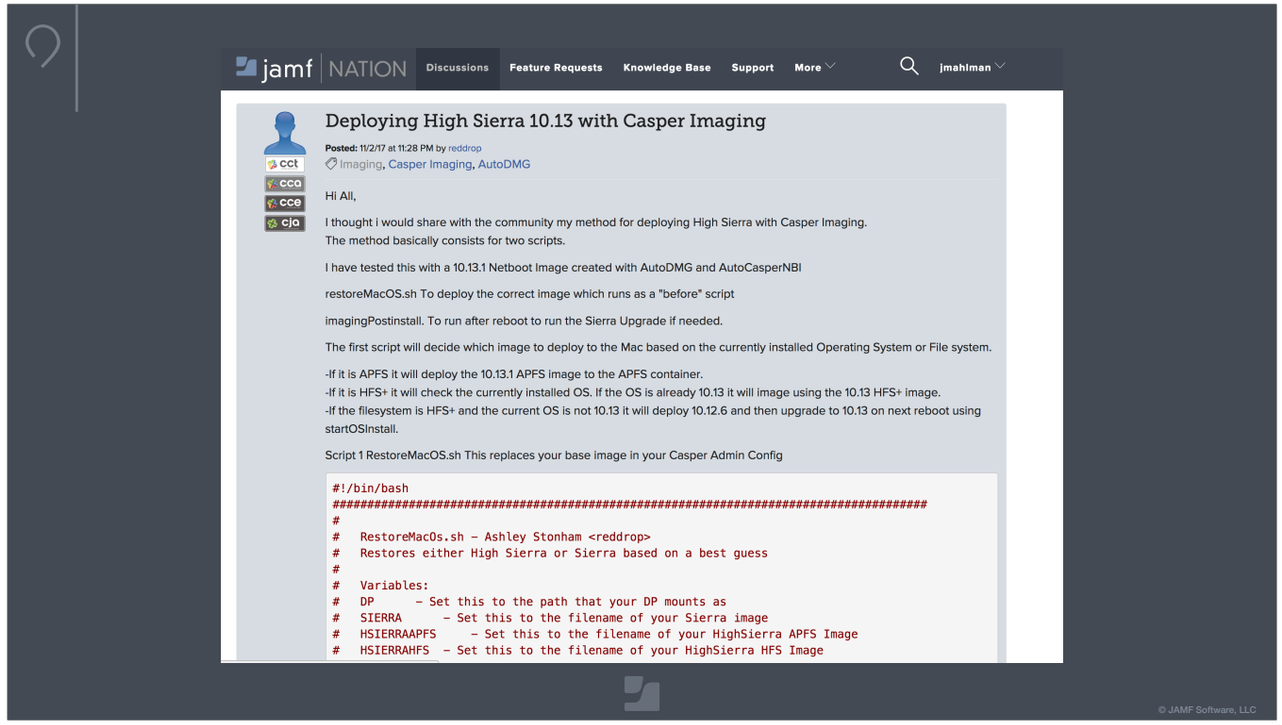
Let’s check google. _C_.



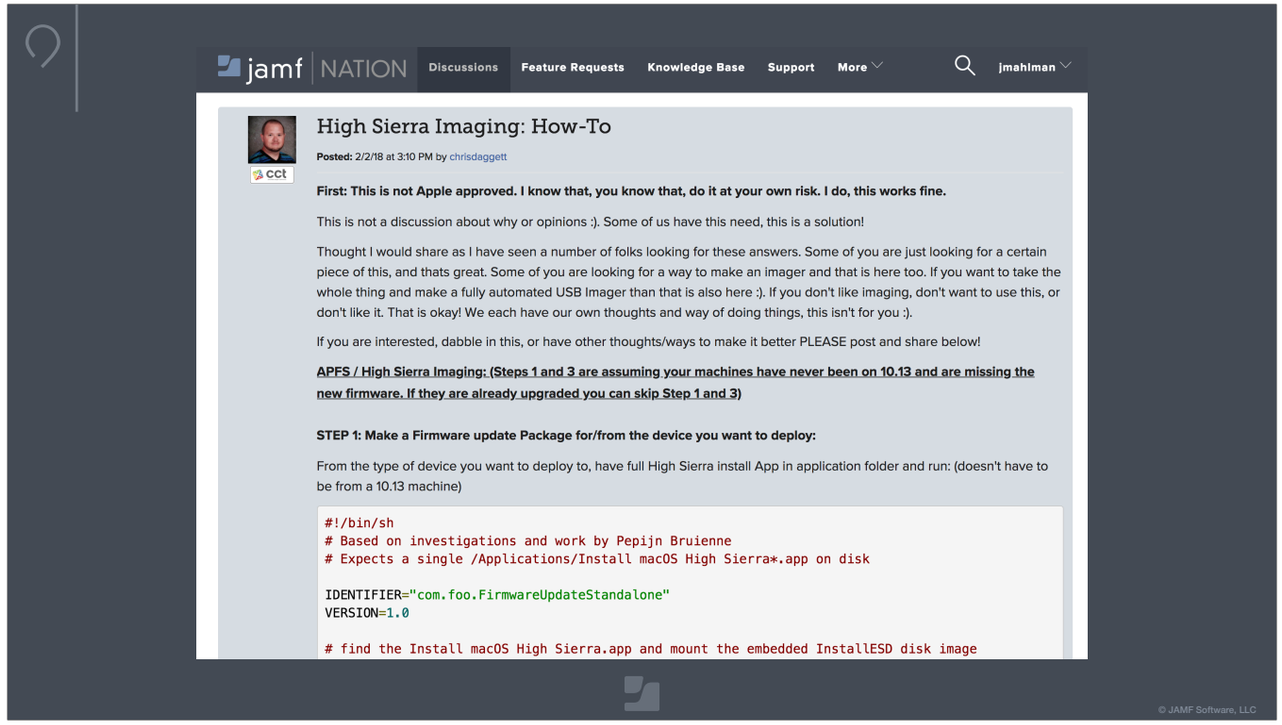
Wow, that’s a lot of stuff..let’s click some of them



Or buddy Armin…Oh, yeah.. Okay, how about Jamf Nation _C_



Deploying High Sierra with casper imaging?!



How to image high sierra??

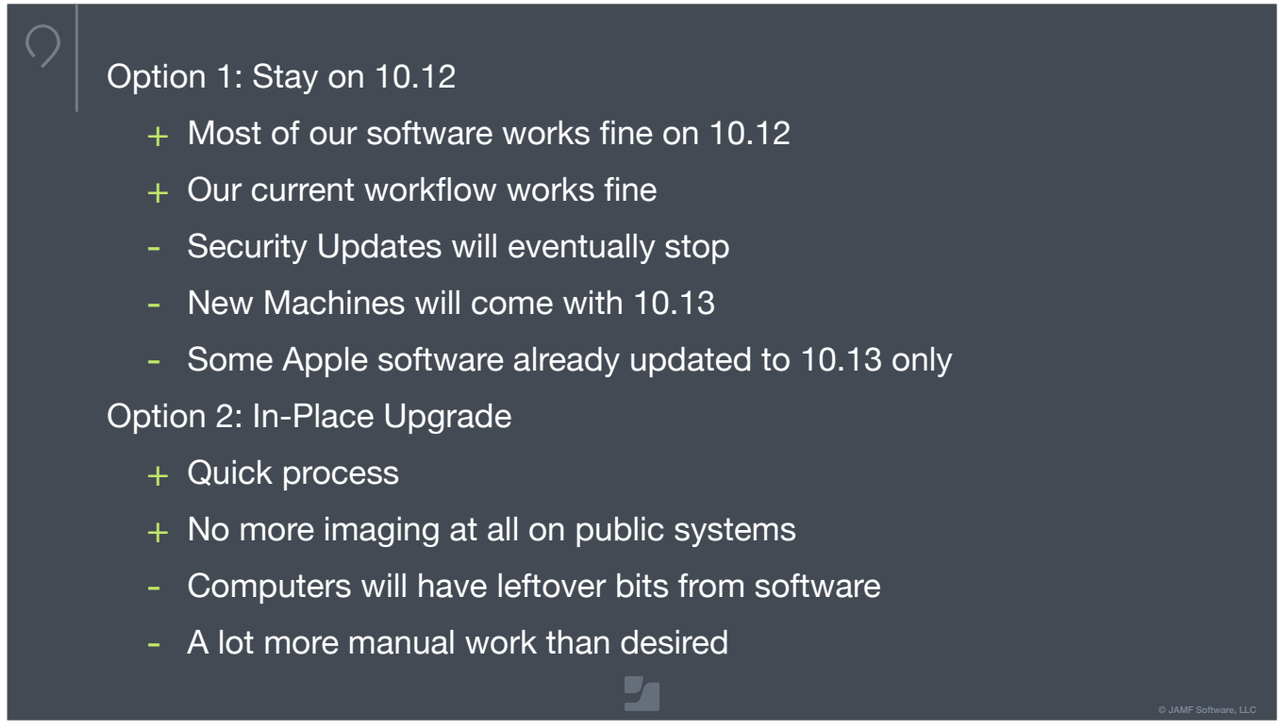
Yeah..posts about people basically learning how to deploy again. _C_

So yeah, it’s dead , Jim_C_

Mostly. Because let’s be honest, it still works (for most machines), but that may not last for long.. _C_

So, what are we going to do?

-Me, 2017



Well, we looked at a bunch of options. Forgive the wall of text…

Our first option was to just stay on 10.12. <READ LIST> This would be fine for us in the short term but not in the long term at all. _C_

Our next option was to do an in-place upgrade. Apple gives us the tools, right? Let's use them…so the pros and cons again. <READ LIST> This one was looking good for us but we still didn't like those cons at all. _C_

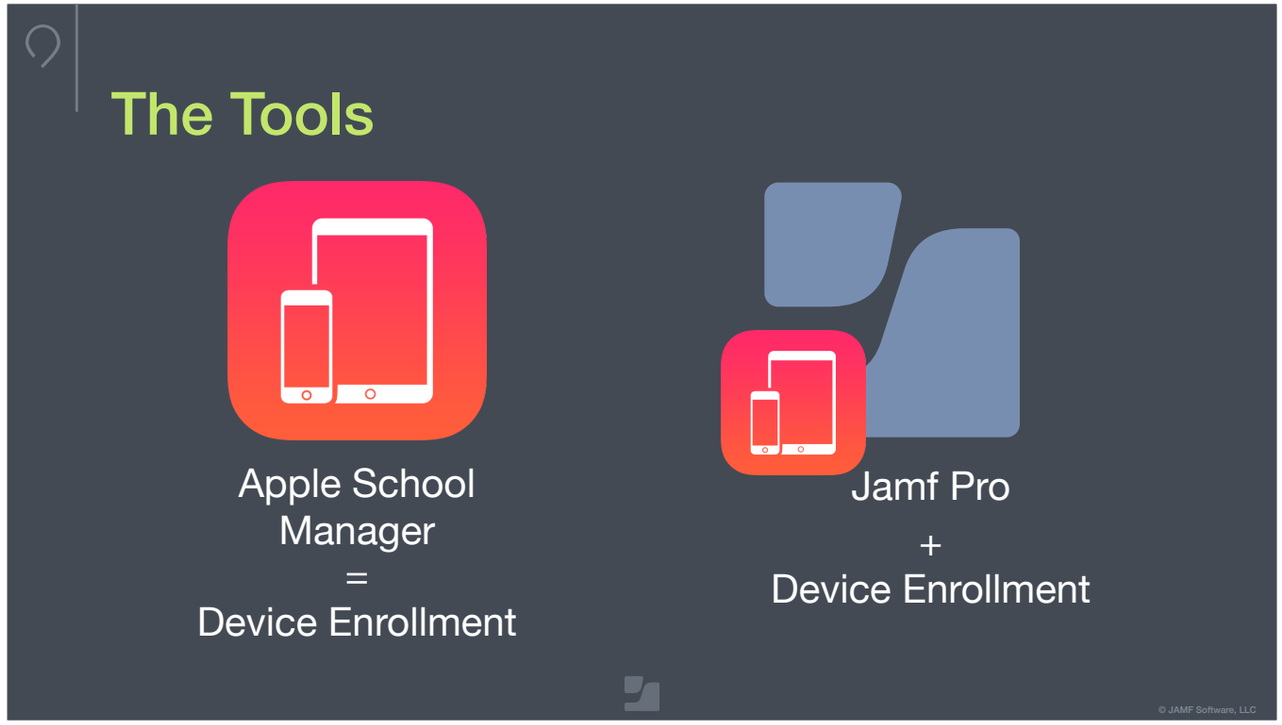
Option 3: In-place Upgrade then image in future

+ Firmware is installed at upgrade
+ Workflows are already good
+ Same issues as Option 2 (leftovers, more work)
- UAMDM will not automatically work
- UAKEL will not work until we manually allow MDM
  (AV software, sound drivers, etc.)

Option 3 was sort of a hybrid solution and I'll be honest with you, this is the process we're using as a very quick stop-gap for our labs. Because again, imaging STILL works on 10.13 with OUR hardware..but we would run into the same issues again plus the UAMDM and UAKEL issues, unless you image to 10.13.3 then upgrade..but for a long term solution, that won't work.

Really, what are we going to do?

-Also me, 2018



Let’s look at the tools we have.

We have Apple School manager _C_ which is just Device Enrollment for schools.

And we have jamf pro _C_ which works with Device Enrollment

Okay, great, now how to we put these together and make is simple and a nice user experience? Well..there are apps for that! And we took a look at two of them. _C_

SplashBuddy

+ Beautiful/Informative UI
+ Lots of functionality
+ Allowed User Input
- More setup required
- More info than we need

DEPNotify

+ Highly Customizable UI
+ Really Simple Setup
+ ~~No User Input~~
+ User Input!

And then came Federico Deis (@fgd)

The first one was SplashBuddy and the other was the new kid DEPNotify.

Splashbuddy was very enticing _C_ Looking at the pros, it was a beautiful and informative UI and offered lots of nice functionality and most importantly, user input.

However, _C_ it had a little more setup on the server side than we really wanted to deal with and was more information than we needed for our process.

_C_ And now DEPnotify. <READ PRO LIST> Unfortunately _C_ no user input… Now, that last one was pretty important to us, we wanted user input so we can name machines and add asset information..so we were really going to go for splash buddy… _C_

And then came Frederico Deis (FGD on slack). He posted in the depnotify channel that he was looking for people to test his forked build that offered user input! So I downloaded, tested it and figured out how to use it and it worked really well! _C_ So taking that “con” away..I had my decision.

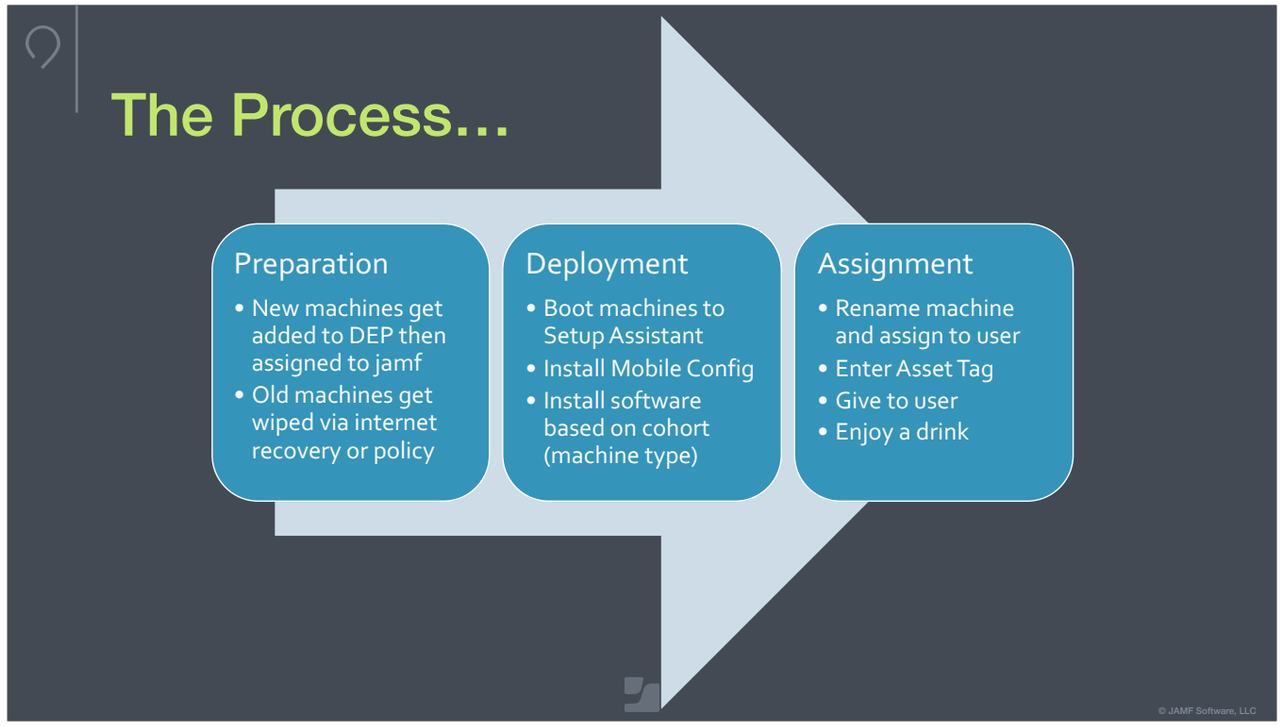
DEPNotify

- Reads input echoed into log file
- Input sets up UI and controls flow
- All UI aspects are controllable

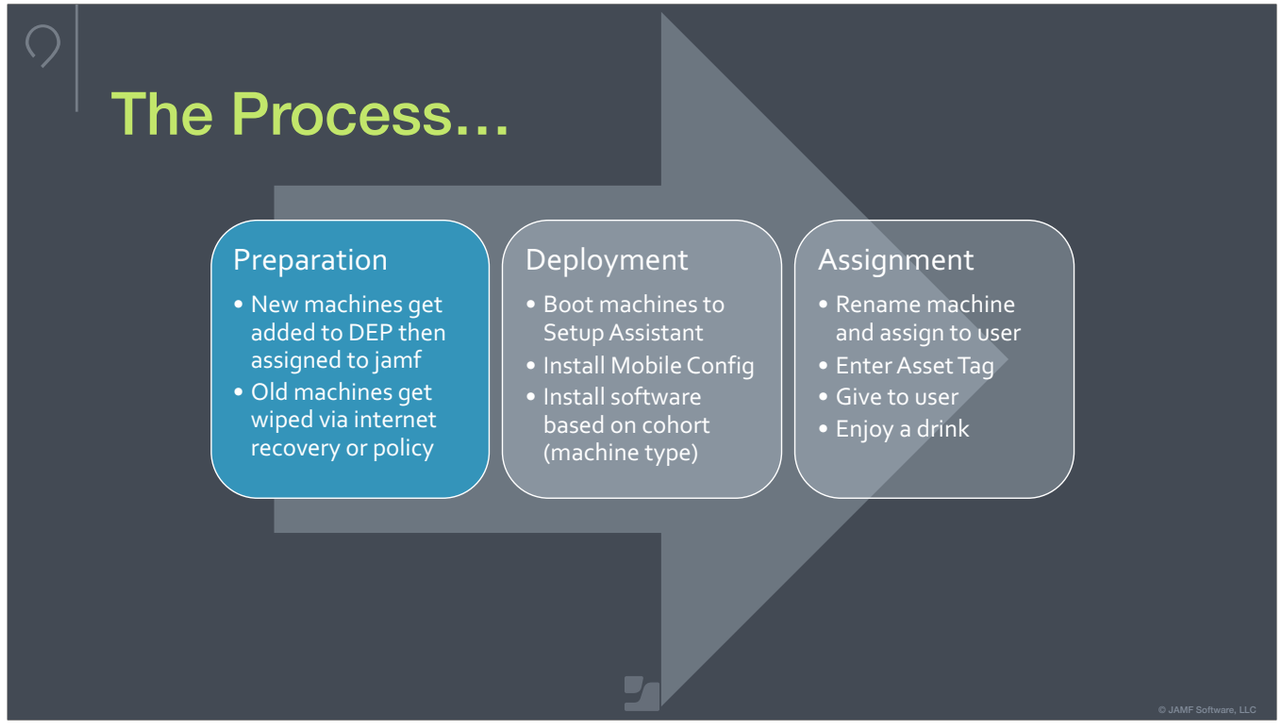
```
echo "Command: MainTitle: New Mac Setup" >> $DNLOG
echo "Command: Image: /var/tmp/your-logo.png” >> $DNLOG
echo "Command: WindowStyle: NotMovable" >> $DNLOG
echo "Command: ContinueButtonRegister: Begin" >> $DNLOG
echo "Status: Please click the button below..." >> $DNLOG
```


A quick and dirty rundown of how DEPNotify works _C_
it reads input echoed into a log file, that input controls the UI and flow of the app and basically all UI aspects are controllable.
Here is a snippet of what the code looks like…

You can see it just echoes COMMAND and then a command type and then a value. Pretty nifty!



So here was the process we were going with..
Get new machines and prep them with the base OS with either DEP for a new machine or internet recovery for a reused one. Boot machines to setup and install the software that was needed and when the machine was going to be assigned we would rename it and enter asset information then give it to the user.

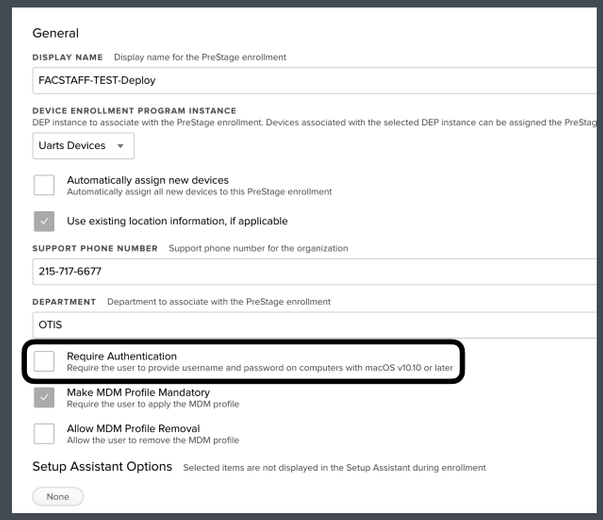


Let’s take a look at the preparation.

Preparation…

New Machines

- Assign to MDM
- Setup Prestage
- Assign Devices to Prestage



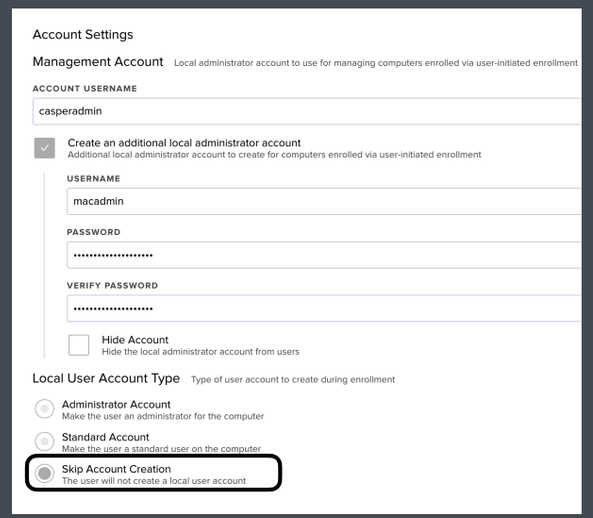
New machines would get assigned in our server via Apple School Manager. Make sure prestage is configured then assign the machine to the correct pre-stage setup.

Note _C_ the checkbox for “require authentication” is unchecked. This is because we want our techs to setup the machine and if you require authentication, that machine gets assigned to that user and we didn’t want that.

Preparation…

New Machines

- Assign to MDM
- Setup Prestage
- Assign Devices to Prestage



The next setting was to create our local admin account, macadmin. That is an account that we have on all machines.

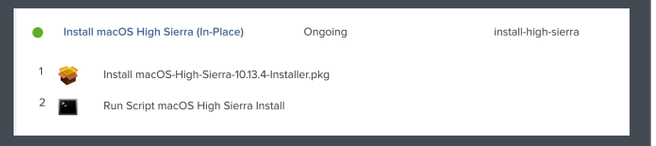
Note _C_ that we skip account creation. We do this again so the machine isn't completely locked to a user until we're ready.

Preparation…

Existing Machines (APFS)

- Package Installer
- Script with ‘eraseinstall’ and ‘nointeraction’ flags
- Make Policy

```
#!/bin/bash
/Applications/Install\ macOS\ High\ Sierra.app/Contents/Resources/
startosinstall --applicationpath "/Applications/Install macOS High Sierra.app"
--rebootdelay 30 --nointeraction $4
```

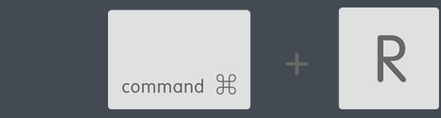



Now, for machines already in the jamf server we can utilize the start os install binary from the High Sierra installer with a policy. First you push out the installer app then run a script that will take care of the install process with start os install.

_C_ Note the $4 flag, we can use that for additional flags such as erase install or convert to apfs.

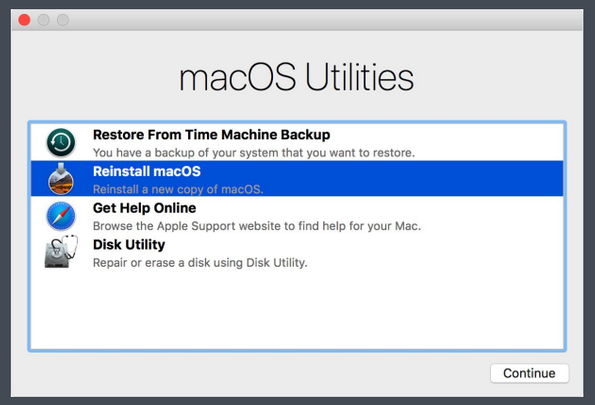
This is nice because if you have machines that are APFS compatible, you can make a self service policy for your techs to wipe the drive and re-install a clean OS (we do this) The example above is just using a custom trigger.

Preparation…



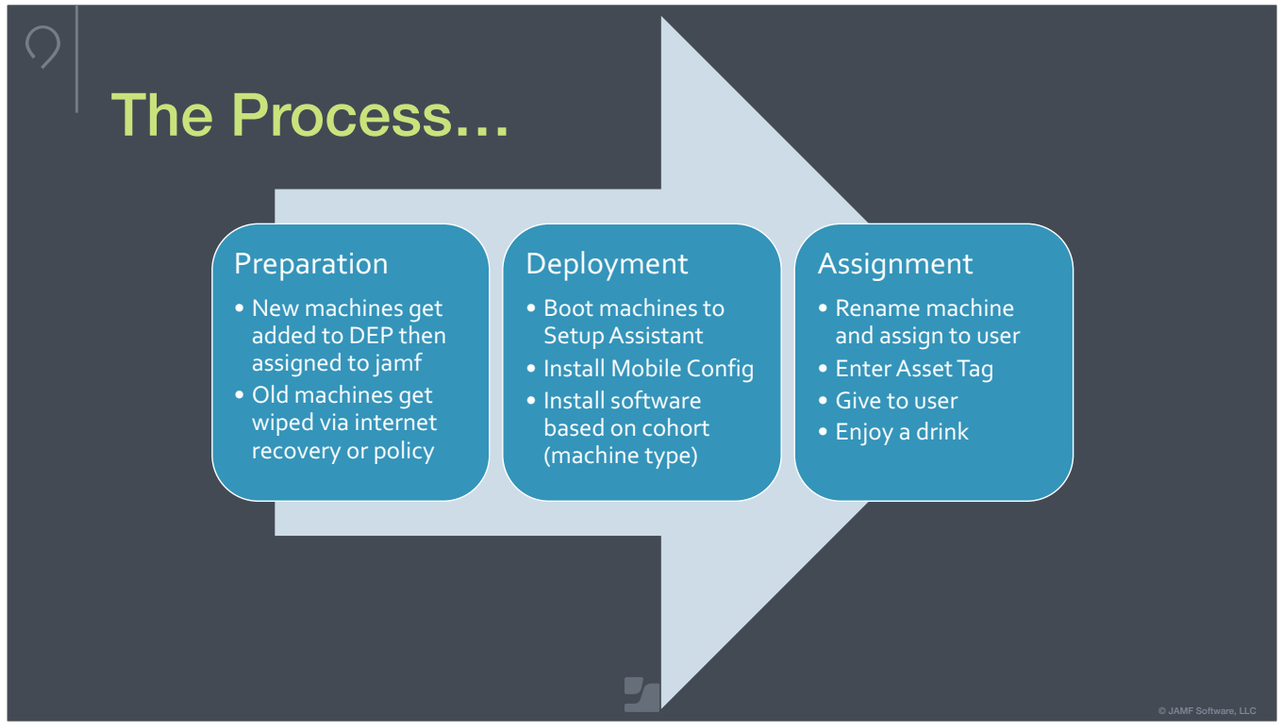
Existing Machines (HFS)

- Internet Recovery!

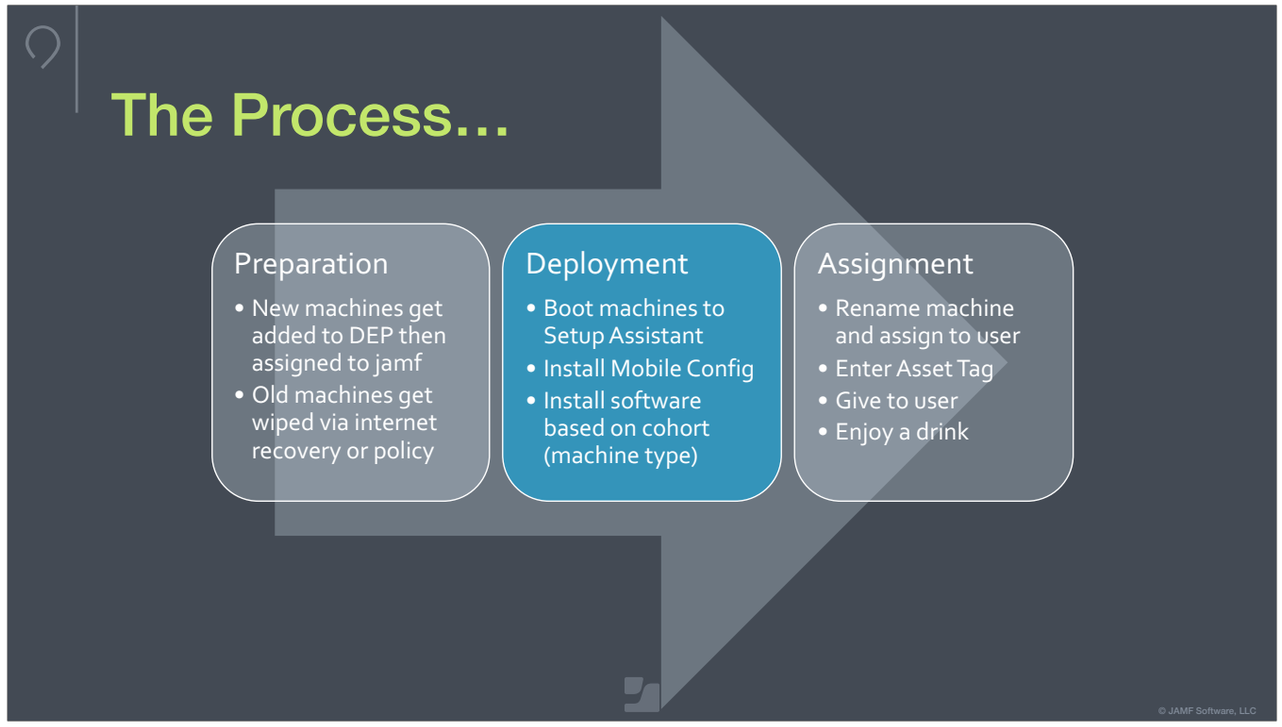


For machines that are either not in the jamf server or you cannot use the “erase install” command you should just boot to internet recovery with good ol’ command R.

_C_ which of course brings up the utilities and you can go from there.

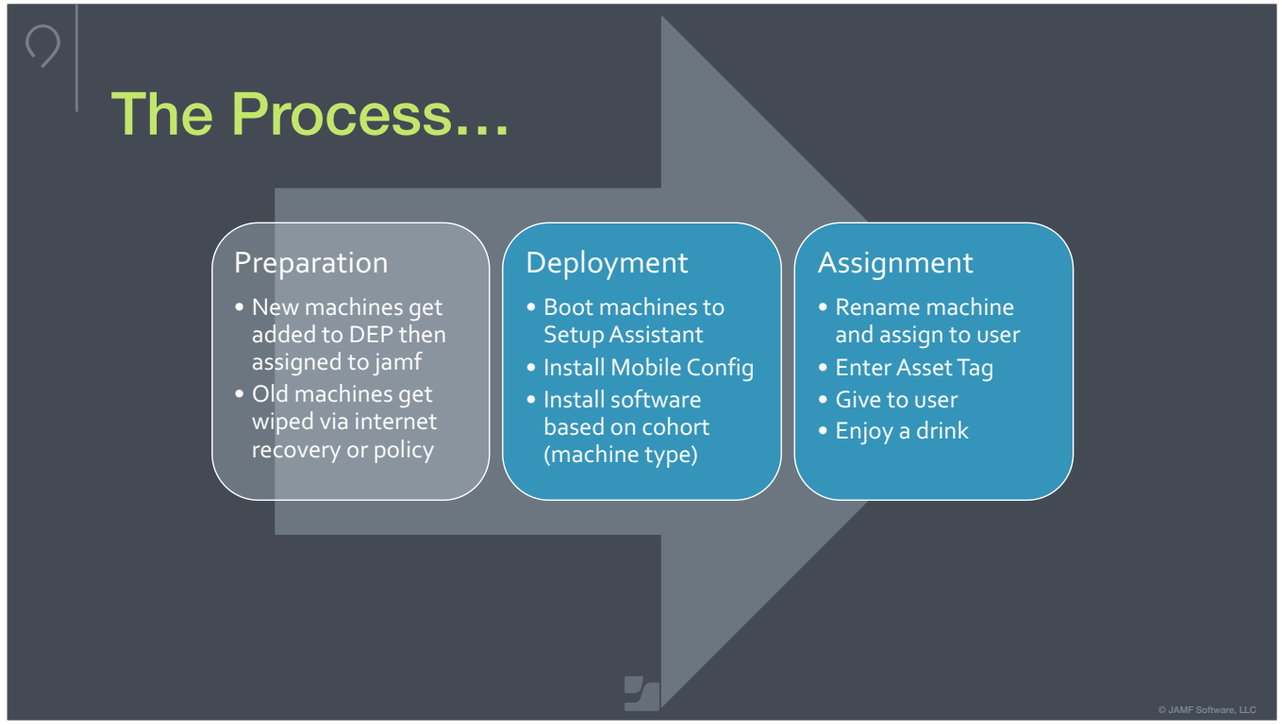


So let’s go back to our steps…we just prepped our machines and next we should deploy.

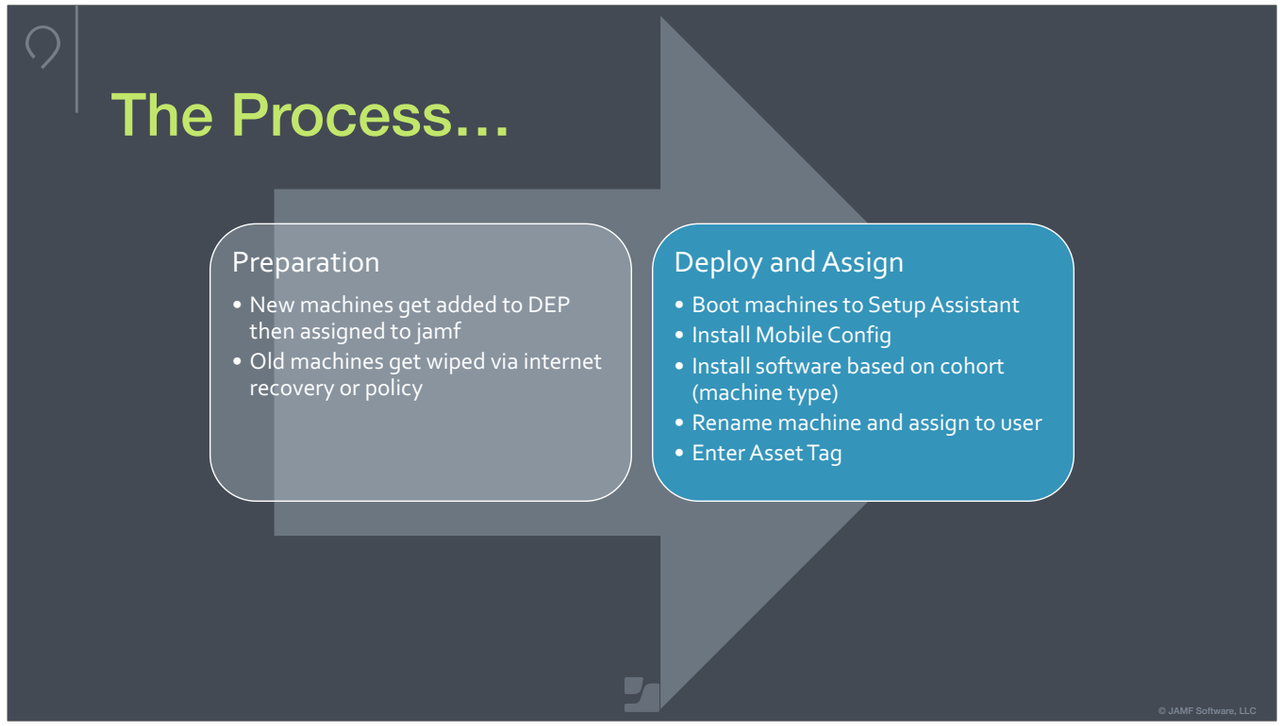


So deployment is simply booting the machine to get the mobile config and install the software we need based on the machine type… But what if you don't know who is getting the machine or where it's going? How are you going to figure out what software gets installed before assignment?

We don't assign the machine until the next step..
 _C_



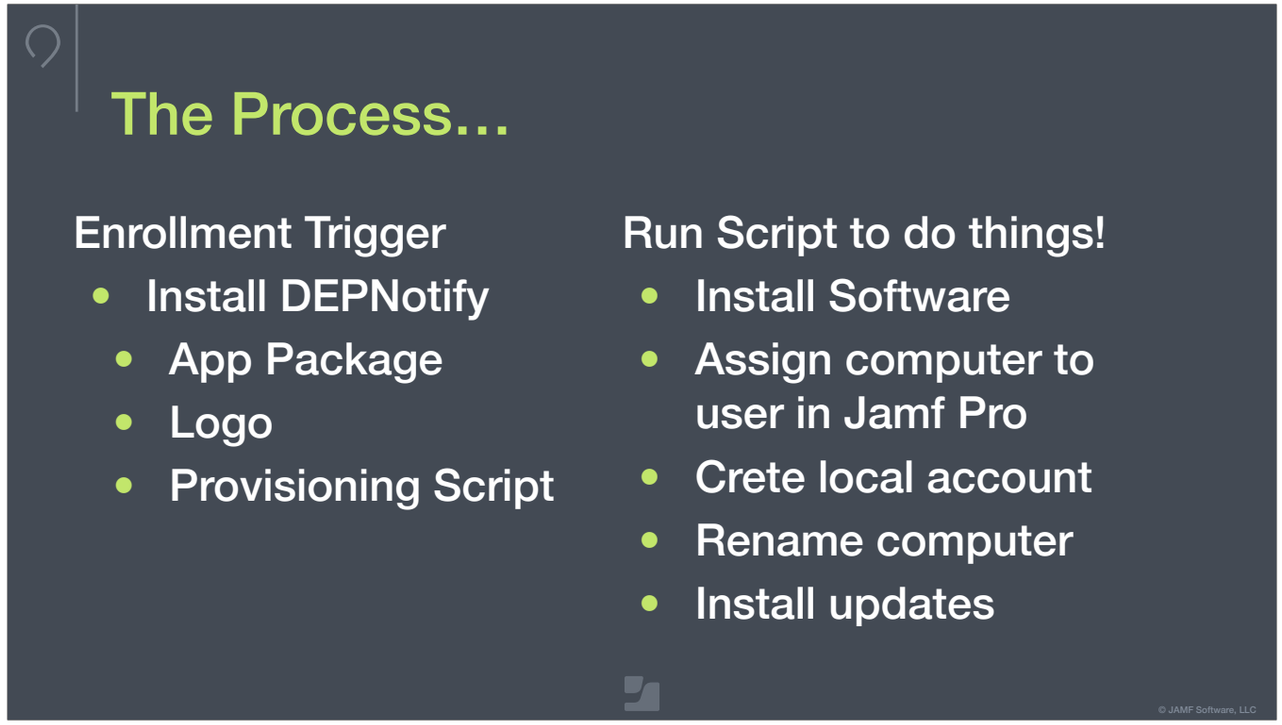
Well, maybe we can do both at the same time… _C_



Which is what we did.

So, after we prepare a machine, that machine can either go into storage until it's ready to be deployed (which happens often for us) or it can be deployed and assigned right away.

This will also lower the amount of steps needed to deploy the machine, then assign it, then rename the machine and add the user account, etc. We can take care of everything at one time.



So here is our enrollment complete process. Again, sorry for the wall of text.

We'll Install DEPNotify with extra payload items then run a script. That script will do the things!

Sounds great, right? It was except..

But…we ran into issues…

- Ran behind the login window
  - Added a “wait for dock” loop
- Ran before user was completely logged in
  - Added timer
- Still was not running every time…
- Launch Daemon!

We ran into issues.

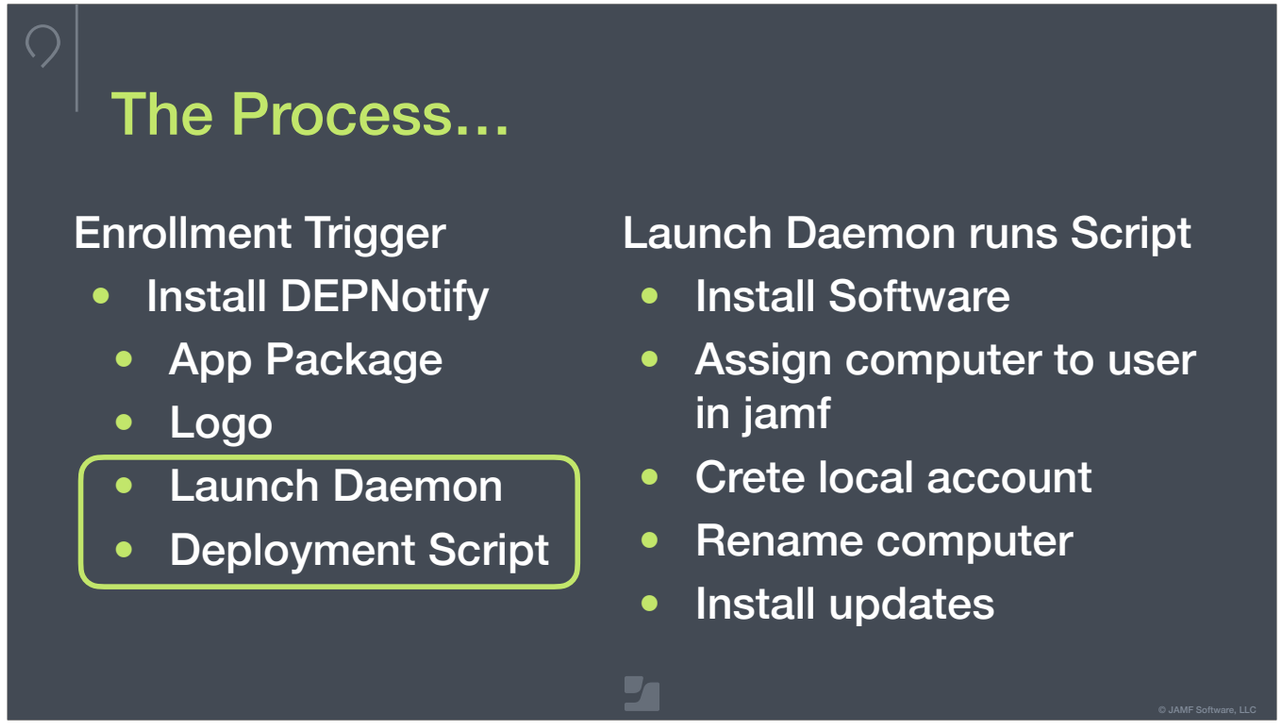
_C_ First we found it was running behind the login window. Things would work, but nothing would show up which was obviously bad.

_C_ So we added a ”wait for dock loop”. This worked about 60% of the time because the next issue was

_C_ It started running before the user was completely logged in. _C_ So we added a timer.

_C_ This too didn’t run every time, we would have a bunch of cases where it would again run but it be in the background or what if we had a tech close the laptop at the login window..then you would have the script waiting to run in the background.

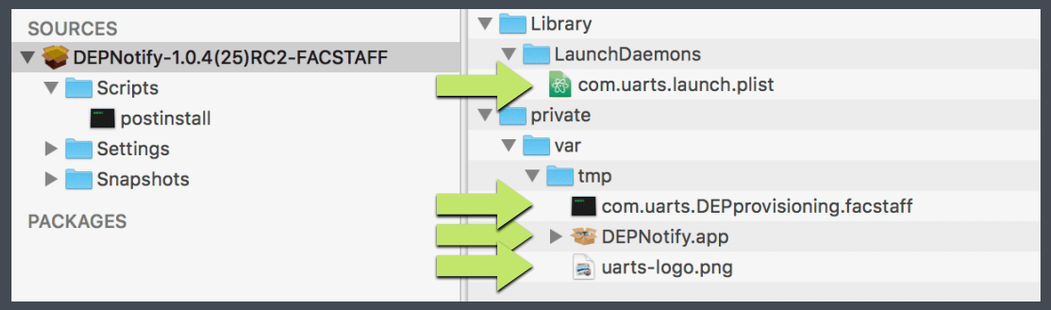
So we decided to solve that with _C_ a launch daemon!



So we just updated our enrollment step with these _C_

We’re still installing DEP with a payload but we’re going to add the deployment script and launch daemon.

DEPNotify Package



So here is our package.

_C_ Here is the app in /var/tmp
_C_ Our logo
_C_ And our provisioning script

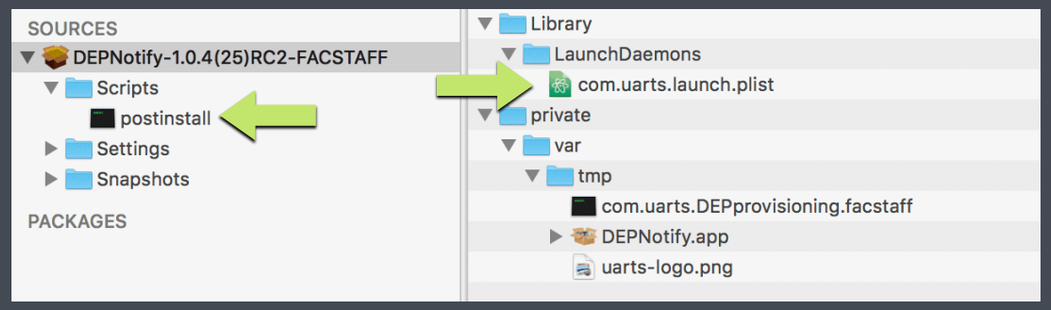
That script gets called by _C_ our launch daemon.

```xml
<?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>GroupName</key>
  <string>wheel</string>
  <key>InitGroups</key>
  <false/>
  <key>Label</key>
  <string>com.uarts.launch</string>
  <key>Program</key>
  <string>/var/tmp/com.uarts.DEPprovisioning.facstaff</string>
  <key>RunAtLoad</key>
  <true/>
  <key>StartInterval</key>
  <integer>10</integer>
  <key>UserName</key>
  <string>root</string>
  <key>StandardErrorPath</key>
  <string>/var/tmp/depnotify.launch.err</string>
  <key>StandardOutPath</key>
  <string>/var/tmp/depnotify.launch.out</string>
</dict>
</plist>
```


This is our launch daemon here. Pretty straight forward, it loads _C_ the provisioning script 10 seconds after login is complete or when it’s loaded.

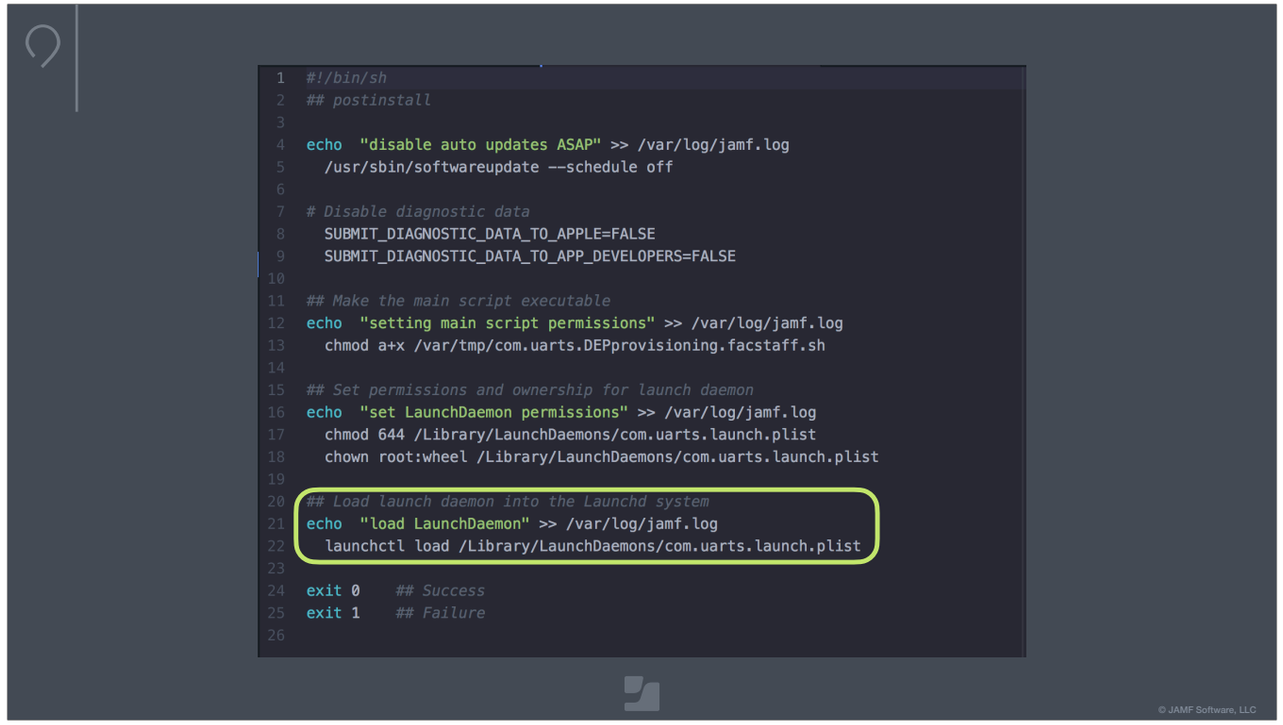
It will also run if the enrollment trigger occurs while the user is logged in, we have this issue quite often.

DEPNotify Package



Now that we have that there, we have to load it and that is what

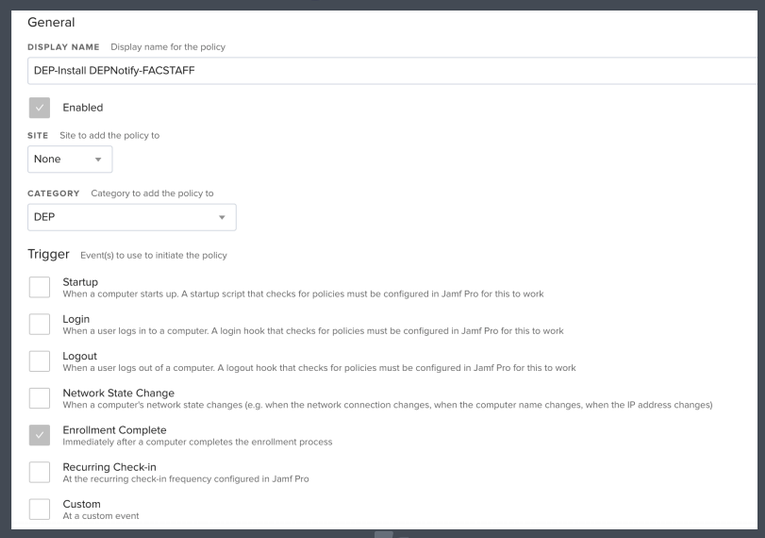
_C_ our post install script is for.



Again, pretty straight forward. Most of this is just extra stuff to disable any auto updates, the most important line is here _C_ just loading our launch daemon.

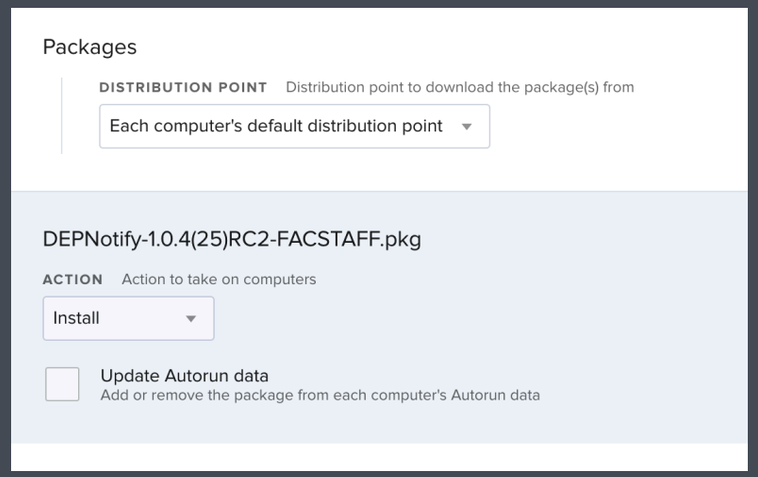
Now our package is done..

Enrollment Policy

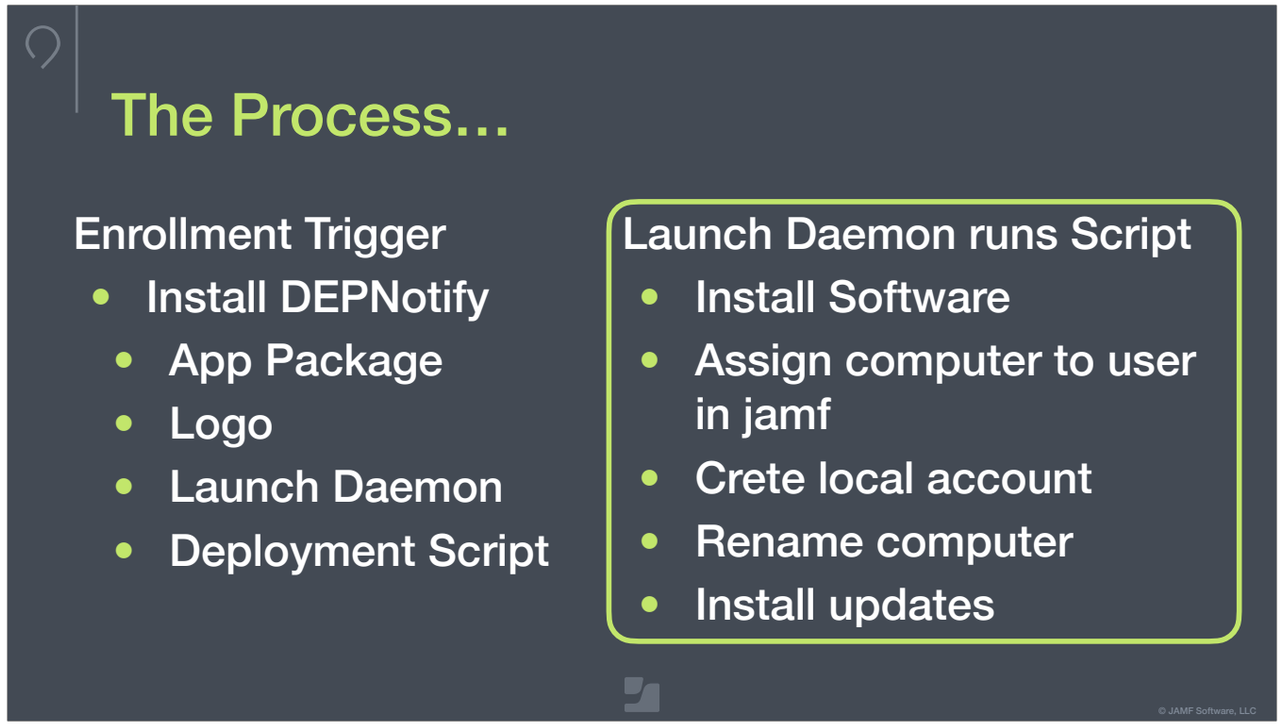


Create our enrollment policy. Trigger is enrollment complete and we're just installing our custom PKG.
_C_

Enrollment Policy



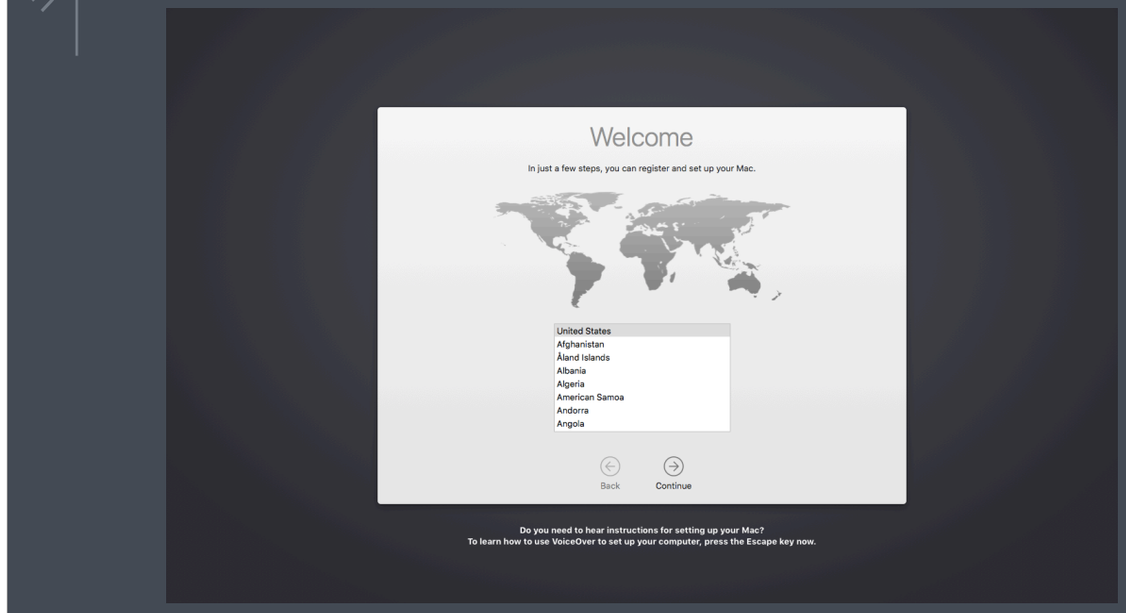
_C_



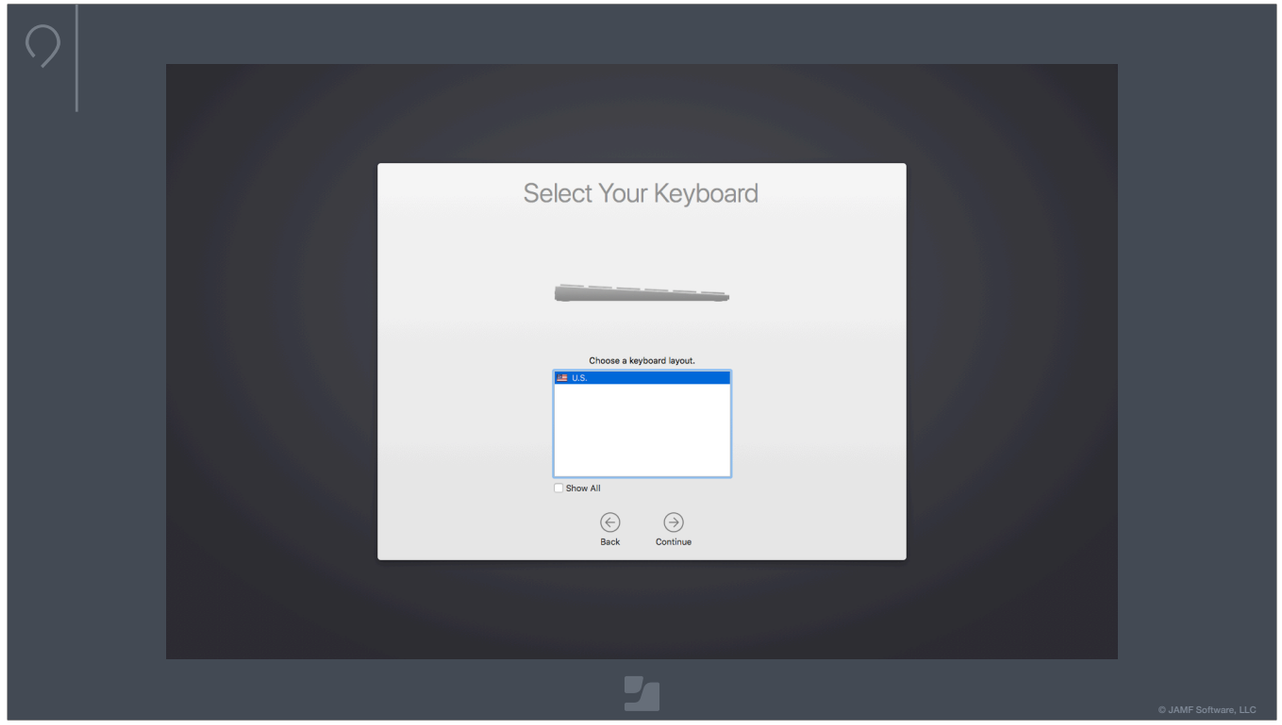
So once DEPNotify is installed the only thing left to do is _C_

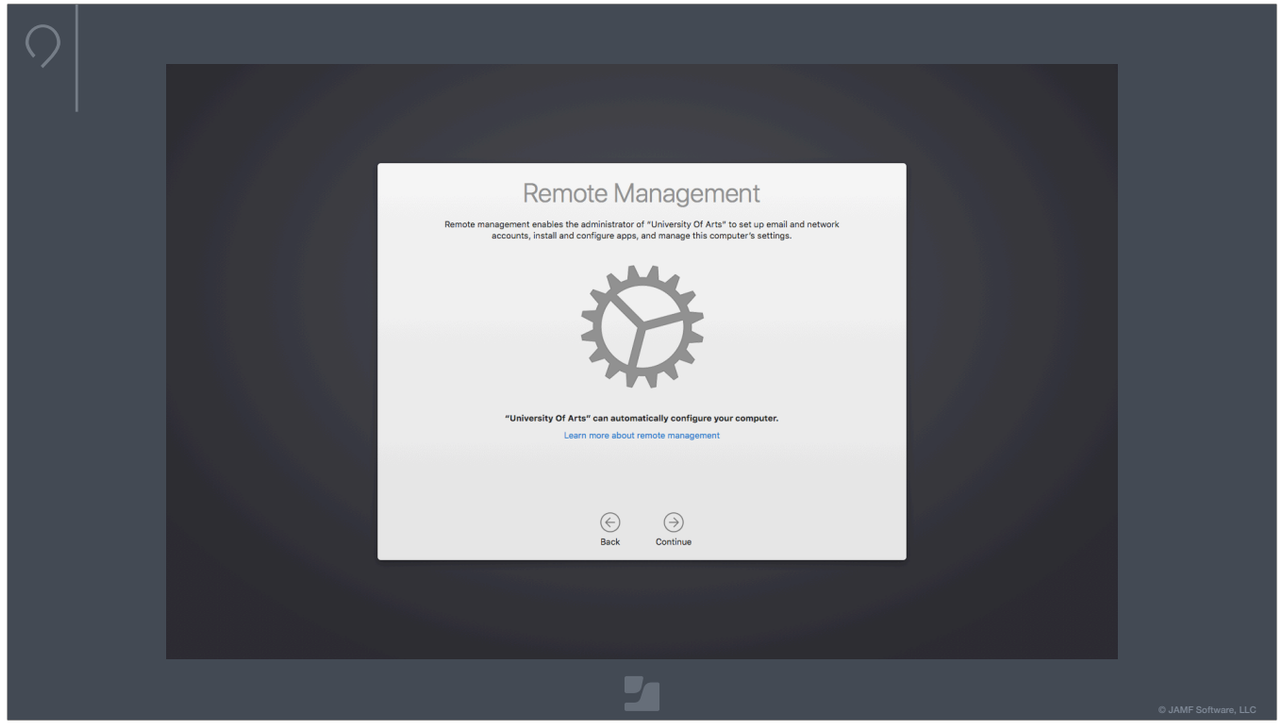
Have our launch daemon run our provisioning script.

Let’s see that in action.

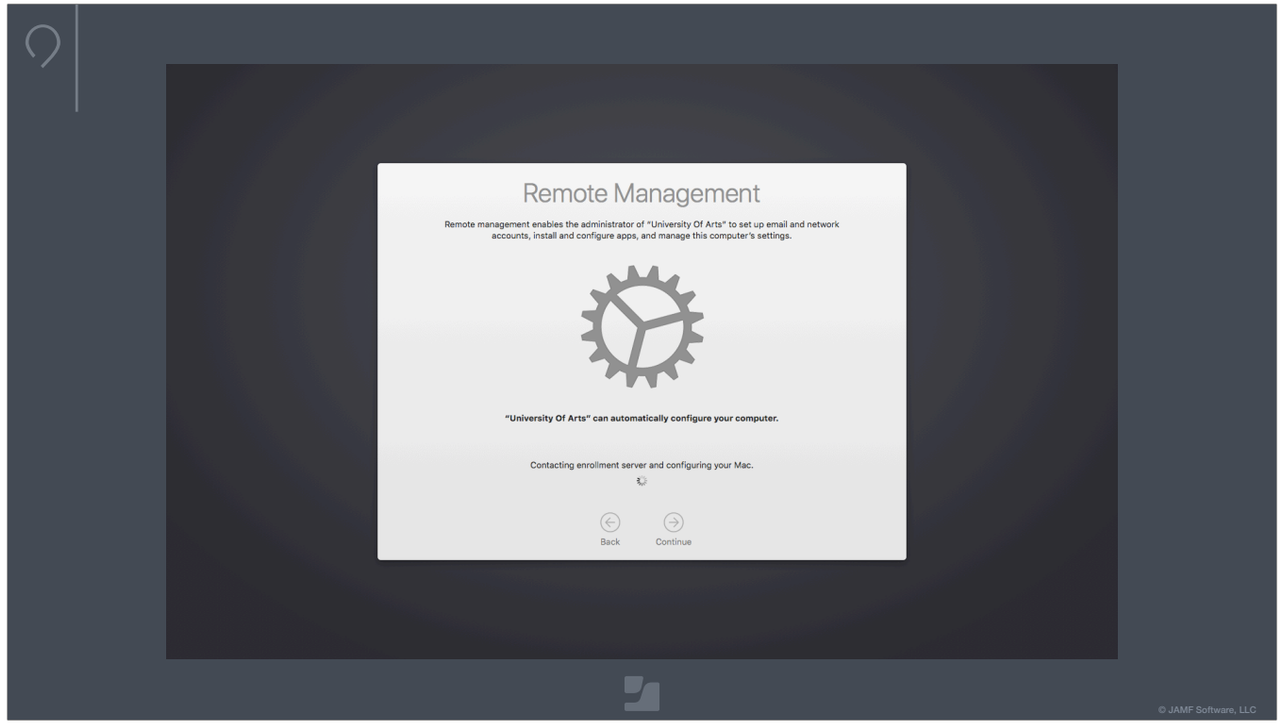


Okay, after we boot and we go through the setup assistant (unfortunately).

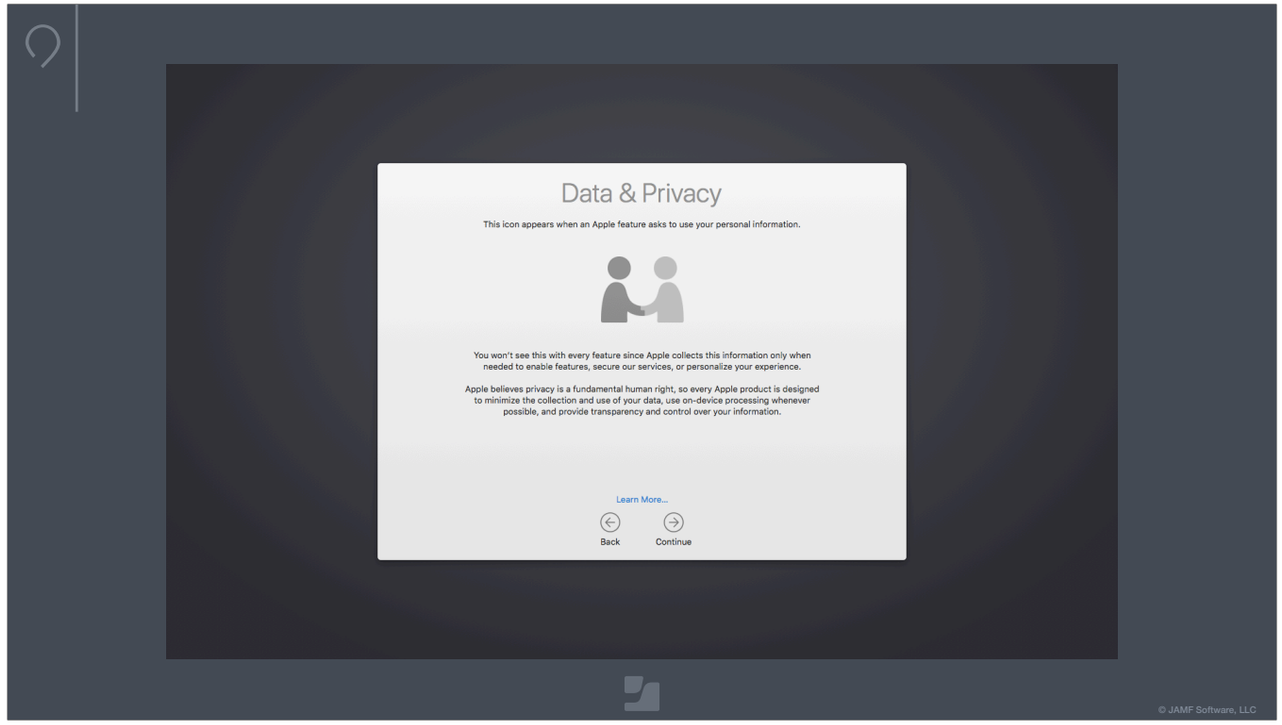

Select Your Keyboard
Choose a keyboard layout.
U.S.
Show All
Back
Continue
© JAMF Software, LLC



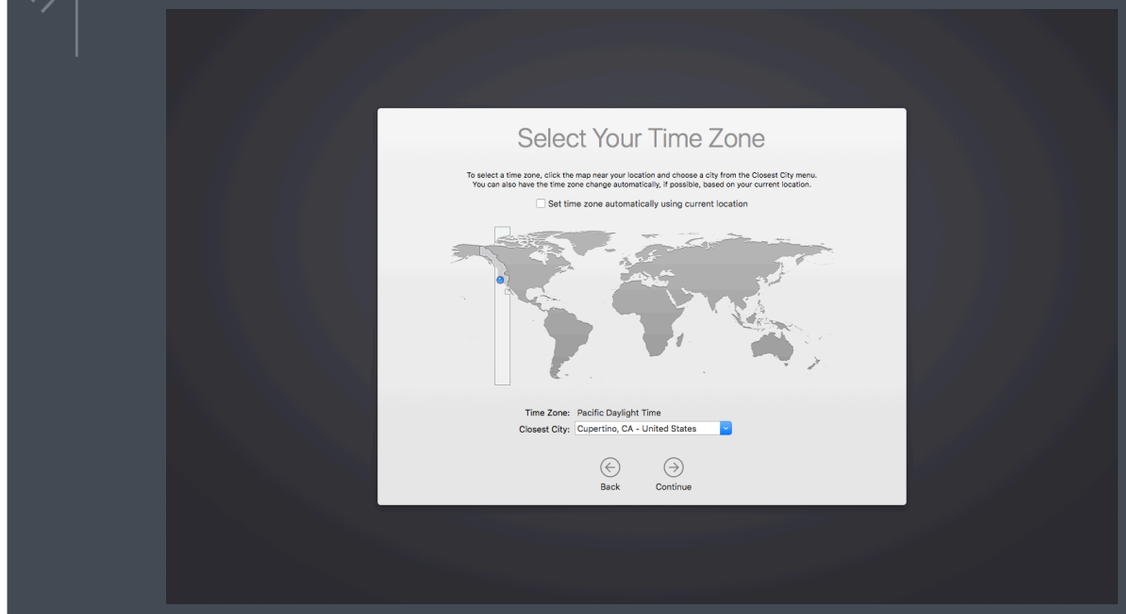
Now, we know this screen, it means we've got a DEP machine that's tied to a server and we're ready to roll! Clicking continue…



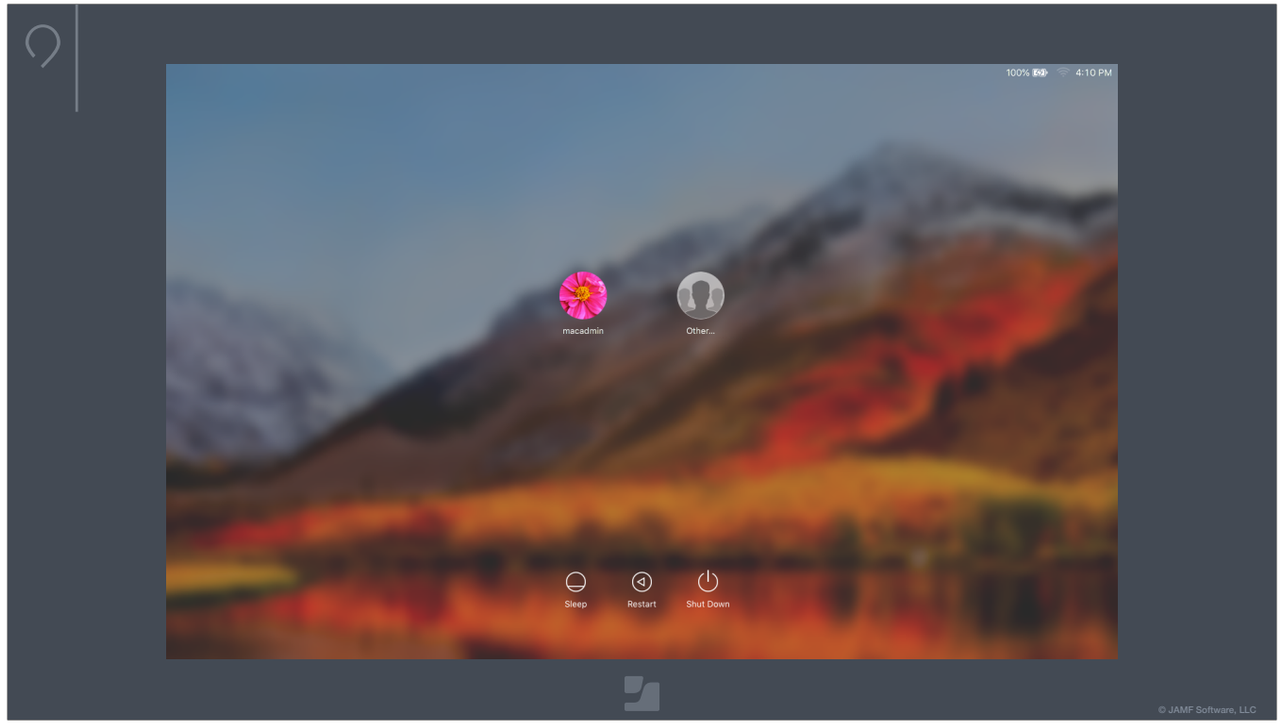
The machine gets configured from our prestage… and



Right..another click..

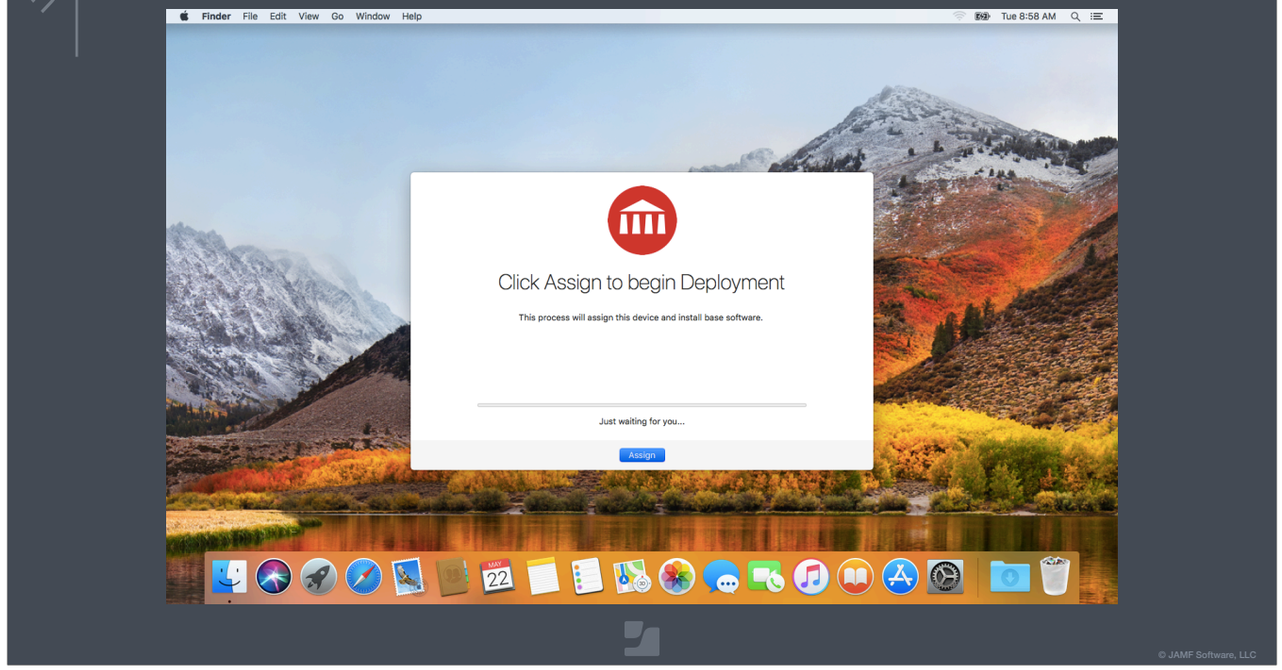


And another..

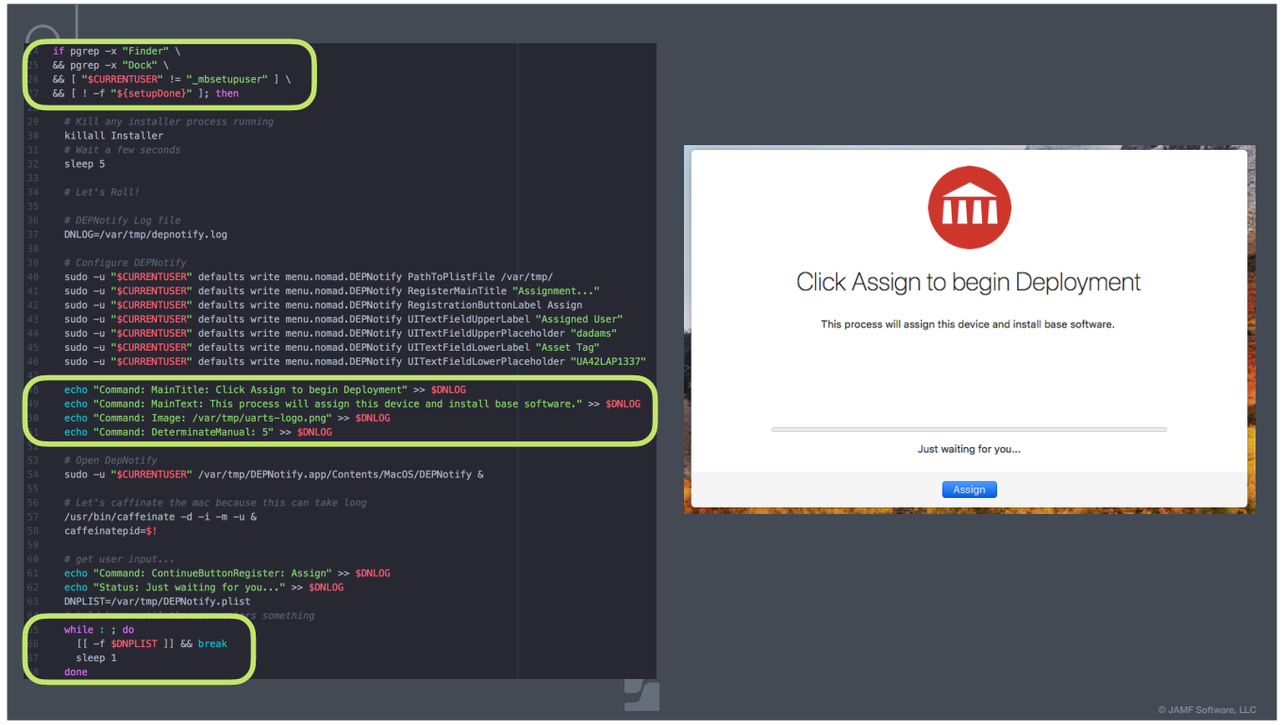


Finally!
Notice our macadmin account is there and it didn’t ask for any authentication.

So we’ll log in.



And this is what we're greeted to after login or after the enrollment policy runs AFTER logging in, our DEPNotify window. Let's see it with our code side-by side.

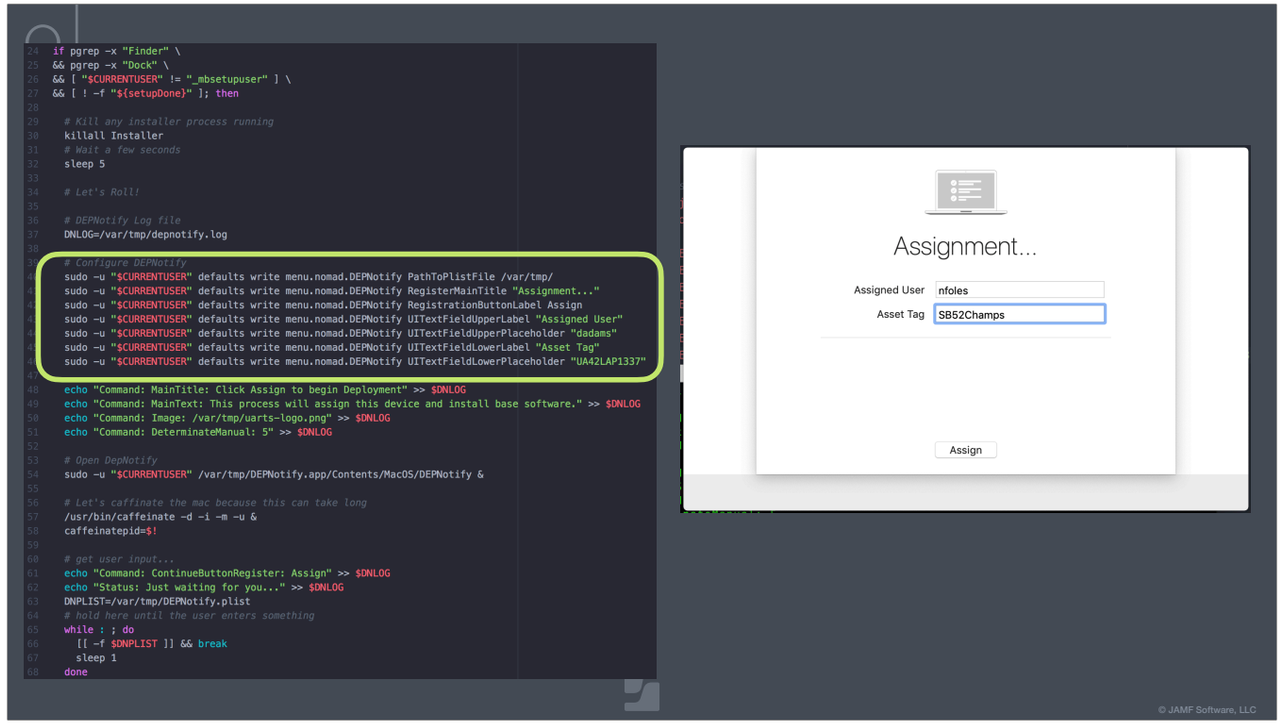


Here's our code. Now, DEPNotify was only launched because _C_
We waited for the dock and finder to be loaded and made sure we're not in the mbsetupuser account… we also are checking for this setup done file, more on that later.

_C_ The window looks the way it does because we sent these commands to the depnotify log file. Then we launched it AFTER sending that to the log.

Now the interesting thing is that this is now just waiting for the user to hit the "Assign" button. I set it up this way so our tech's don't have to wait around until it's done installing things, nothing will happen until they start. So that's down here _C_.

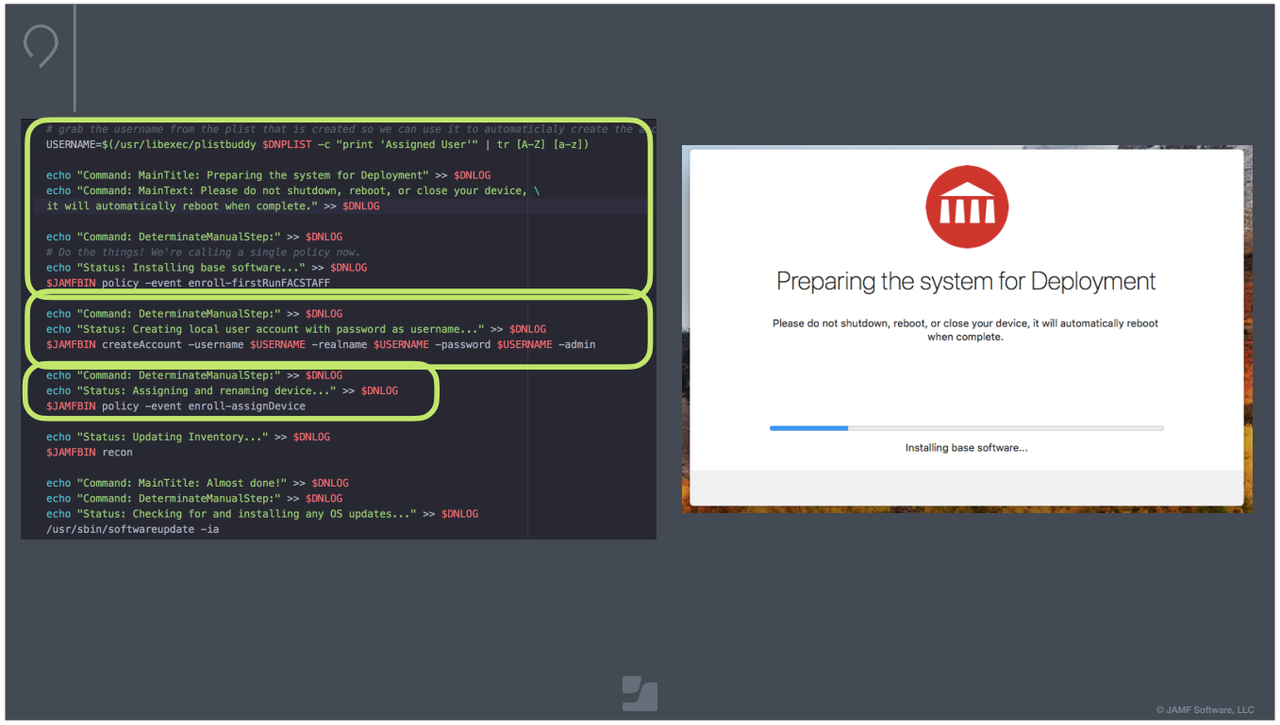
It's just a while loop waiting for the "DNPLIST" which is a file that gets dropped after input is complete.
Which is next up…



When the tech clicks “Assign” the registration window drops down.

That is populated by this _C_ section of code. Notice that the code was run before DEPNotify was open because it’s actually just setting some prefs up. You can also create a config file for this, but we liked just coding it in.

Now, we only need two text fields, but you can also add a dropdown menu or two and a “sensitive data” checkbox. New features are being added all of the time so there are probably other things you can do now.



So after the user input is done we can begin the tasks.

_C_ First we're grabbing the username from the plist that was created after registration and holding it for creating the local account later. Then we're passing more commands into the DEPNotify log file, so now our window has changed. And then we run our first run policy.

_C_ After the policy is run we are creating the local account based on the assigned user and setting the password to the username (temporarily).

_C_ Then we're going to assign and rename the device with another policy. This policy runs a script…

```
SERIAL=$(ioreg -rd1 -c IOPlatformExpertDevice | awk -F'"' '/IOPlatformSerialNumber/{print $4}')
MODEL=$(system_profiler SPHardwareDataType | awk '/Model Identifier/ {print $3}')

DNPLIST=/var/tmp/DEPNotify.plist
USERNAME=$(/usr/libexec/plistbuddy $DNPLIST -c "print 'Assigned User'" | tr [A-Z] [a-z])
ASSETTAG=$(/usr/libexec/plistbuddy $DNPLIST -c "print 'Asset Tag'" | tr [a-z] [A-Z])

# Create xml
cat << EOF > /var/tmp/tempInfo.xml
<computer>
    <general>
      <asset_tag>$ASSETTAG</asset_tag>
    </general>
    <location>
      <username>$USERNAME</username>
    </location>
</computer>
EOF
  ## Upload the xml file
  /usr/bin/curl -sfku "${APIUSER}:${APIPASS}" "${JSSURL}JSSResource/computers/serialnumber/$SERIAL" -X PUT -T /var/tmp/tempInfo.xml

if echo "$MODEL" | grep -q "MacBookAir"
then
    PREFIX="MBA"
elif echo "$MODEL" | grep -q "MacBookPro"
then
    PREFIX="MBP"
else
    echo "No model identifier found."
    PREFIX=""
fi

# rename the computer
COMPUTERNAME="${USERNAME}-${PREFIX}"
COMPUTERNAME=`echo ${COMPUTERNAME:0:15}`
/usr/local/jamf/bin/jamf setComputerName -name $COMPUTERNAME

# update our extension attribute
mkdir /Library/JAMF\ DM
mkdir /Library/JAMF\ DM/ComputerName
chflags hidden /Library/JAMF\ DM
echo $COMPUTERNAME > /Library/JAMF\ DM/ComputerName/ComputerName.txt
rm -Rf /var/tmp/tempInfo.xml
```

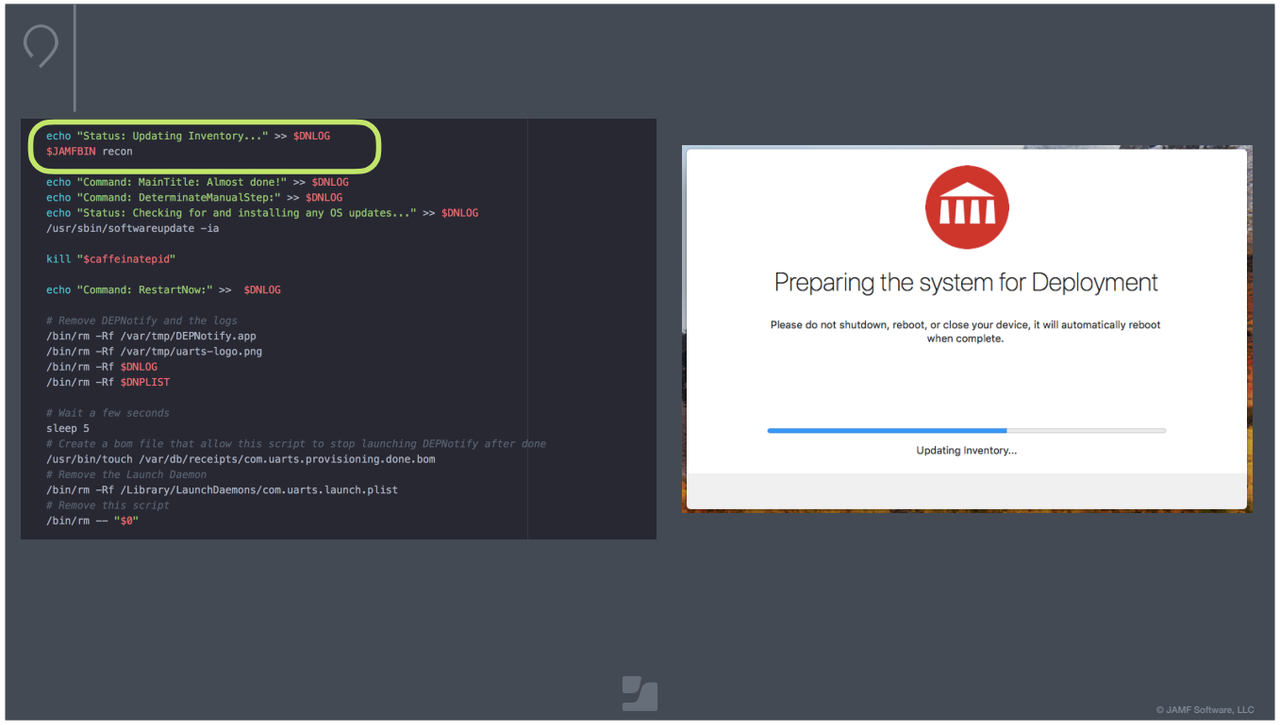

It just reads _C_ the plist file that was dropped at registration and sets variables for user and asset tag.

_C_ sets up an xml file and passes it to the jamf API

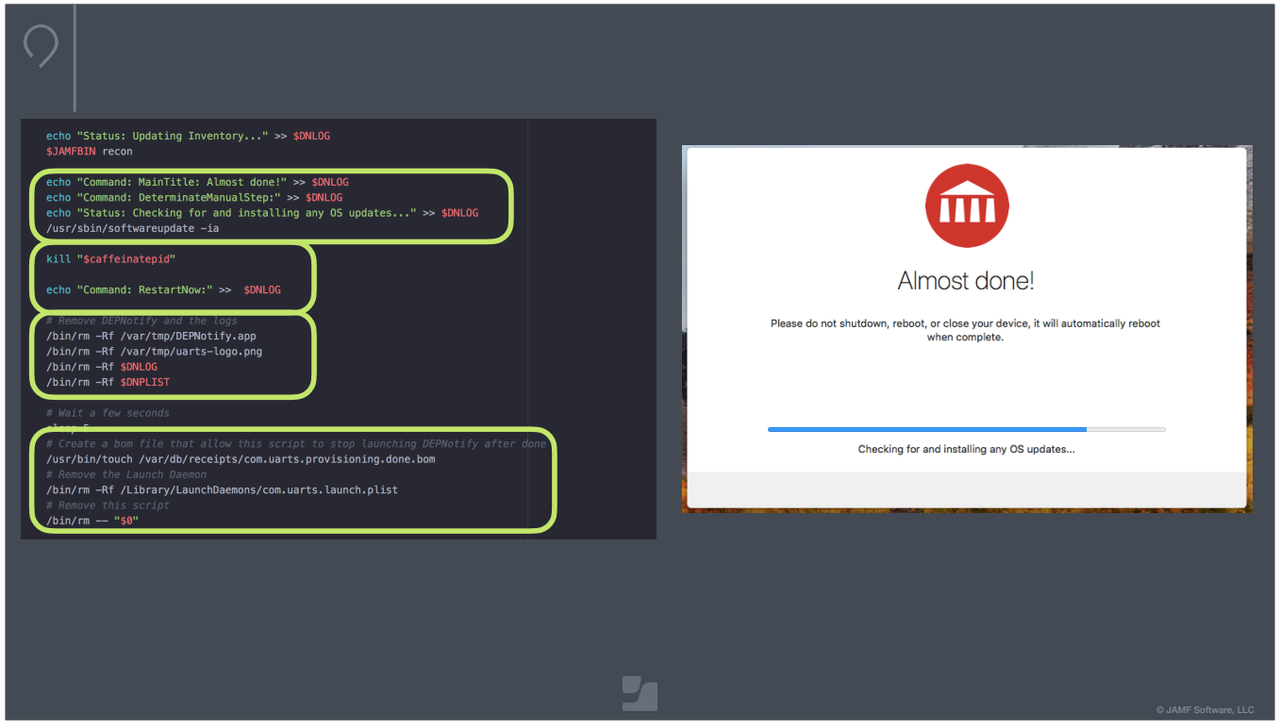
_C_ then it renames the machine using the assigned username with a prefix for MBA or MBP.

_C_ Finally, we update our extension attribute receipts on the machine and remove the temp XML file.

If you’ve ever done any work with the jamf API, this is all pretty straightforward.



Back in our provisioning script, well, at the bottom of it, we run a recon to get all of that new info into our server



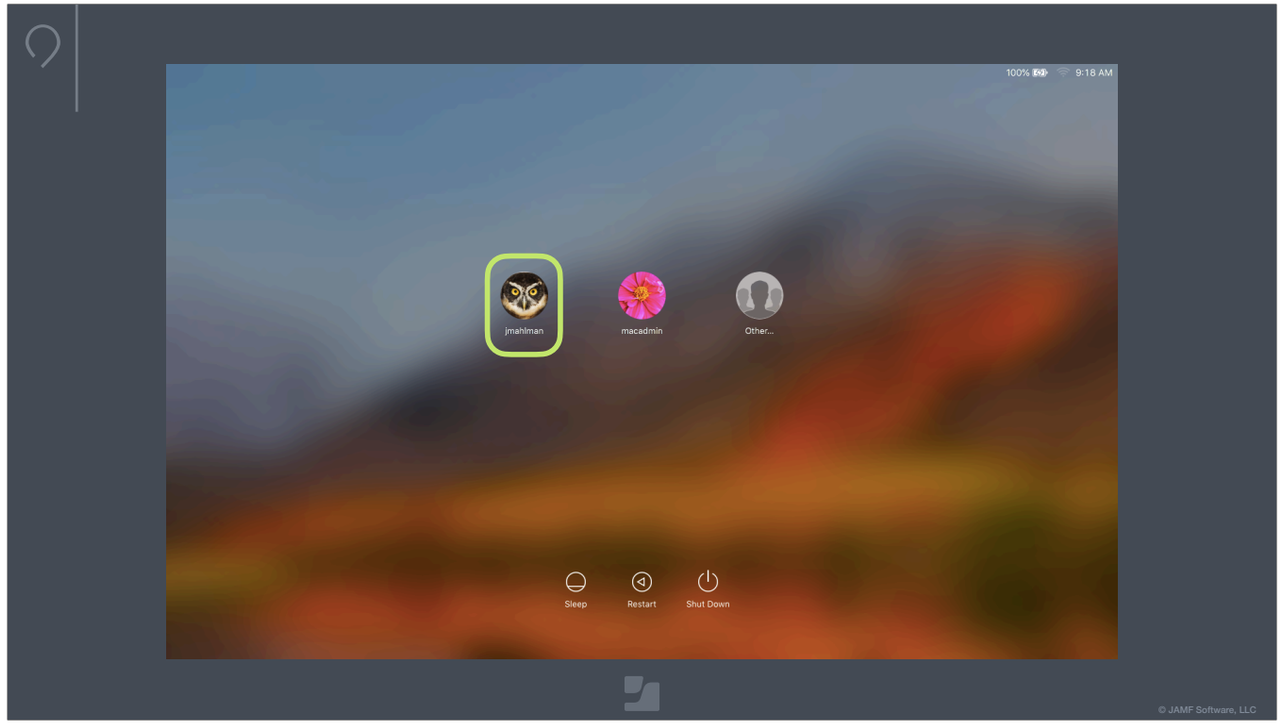
And next we run software updates..we're also changing the text in our DEPNotify window just to tell the tech that it's almost done.

_C_ After software updates install we send the command to DEPNotify to restart the machine right away, you can ask the user to hit "OK" to reboot if you'd like, there is also a quit or logout action.

_C_ Right as that happens we clean up the files that we installed (DEPNotify, our logo, and some of our logs).

_C_ Finally, we create the setup done bom file to tell us that this ran and if the launchdaemon doesn't get removed for some reason it won't accidentally run provisioning again. It's also very useful if the enrollment triggers again for some reason. We are also removing the launch daemon here.

Note that we're not unloading it, we had issues with trying to unload it so I decided to just to remove it since the machine was going to reboot anyway.



Reboot complete and

_C_ we now have our new local user and everything installed.

I was so happy this worked but It still had a lot of steps..so I began to think…

Can I automate this for labs, etc..?

-Also also me, 2018

Can I automate this?

Well, around the exact same time I was working on this process I came across Neil Martin’s jamf nation road show presentation where he did exactly what I wanted..so I decided to try it for myself in our environment so… _C_

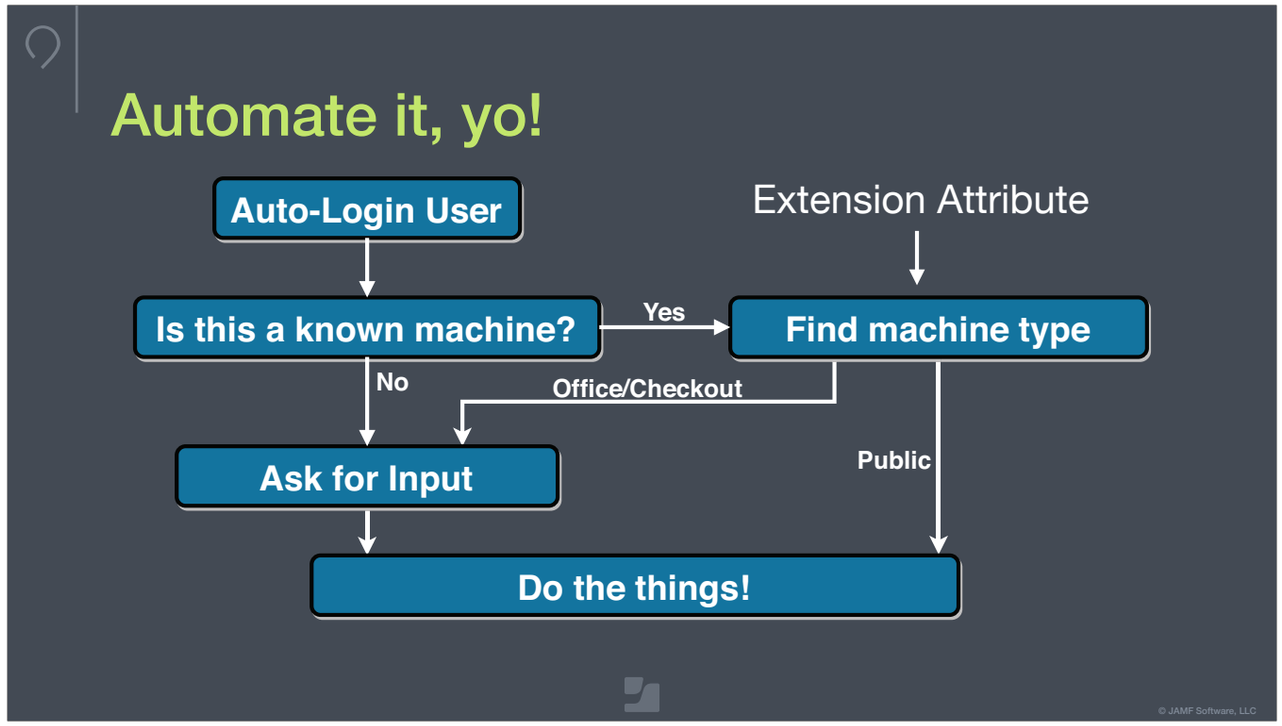
HECK YEAH!

-Me, 3 months ago

Neil Martin's JNRS presentation:
https://github.com/neilmartin83/Jamf-Nation-Roadshow-London-2018

With scripting we can do anything!

(Thanks Neil!)



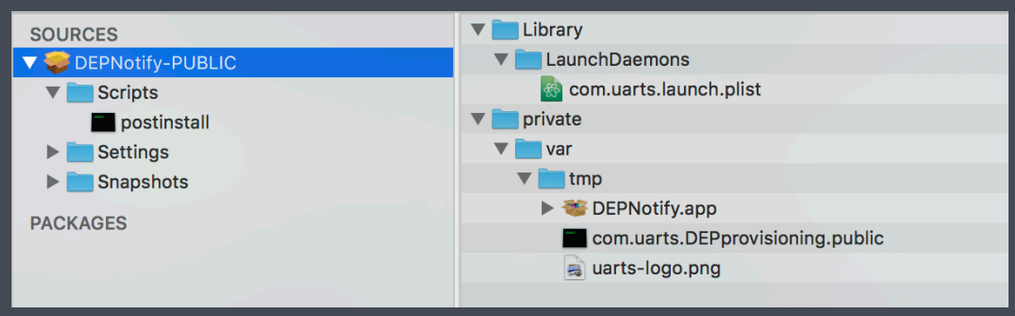
This was my ::ahem:: flow of how I wanted things to work. I like flow charts.

I wanted the machine to auto-login so DEPNotify would actually open, see if it's a "known machine" to the server and if it was, what kind? Office, lab, checkout laptop…

If it was not known to the server or if it was an "Office" or "Checkout" machine I wanted it to always ask the user for input, then do everything. If it's a public machine, just do everything.

We find out the machine type _C_ with a text extension attribute that we fill at image/deployment time and have on the machines in a hidden receipt which we call a Cohort. It never changes unless we specifically change it. Every machine in our environment has a Cohort.

DEPNotify Package - Automated



So let’s make our package. It’s the same package except the post install script has some changes…

```
#!/bin/sh
## postinstall

echo  "disable auto updates ASAP" >> /var/log/jamf.log
  # Disable Software Updates during imaging
  /usr/sbin/softwareupdate --schedule off

echo  "set power management" >> /var/log/jamf.log
#set power management settings
  pmset -c displaysleep 60 disksleep 0 sleep 0 womp 0 ring 0 autorestart 0 halfdim 1 sms 1
  pmset -b displaysleep 5 disksleep 1 sleep 10 womp 0 ring 0 autorestart 0 halfdim 1 sms 1

# Disable diagnostic data
  SUBMIT_DIAGNOSTIC_DATA_TO_APPLE=FALSE
  SUBMIT_DIAGNOSTIC_DATA_TO_APP_DEVELOPERS=FALSE

## Make the main script executable
echo  "setting main script permissions" >> /var/log/jamf.log
  chmod a+x /var/tmp/com.uarts.DEPprovisioning.public.sh

## Set permissions and ownership for launch daemon
echo  "set LaunchDaemon permissions" >> /var/log/jamf.log
  chmod 644 /Library/LaunchDaemons/com.uarts.launch.plist
  chown root:wheel /Library/LaunchDaemons/com.uarts.launch.plist

## Load launch daemon into the Launchd system
echo  "load LaunchDaemon" >> /var/log/jamf.log
  launchctl load /Library/LaunchDaemons/com.uarts.launch.plist

# We have to wait for the login window to show because the machine will reboot...
# so let's start this after the setup assistant is done.
CURRENTUSER=$(/usr/bin/python -c 'from SystemConfiguration import SCDynamicStoreCopyConsoleUser; \
import sys; username = (SCDynamicStoreCopyConsoleUser(None, None, None) or [None])[0]; \
username = [username,""][username in [u"loginwindow", None, u""]]; sys.stdout.write(username + "\n");')
while [[ "$CURRENTUSER" == "_mbsetupuser" ]]; do
  sleep 5
  CURRENTUSER=$(/usr/bin/python -c 'from SystemConfiguration import SCDynamicStoreCopyConsoleUser; \
  import sys; username = (SCDynamicStoreCopyConsoleUser(None, None, None) or [None])[0]; \
  username = [username,""][username in [u"loginwindow", None, u""]]; sys.stdout.write(username + "\n");'
done

echo  "add auto-login user" >> /var/log/jamf.log
  /usr/local/jamf/bin/jamf policy -event dep-autologin

exit 0    ## Success
exit 1    ## Failure
```


It’s mainly the same except for this _C_ section here… _C_

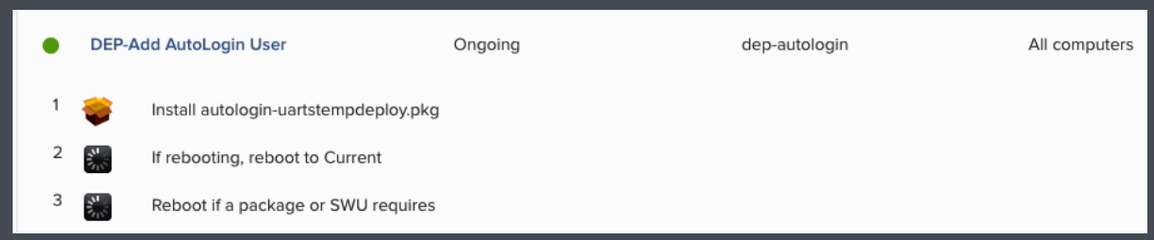
```
## Load launch daemon into the Launchd system
echo  "load LaunchDaemon" >> /var/log/jamf.log
  launchctl load /Library/LaunchDaemons/com.uarts.launch.plist

# We have to wait for the login window to show because the machine will reboot...
# so let's start this after the setup assistant is done.
CURRENTUSER=$(/usr/bin/python -c 'from SystemConfiguration import SCDynamicStoreCopyConsoleUser; \
import sys; username = (SCDynamicStoreCopyConsoleUser(None, None, None) or [None])[0]; \
username = [username,""][username in [u"loginwindow", None, u""]]; sys.stdout.write(username + "\n");')
while [[ "$CURRENTUSER" == "_mbsetupuser" ]]; do
  sleep 5
  CURRENTUSER=$(/usr/bin/python -c 'from SystemConfiguration import SCDynamicStoreCopyConsoleUser; \
  import sys; username = (SCDynamicStoreCopyConsoleUser(None, None, None) or [None])[0]; \
  username = [username,""][username in [u"loginwindow", None, u""]]; sys.stdout.write(username + "\n");')
done

echo  "add auto-login user" >> /var/log/jamf.log
  /usr/local/jamf/bin/jamf policy -event dep-autologin

exit 0    ## Success
exit 1    ## Failure
```


We’re still loading our launch daemon _C_ but this ugly portion below is doing us a big favor.

_C_ While we’re in the _mbsetupuser we don’t want the next line to run. That’s because this line _C_ is calling a policy that installs a package to create an auto-login user and automatically reboots the machine.

If we don’t wait the machine may reboot before you get to the login window and finish setup assistant. Not the end of the world, but we didn’t want that.

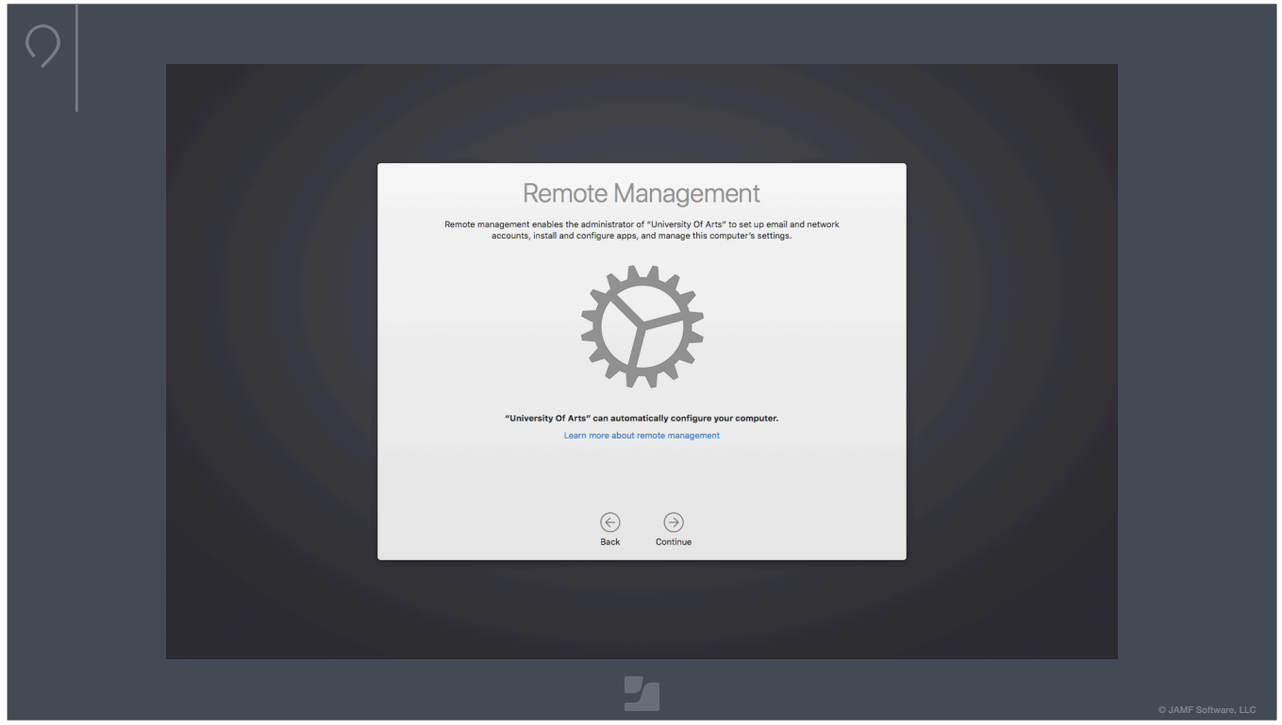
DEPNotify Package - Automated

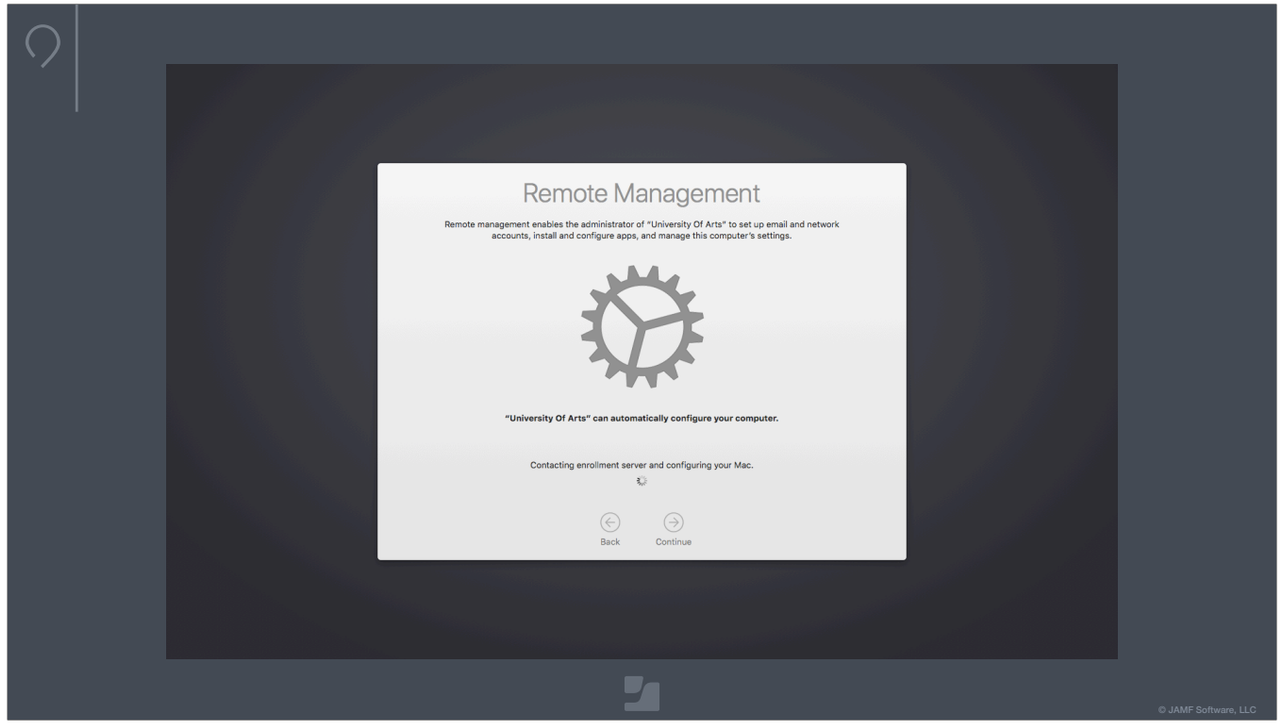


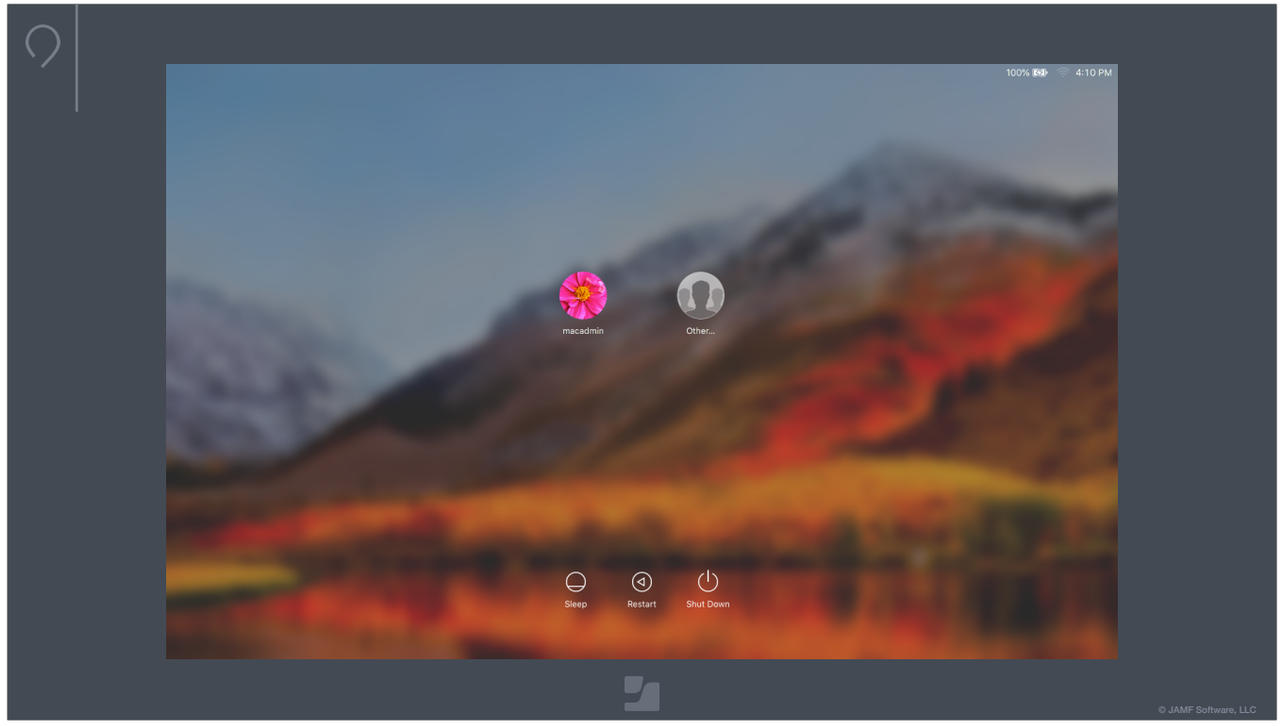
Thanks, MacUserGenerator! (https://github.com/ninxsoft/MacUserGenerator)

This is the auto-login user policy. It's just installing a package created with MacUserGenerator which is an app based on CreateUserPackage.

So now that all of that's done..let's see that in action!







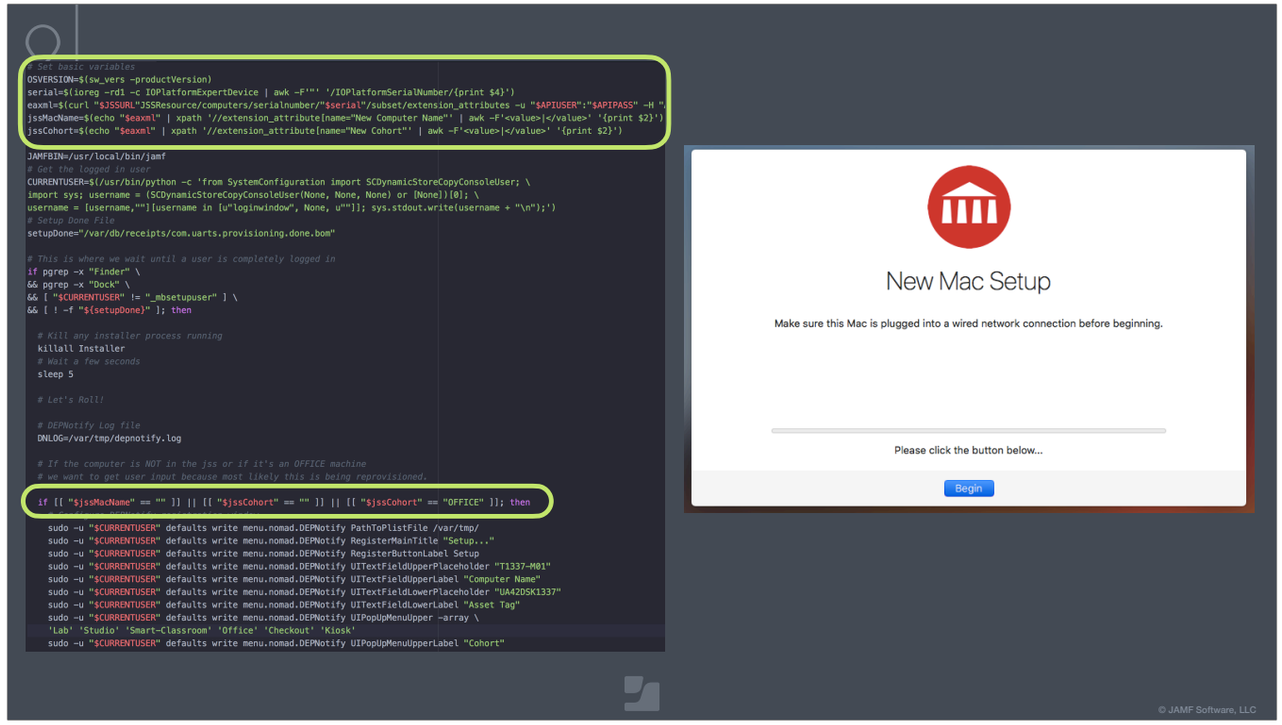
Now we’re back at the login screen and the machine will automatically reboot here and auto login to the temp account we created. When it reboots, our provisioning script will kick off.

```
# Get basic variables
OSVERSION=$(sw_vers -productVersion)
serial=$(ioreg -rd1 -c IOPlatformExpertDevice | awk -F'"' '/IOPlatformSerialNumber/{print $4}')
eaxml=$(curl "$JSSURL"JSSResource/computers/serialnumber/"$serial"/subset/extension_attributes -u "$APIUSER":"$APIPASS" -H "
jssMacName=$(echo "$eaxml" | xpath '//extension_attribute[name="New Computer Name"]' | awk -F'<value>|</value>' '{print $2}')
jssCohort=$(echo "$eaxml" | xpath '//extension_attribute[name="New Cohort"]' | awk -F'<value>|</value>' '{print $2}')

JAMFBIN=/usr/local/bin/jamf
# Get the logged in user
CURRENTUSER=$(/usr/bin/python -c 'from SystemConfiguration import SCDynamicStoreCopyConsoleUser; \
import sys; username = (SCDynamicStoreCopyConsoleUser(None, None, None) or [None])[0]; \
username = [username,""][username in [u"loginwindow", None, u""]]; sys.stdout.write(username + "\n");')
# Setup Done File
setupDone="/var/db/receipts/com.uarts.provisioning.done.bom"

# This is where we wait until a user is completely logged in
if pgrep -x "Finder" \
&& pgrep -x "Dock" \
&& [ "$CURRENTUSER" != "_mbsetupuser" ] \
&& [ ! -f "${setupDone}" ]; then

  # Kill any installer process running
  killall Installer
  # Wait a few seconds
  sleep 5

  # Let's Roll!

  # DEPNotify Log file
  DNLOG=/var/tmp/depnotify.log

  # If the computer is NOT in the jss or if it's an OFFICE machine
  # we want to get user input because most likely this is being reprovisioned.

  if [[ "$jssMacName" == "" ]] || [[ "$jssCohort" == "" ]] || [[ "$jssCohort" == "OFFICE" ]]; then
    # Configure DEPNotify registration window
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify PathToPlistFile /var/tmp/
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify RegisterMainTitle "Setup..."
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify RegisterButtonLabel Setup
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify UITextFieldUpperPlaceholder "T1337-M01"
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify UITextFieldUpperLabel "Computer Name"
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify UITextFieldLowerPlaceholder "UA42DSK1337"
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify UITextFieldLowerLabel "Asset Tag"
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify UIPopUpMenuUpper -array \
    'Lab' 'Studio' 'Smart-Classroom' 'Office' 'Checkout' 'Kiosk'
    sudo -u "$CURRENTUSER" defaults write menu.nomad.DEPNotify UIPopUpMenuUpperLabel "Cohort"
```


This is the beginning of the script. First, we want to see if we recognize this machine. _C_ Let’s zoom in..

```
# Set basic variables
OSVERSION=$(sw_vers -productVersion)
serial=$(ioreg -rd1 -c IOPlatformExpertDevice | awk -F'"' '/IOPlatformSerialNumber/{print $4}')
eaxml=$(curl "$JSSURL"JSSResource/computers/serialnumber/"$serial"/subset/extension_attributes -u "$APIUSER":"$APIPASS" -H "A
jssMacName=$(echo "$eaxml" | xpath '//extension_attribute[name="New Computer Name"]' | awk -F'<value>|</value>' '{print $2}')
jssCohort=$(echo "$eaxml" | xpath '//extension_attribute[name="New Cohort"]' | awk -F'<value>|</value>' '{print $2}')
```

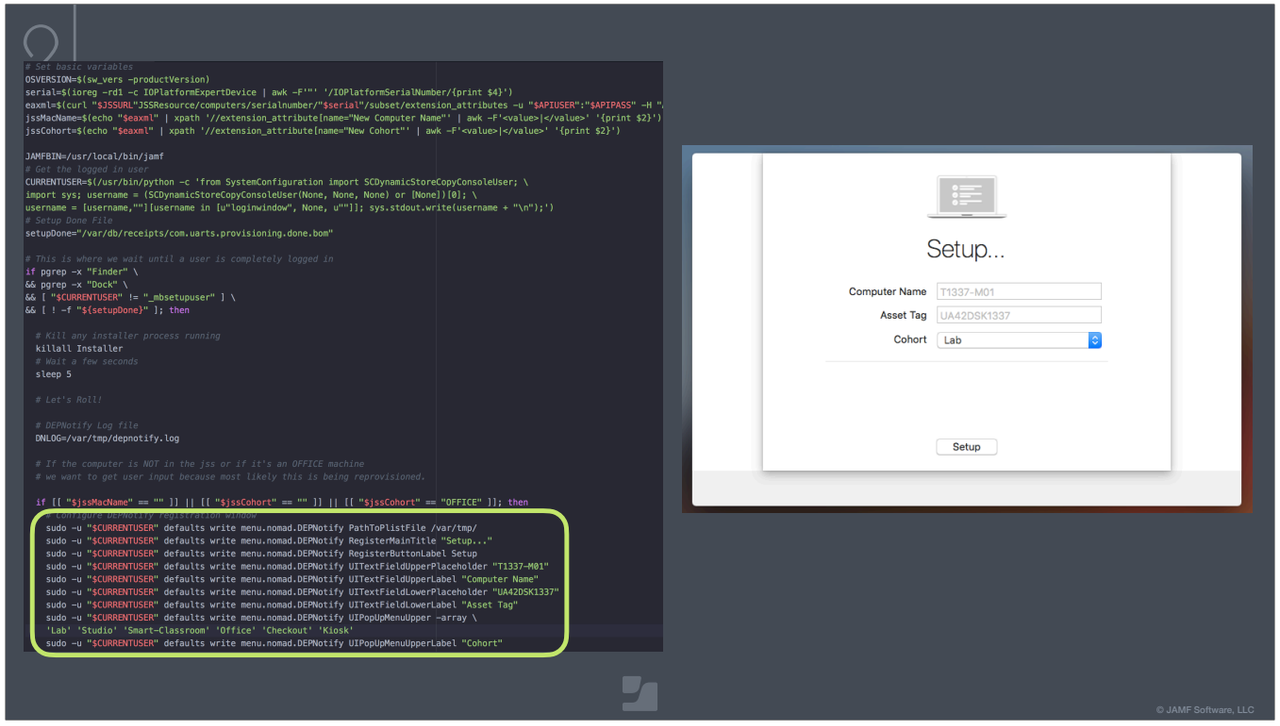

We pull the computer info from the jamf server api and get our Extension attributes _C_ “New Computer name” and _C_ “New Cohort”. The names are just because we have an older extension attribute for each of them and instead of changing that one (since a lot of smart groups use them) we just made new ones.



Side by side again. We get that info _C_

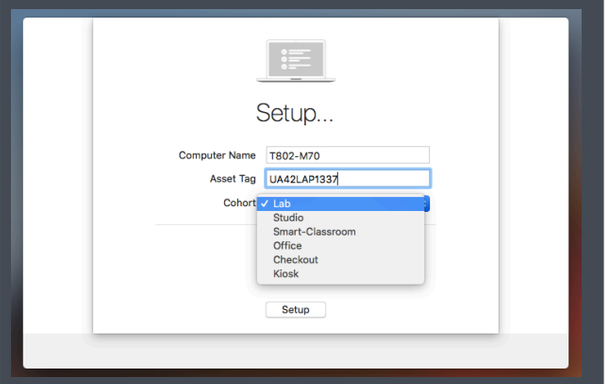
Then _C_ we check if either of those EAs are blank or if it’s an OFFICE machine

In this case, the machine is an OFFICE machine so it’s going to sit there and wait for someone to click “Begin” and enter information just like before.

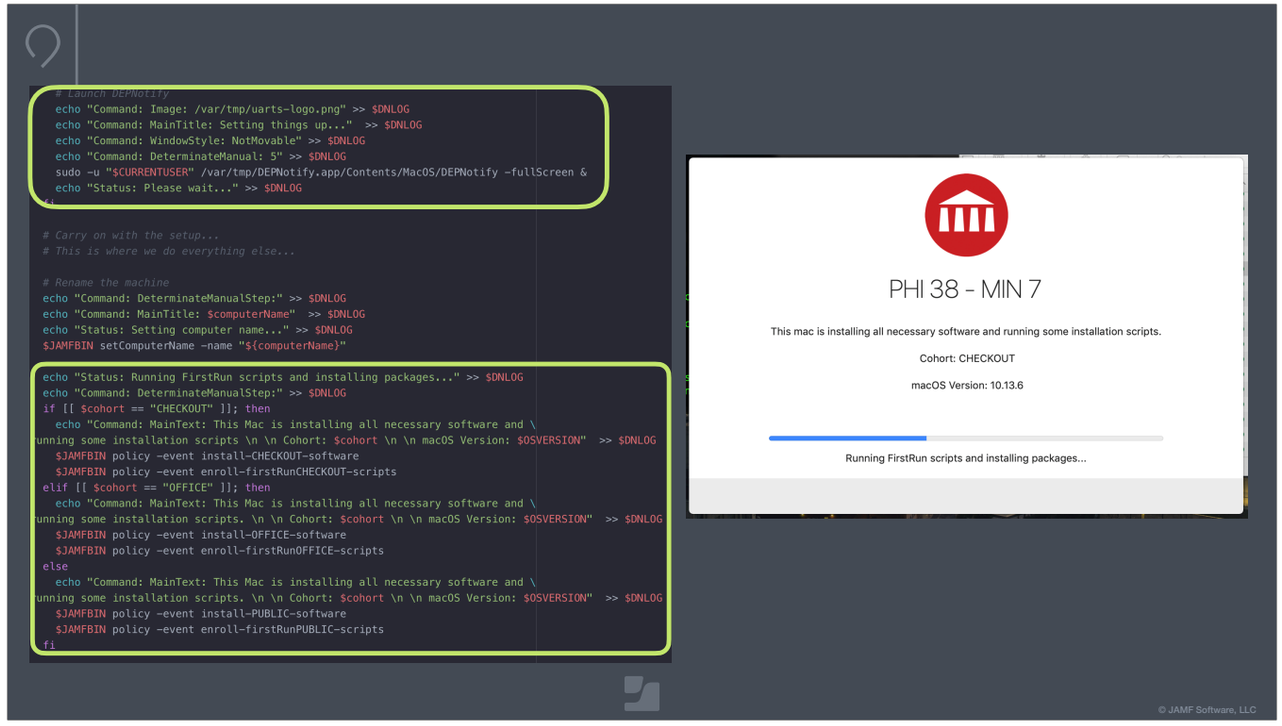


So we setup our prefs for the registration window to enter asset tag and computer name and the computer type with a dropdown.

```
    # Open DepNotify fullscreen
    sudo -u "$CURRENTUSER" /var/tmp/DEPNotify.app/Contents/MacOS/DEPNotify -fullScreen &
    echo "Command: MainText: Make sure this Mac is plugged into a wired network connection before beginning." >> $DNLOG

    # Let's caffinate the mac because this can take long
    /usr/bin/caffeinate -d -i -m -u &
    caffeinatepid=$!

    # get user input...
    echo "Command: ContinueButtonRegister: Begin" >> $DNLOG
    echo "Status: Please click the button below..." >> $DNLOG
    DNPLIST=/var/tmp/DEPNotify.plist
    # hold here until the user enters something
    while : ; do
      [[ -f $DNPLIST ]] && break
      sleep 1
    done

    # Let's read the user data into some variables...
    computerName=$(/usr/libexec/plistbuddy $DNPLIST -c "print 'Computer Name'" | tr [a-z] [A-Z])
    cohort=$(/usr/libexec/plistbuddy $DNPLIST -c "print 'Cohort'" | tr [a-z] [A-Z])
    ASSETTAG=$(/usr/libexec/plistbuddy $DNPLIST -c "print 'Asset Tag'" | tr [a-z] [A-Z])
    # Update Asset Tag, Computer Name, and Cohort in JSS

    cat << EOF > /var/tmp/tempInfo.xml
<computer>
  <general>
    <asset_tag>$ASSETTAG</asset_tag>
  </general>
  <extension_attributes>
    <extension_attribute>
      <name>New Cohort</name>
      <value>$cohort</value>
    </extension_attribute>
    <extension_attribute>
      <name>New Computer Name</name>
      <value>$computerName</value>
    </extension_attribute>
  </extension_attributes>
</computer>
EOF
    ## Upload the xml file
    /usr/bin/curl -sfku "$APIUSER":"$APIPASS" "$JSSURL"JSSResource/computers/serialnumber/"$serial" -H \
    "Content-type: text/xml" -T /var/tmp/tempInfo.xml -X PUT
```



When the tech finishes the registration window we send that new info to the jamf server via API again and continue with setup like every other machine.

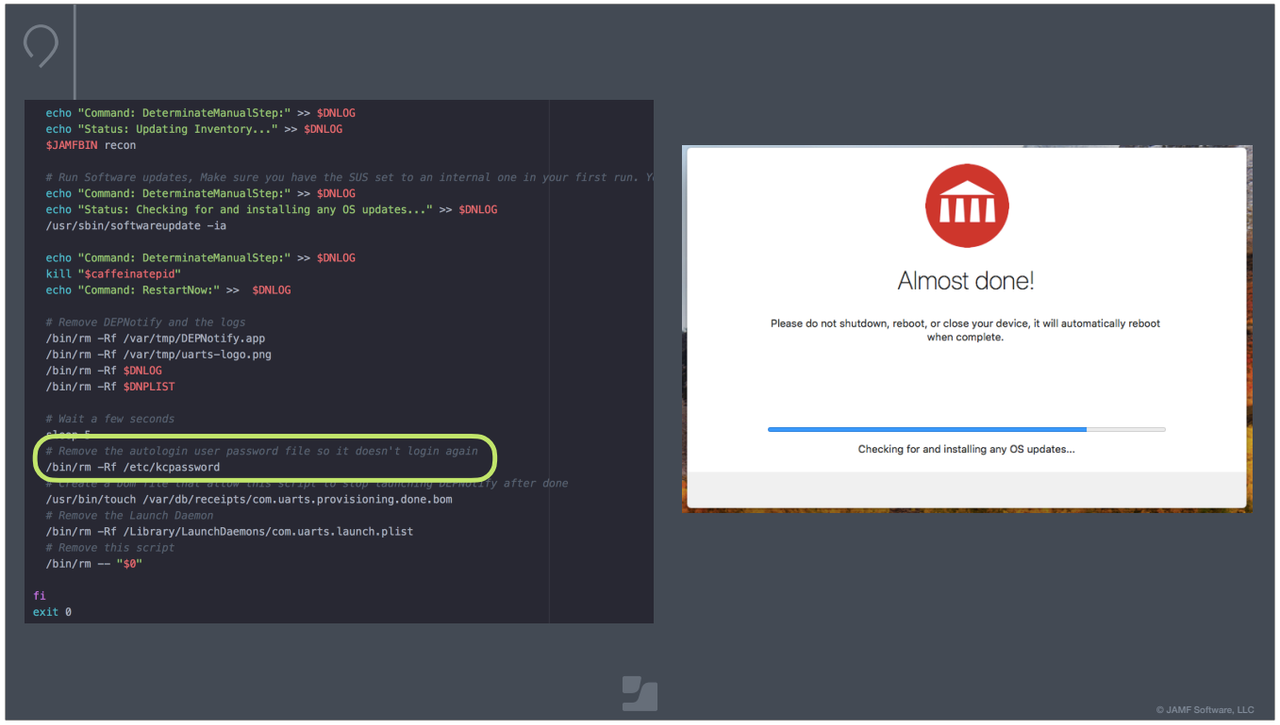


Now, if the machine IS known to the server and falls into one of our automated groups _C_ we setup our just DEPNotify window and launch it. Then just _C_ run commands based on the type of machine.

This section is also where office and unknown systems do everything.

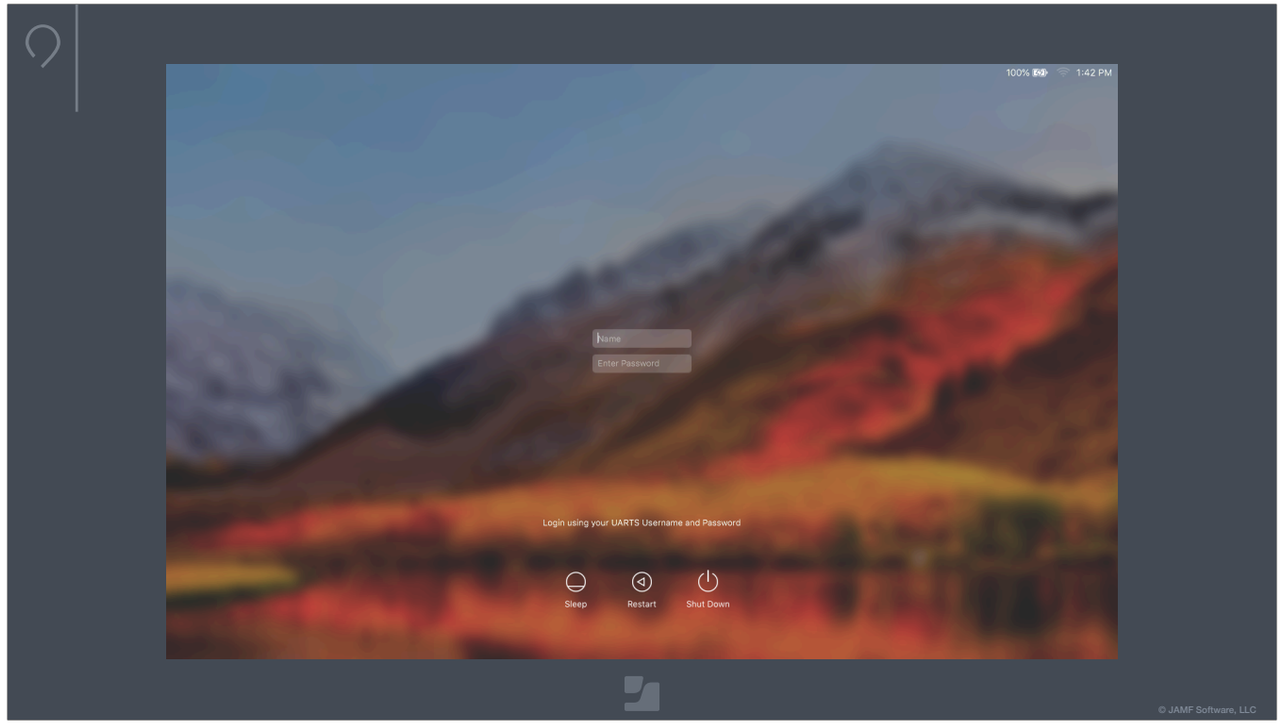
```
  echo "Status: Running FirstRun scripts and installing packages..." >> $DNLOG
  echo "Command: DeterminateManualStep:" >> $DNLOG
  if [[ $cohort == "CHECKOUT" ]]; then
    echo "Command: MainText: This Mac is installing all necessary software and \
running some installation scripts \n \n Cohort: $cohort \n \n macOS Version: $OSVERSION"  >> $DNLOG
    $JAMFBIN policy -event install-CHECKOUT-software
    $JAMFBIN policy -event enroll-firstRunCHECKOUT-scripts
  elif [[ $cohort == "OFFICE" ]]; then
    echo "Command: MainText: This Mac is installing all necessary software and \
running some installation scripts. \n \n Cohort: $cohort \n \n macOS Version: $OSVERSION"  >> $DNLOG
    $JAMFBIN policy -event install-OFFICE-software
    $JAMFBIN policy -event enroll-firstRunOFFICE-scripts
  else
    echo "Command: MainText: This Mac is installing all necessary software and \
running some installation scripts. \n \n Cohort: $cohort \n \n macOS Version: $OSVERSION"  >> $DNLOG
    $JAMFBIN policy -event install-PUBLIC-software
    $JAMFBIN policy -event enroll-firstRunPUBLIC-scripts
  fi
```


Here’s that section blown up a bit. You can see we’re just running 2 policies for each type. One takes care of scripts and the other is software..which is just another script that calls out software triggers so we can easily add and remove software to our deployments in the jamf webapp

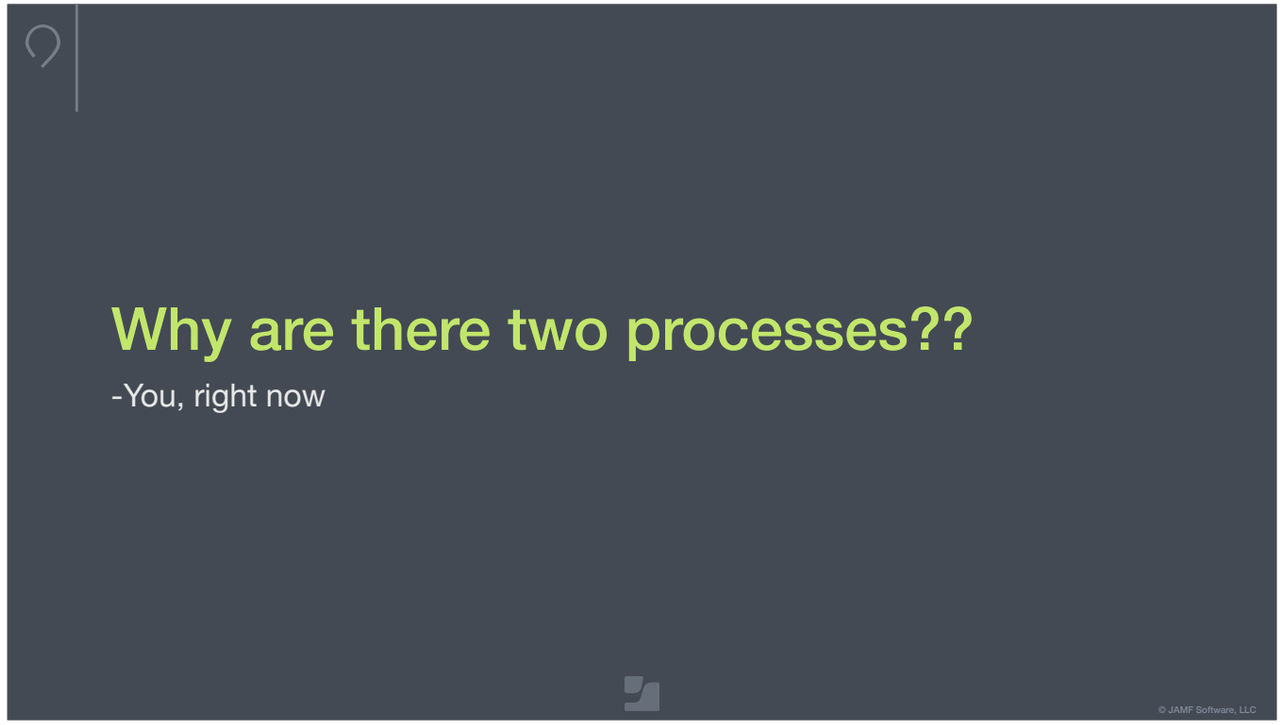


The end of our automation script is the same as the other except this one key line _C_ here. We want to remove the auto login user password file so it doesn't automatically login again after rebooting.

We reboot…and..



We’re greeted by our login window. And we’done.



Some of you may be thinking, why do you have two different processes? This is a really good question and the really good answer is that we don’t anymore!

The first process was my original proof of concept that we were testing for months before the automated one was done. I wanted to make sure the process worked and our techs were seeing it already before I rolled it out 100%.

We also didn’t have a need for the automated setup until the summer when we got PUBLIC new systems in, so I took care of our faculty and staff laptops first since we had a few trickling in throughout the spring.

I also wanted to go through the evolution of our process.

There is actually an updated set of scripts on my Git page to take care of all automation.

So this was totally me after I got my process working. But I have to remind myself… _C_

No…

And that’s okay..right?

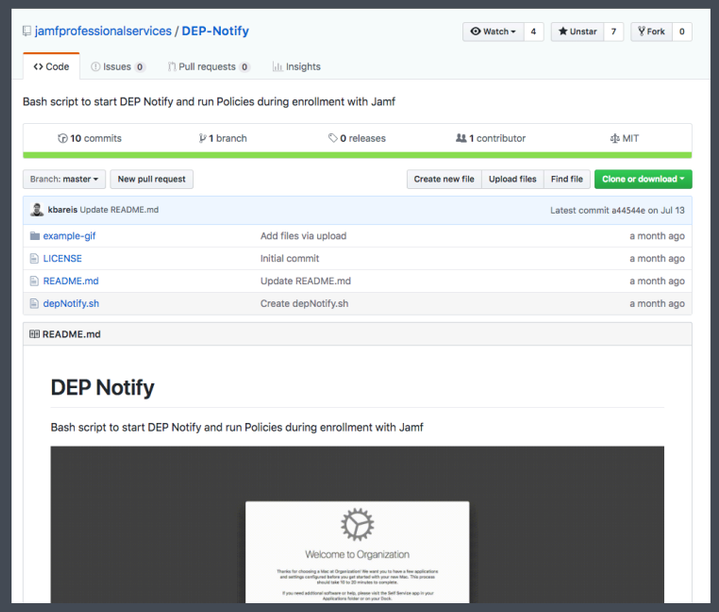
It’s not. Well, not really.
And that’s okay for now..

DEPNotify really helped us make the transition a lot smoother even though we started our transition way later than we should have. Hopefully the future will bring us closer to the old “hand off” methods we were used to. _C_ Welcome to the future!!

I’m not into scripting…any ideas?

-You, right now…maybe?

There may be some here that don’t really want to do a heck of a lot of scripting, or if you want something really easy to deploy. Well I do have a quick solution for you….

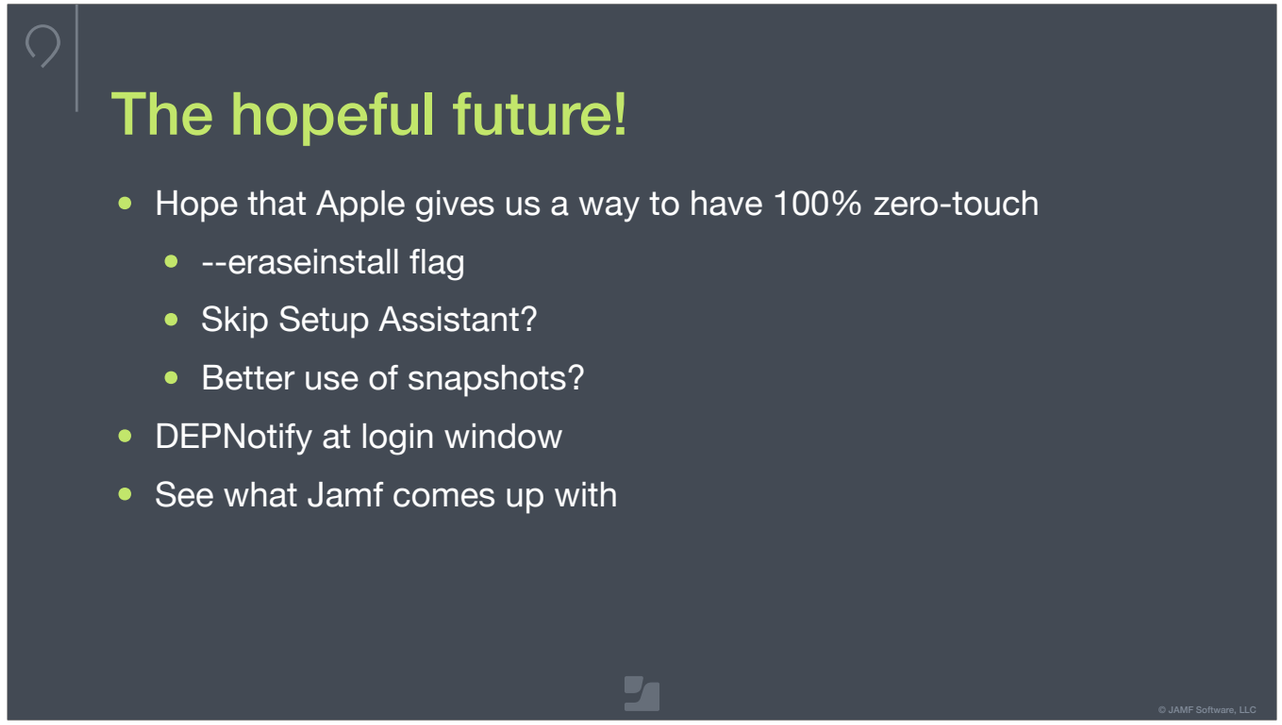


https://github.com/jamfprofessionalservices/DEP-Notify

Jamf professional service has a git repo for DEPNotify which includes _C_

```
################################################################################
# Variables to Modify
################################################################################
# Testing flag will enable the following things to change:
  # - Auto removal of BOM files to reduce errors
  # - Sleep commands instead of polcies being called
  # - Quit Key set to command + control + x
  TESTING_MODE=true # Set variable to true or false

# Flag the app to open fullscreen or as a window
  FULLSCREEN=false # Set variable to true or false

# Banner image can be 600px wide by 100px high. Images will be scaled to fit
# If this variable is left blank, the generic image will appear
  BANNER_IMAGE_PATH="/System/Library/CoreServices/Setup Assistant.app/Contents/Resources/remote_management.tiff"

# Main heading that will be displayed under the image
# If this variable is left blank, the generic banner will appear
  BANNER_TITLE="Welcome to Organization"

# Paragraph text that will display under the main heading. For a new line, use \\n
# If this variable is left blank, the generic message will appear. Leave single
# quotes below as double quotes will break the new line.
  MAIN_TEXT='Thanks for choosing a Mac at Organization! We want you to have a few applications and settings configured before y

# URL for support or help that will open when the ? is clicked
# If this variable is left blank, the ? will not appear
  SUPPORT_URL="https://support.apple.com"

# Initial Start Status text that shows as things are firing up
  INITAL_START_STATUS="Initial Configuration Starting..."

# EULA configuration
# CURRENTLY BROKEN - seeing issues with the EULA and contiune buttons
  EULA_ENABLED=false # Set variable to true or false
  EULA_TXT_FILE="/var/tmp/eula.txt"

# The policy array must be formatted "Progress Bar text,customTrigger". These will be
# run in order as they appear below.
  POLICY_ARRAY=(
    "Installing Chrome,depNotifyChrome"
    "Installing Firefox,depNotifyFirefox"
  )

# Text that will display in the progress bar
  INSTALL_COMPLETE_TEXT="Configuration Complete!"
```


A script where you just fill your information into the variables and it will take care of the logic and installation policies for you. It's a very nice easy to use and read script if you need a simple deployment process.



So..looking ahead.

We've been getting new tools with every version of macOS.

_C_ Let's Hope that apple gives us true zero-touch.
We're getting close with the erase install flag but we still have to go through setup assistant.
I would also like more control with snapshots.

_C_ DEPNotify at login window would be awesome and I know there is work on this already especially with Nomad Login.

_C_ and of course I would like to see what jamf comes up with for this. There is some work being done already on a DEP workflow that looks promising, but it may be some time off.

Resources

- My GitHub
  - https://github.com/jmahlman/uarts-scripts/tree/master/DEP%20Scripts
  - Updated process: https://github.com/jmahlman/DEPNotify-automated
- DEPNotify
  - https://gitlab.com/Mactroll/DEPNotify
- Neil Martin's Presentation/Code from JNRS
  - https://github.com/neilmartin83/Jamf-Nation-Roadshow-London-2018
- Jamf Professional Services DEPNotify repo
  - https://github.com/jamfprofessionalservices/DEP-Notify


THANK YOU!
© JAMF Software, LL

Thank you for listening!

Give us feedback by completing the 2-question session survey in the JNUC 2018 app.

UP NEXT

Session title

Session time