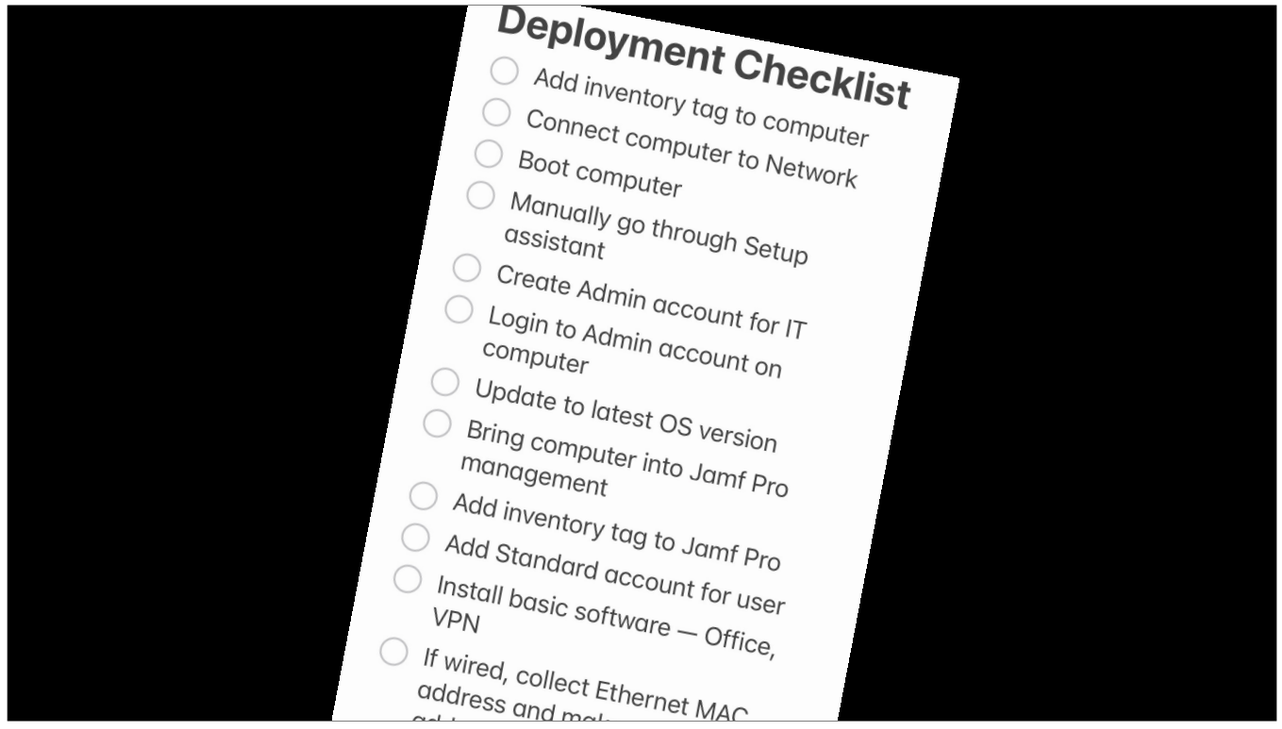
Light Touch Deployment

Using PreStage Enrollment and Jamf Setup Manager

Anthony Reimer • January 2025

Slides will be provided after the meeting in the Teams channel. There will be a bunch of live links in the slides to help you jump to useful references.



When you need to deploy or re-deploy a computer, many of you will follow a checklist or a wiki article that details all the steps needed to be achieved before handing the computer to the user or making it available in a lab. It's usually a long list and involves a lot of manual steps, including bringing the computer into management. This *works* when we can manually control everything and have adequate staff to execute this level of control. But as we learned early in the COVID-19 Pandemic, that is not always possible. For example, sometimes we need to setup a computer when it is not on the campus network.

Wouldn't it be nice if we could automate most of that checklist? Maybe do just one or two simple steps and, if it is a 1-to-1 deployment, hand the computer to the user? Not even worry about enrolling the device because it happens as part of initial setup? Even deal with cases where University-owned computers are procured or setup outside of our direct control? 🍎 That is the overarching goal of Automated Device Enrollment and Jamf Pro's PreStage Enrollment.

Light Touch Deployment
Outline

- ASM, ADE, PreStage Enrollment, DFU mode
- Apple Configurator, Jamf Setup Manager
- New or Re-deployed Computer process in IAML
- Review / Q & A

Today, I’m going to talk about that kind of workflow, which I’ll call Light Touch Deployment for lack of a better name. I’ll define some common terms and highlight a couple of tools that make initial deployment easier. I will then go through how I currently deploy new Macs in my Labs, with an eye to what Shane is preparing in this regard for implementation across campus. I'll wrap up and give you some time for Q & A.

Terms

- Apple School Manager (ASM)
- Automated Device Enrollment (ADE, formerly DEP)
- PreStage Enrollment
- Device Firmware Update mode (DFU mode)

ASM: There are a bunch of different things you can do with the ASM web portal, including volume purchasing apps that are only available through the App Store, but for today's discussion, we'll focus on the fact that when the University procures an iPhone, iPad, Mac, or Apple TV through our regular procurement processes, that device is automatically added to our Apple School Manager account. In fact, if someone goes to the Apple Store and purchases a Mac using a PCard, the Apple Store staff now have the ability to add that computer to our Apple School Manager account.

 Any device in ASM is eligible for Automated Device Enrollment. Apple's goal with ADE is, in Apple's words, "to automate MDM enrollment and simplify initial device setup without having to physically touch or prepare the devices before users get them." Yes, this process is designed to work if the device is drop-shipped. Even if you *do* put hands on the device, you can still benefit from a simplification of the enrollment process.

 A PreStage Enrollment, often shortened to "PreStage", is the method used in Jamf Pro to accomplish ADE. Each device in ASM can have exactly one PreStage assigned to it. A PreStage allows you to configure a device with basic settings and software.

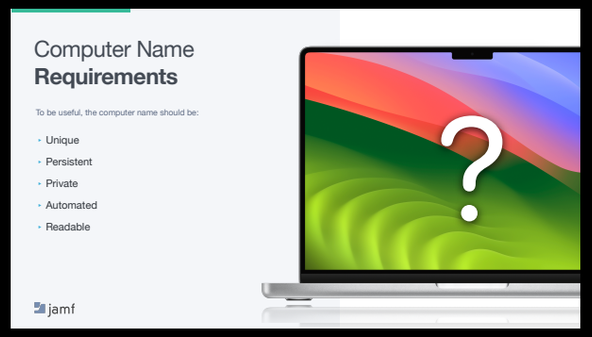
 You will also hear references to DFU mode. In the Mac context, it refers to starting up the Mac in a certain way that allows the firmware and even the OS to be restored on an Apple Silicon Mac or an Intel Mac with a T2 chip. Virtually any iOS, iPadOS, or Apple TV that is currently in service can also be booted into DFU mode.

We’ll use a couple of Apps in our Light Touch Deployment process. You may have used Apple Configurator in the past to configure an iPad before we had Jamf Pro, or perhaps more recently, you used it to help revive a Mac or iPhone. It is useful in the computer deployment context for completely erasing a Mac and restoring macOS. It can also be used to assign a device to our Apple School Manager account when it is sourced in an unusual way, such as a donation of a used device. You can get this from app Self Service if you don’t already have it.

Jamf Setup Manager is a Swift app written by the Jamf CE team. They describe it as an “enrollment progress tool” that provides the user more information in the initial Mac setup experience, but their primary value proposition for an IT unit is to ensure that a new Mac is properly configured and assigned before sending the device to its new user or making it available publicly. It runs over top of the normal Apple Setup Assistant before a user is created.

Jamf Setup Manager
Set Computer Name

- Armin Briegel @ MacAD.UK 2024
  - *scriptingosx.com/macaduk2024*
- Automatically Renaming Computers blog post
  - *maclabs.jazzace.ca/2023/02/23/automatically-renaming-computers.html*

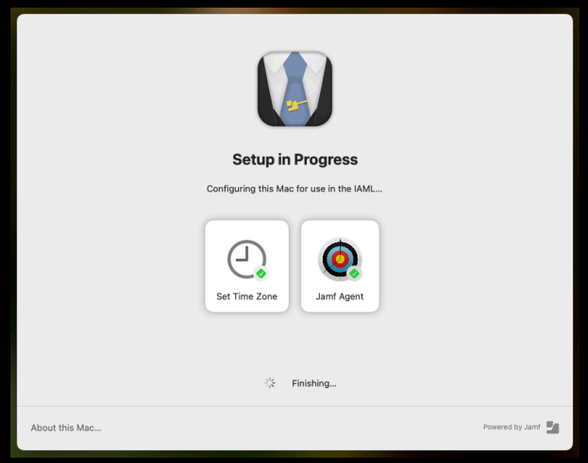


One of the big setup issues that Jamf Setup Manager solves is computer naming. If you have access to our Jamf Pro console, you may have seen a lot of computers named “it.admin’s Mac” or other generic names. This is a common problem in Education and Enterprise—so much so that Armin Briegel did a whole presentation at MacAD.UK last May on Setting the Computer Name. It was a deep dive on what criteria your computer name should meet, how you can do this programatically using tools in macOS and Jamf Pro, and how Jamf Setup Manager—which was in Private Beta at the time—can be used to do this.

 I initially implemented a renaming method supported in Jamf Pro where you supply a CSV file with a list of serial numbers and the corresponding computer name and a Jamf Pro command sets the correct name when it is run. I blogged about this method, but the biggest pitfall for me was that many of my policies were scoped based on the computer name and there were some Central IT policies that ran before I could make this change. Thus, I really wanted to do the rename in the PreStage, since it runs first. As my blog post discusses, I couldn’t do that with On-Prem Jamf Pro, but when we did move to Jamf Cloud, I tried it again and still had a timing issue if I let the Mac sit too long. This is when I decided to try Jamf Setup Manager.

Jamf Setup Manager
Install Software & Settings

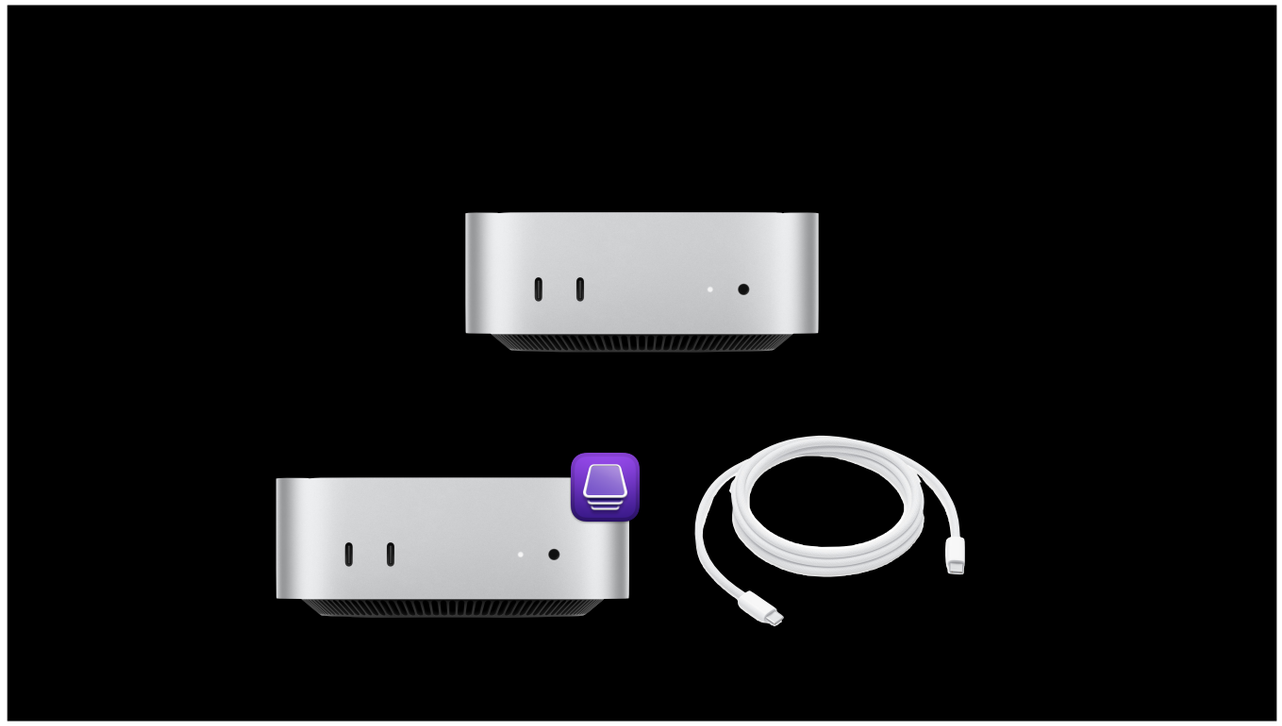
- Trigger Policy
- Installomator built-in
- Shell commands
- User entry / Two phase
- Progress indicator
- Recon



Jamf Setup Manager can be really helpful in getting a good baseline setup for your device. [Detailed notes in slide deck:]
First of all, it can trigger any Jamf Pro policy where you have defined a named trigger (and presumably is in scope).
 You can also have it download software directly from the vendor and install it using the open source tool Installomator, which is built-in to Jamf Setup Manager. The use case for Installomator is when you always want the latest version of an app to be installed, so you have Setup Manager download the installer from the vendor rather than using anything cached in your Distribution Point.
 It can also run shell commands. If you've ever tried to set the Time Zone in a Lab, for example, you would use a shell command running as root to do this. You may also want to establish certain settings which you had previously triggered in a shell script. If timing is an issue, this option gives you the opportunity to trigger this early in the setup.
 You can also accept user entry. This also allows you to do a two-phase installation, where data supplied by the user lets you scope a second set of policy triggers based on that input.
 Jamf Setup Manager can show any or all of its tasks in a progress indicator. You can add an icon or symbol from SF Symbols to make it look pretty. This progress indicator is most useful when you are installing large apps or a large *number* of apps. Since I barely put anything in my PreStage, I just provide myself a reminder of what Jamf Setup Manager is doing for me.
 Finally, Setup Manager will automatically run an inventory update before and after running the enrollment actions. This should help with policies outside of Setup Manager that depend on computer name or other things configured in the PreStage.

Configurator + PreStage + Jamf Setup Manager

Now that we have defined some terms and shown the utility of a couple of tools, let me take you through my current enrollment process, which may help you understand why this kind of workflow can make life easier in your unit, make deployment processes more flexible, and improve compliance without significant intervention.

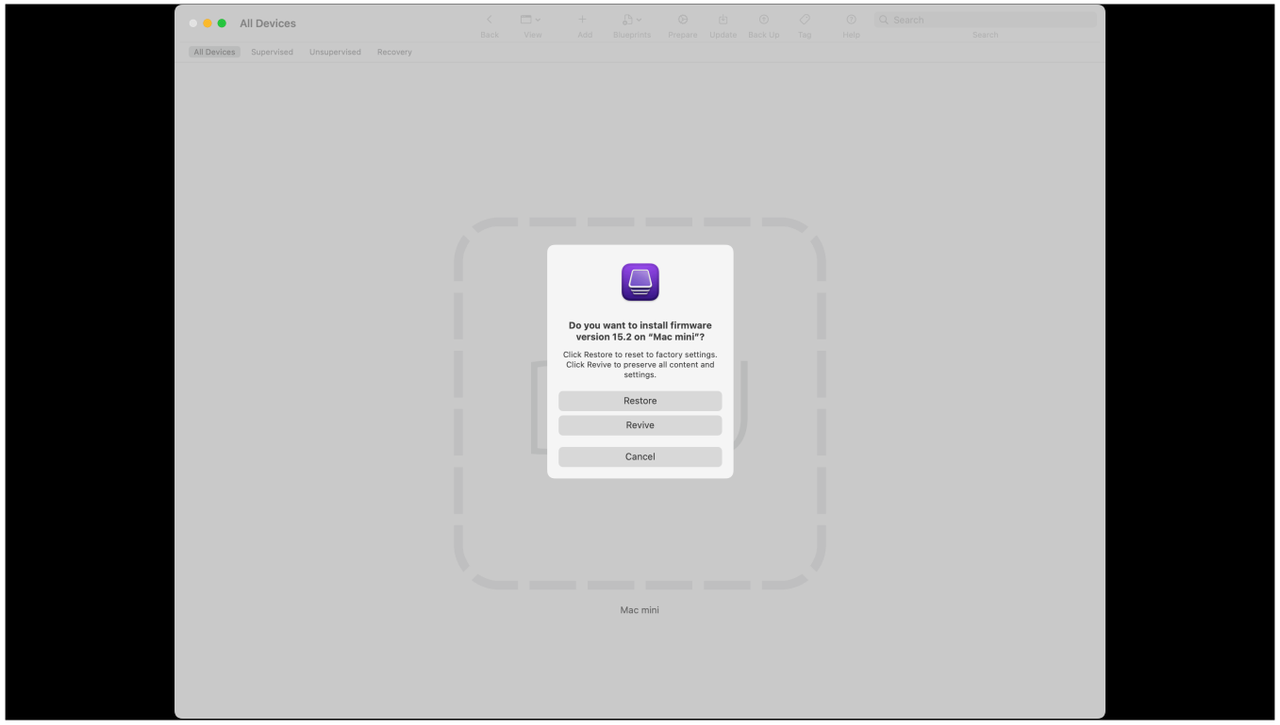


First, when I get a new computer or am re-deploying an old one, I want it to be running the same version of macOS that is running in my Lab already. Right now, that's macOS 15.2. If this was the Fall Term or if I hadn't successfully updated to Sequoia over Christmas, I would be running 14.6. So the first thing I do is fully erase the Mac using Apple Configurator and have Configurator restore the target OS onto the Mac using an IPSW file. To do that, I need a second Mac to run Configurator and a USB-C cable to connect the two.

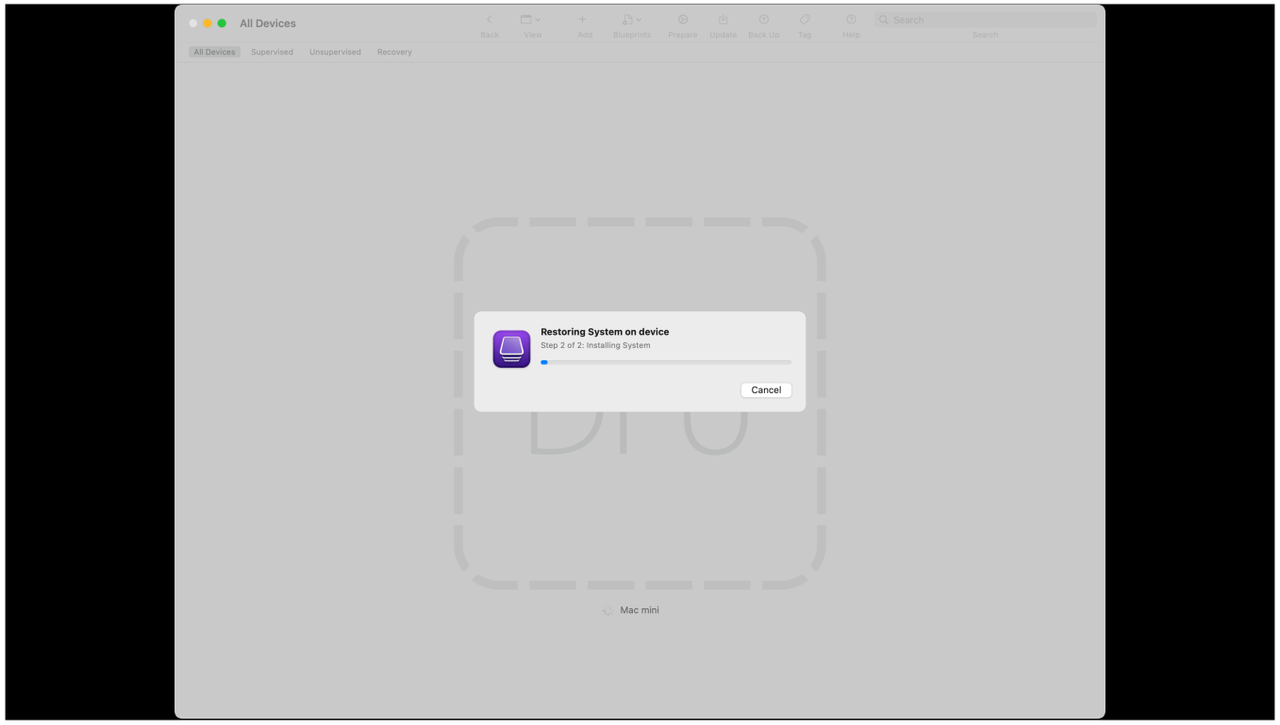
Restore macOS
Via IPSW

- support.apple.com/en-ca/108900
- Download IPSW:
  - On the fly
  - Mist
    github.com/ninxsoft/Mist
  - Mr. Macintosh
    mrmacintosh.com/apple-silicon-m1-full-macos-restore-ipsw-firmware-files-database/

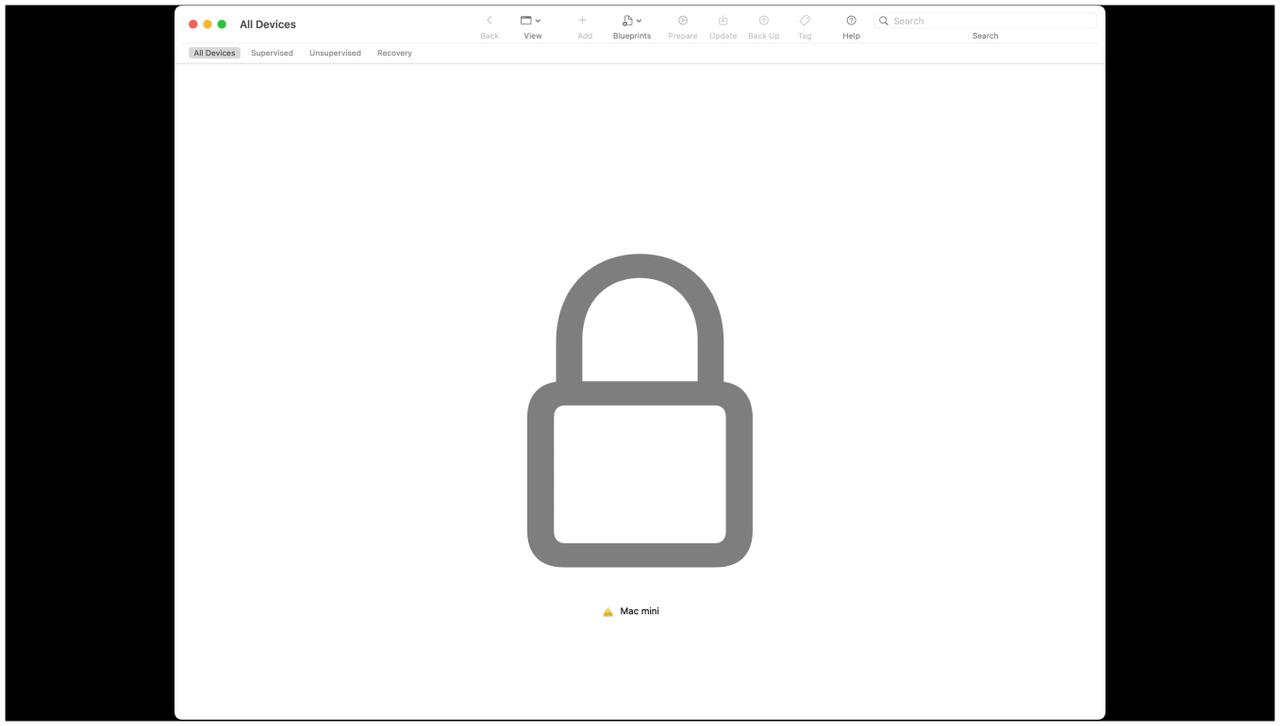
First, you put the target Mac into DFU mode and hook it up to the Mac running Apple Configurator. All the details on how to do this are on the Apple Support site. Note that you have to use a particular Thunderbolt port on the target Mac for this to work. Also, some USB-C cable types won't work—reach out to me if you have issues, since I've worked through those finicky bits. Once you have successfully done that, you will see a screen similar to one shown. The next thing you need is an IPSW file for the OS you want to deploy. There are three good ways to get the IPSW file. If all you want is the most recent release of the current major release of macOS, you can have Configurator download the 16 GB file on the fly. If you want a specific version of the OS or if you are going to do more than one Mac, you can download the IPSW file you need manually. I recommend you use one of the two methods I have listed. Mist, written by Nindi Gill from Australia, is an app that is great for both downloading IPSW files and OS installers and it uses Apple's own catalogs, so it should stay up to date. The Mr. Macintosh website has a number of good Links pages, including IPSW files and OS installers, pointing to downloads directly from Apple, and Ryan is quite good at promptly updating the links. Pick your favourite.



If you downloaded the IPSW file, you can simply drag-and-drop it onto the DFU icon in Configurator representing the Mac in question. Otherwise, just select the DFU icon and choose Restore from the menus or by right-clicking. Either way, it will ask you to confirm what you want to do. In this case, we want to completely erase it, so we choose Restore.



It will provide a progress bar while it Restores the firmware and OS. It takes anywhere from 10–20 minutes and it will automatically reboot the target Mac when it successfully completes.



After the reboot, you will see a lock icon. You can now disconnect the Mac and power it down. You are done with Configurator.

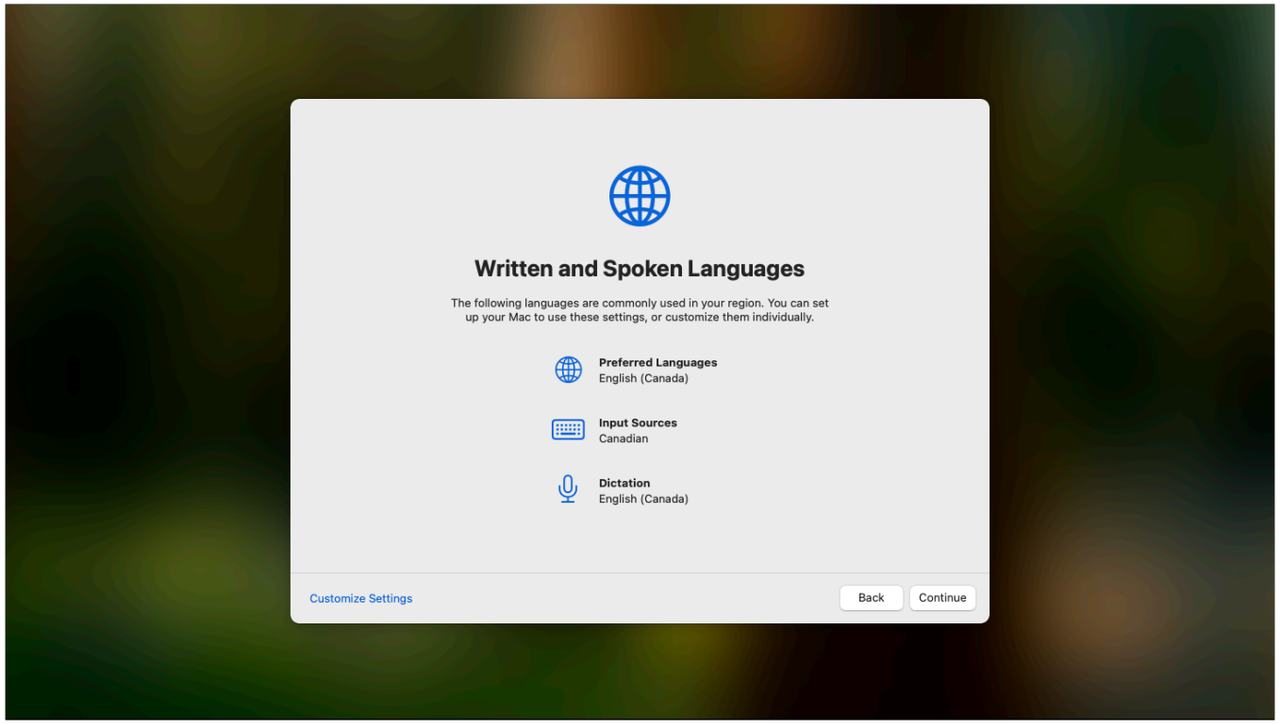
Sidebar: Why erase a new Mac?

Earlier on, I mentioned that one of the benefits of Automated Device Enrollment is that it supports scenarios where the computer is drop-shipped without IT ever touching it. Erasing it is not necessary for ADE to work; you can use the OS already installed on the device at the factory. As long as the Mac is connected to the Internet and a PreStage is assigned, the user won't be able to use the Mac without enrolling into management. There are two potential issues here that could lead to a new Mac not being enrolled automatically:

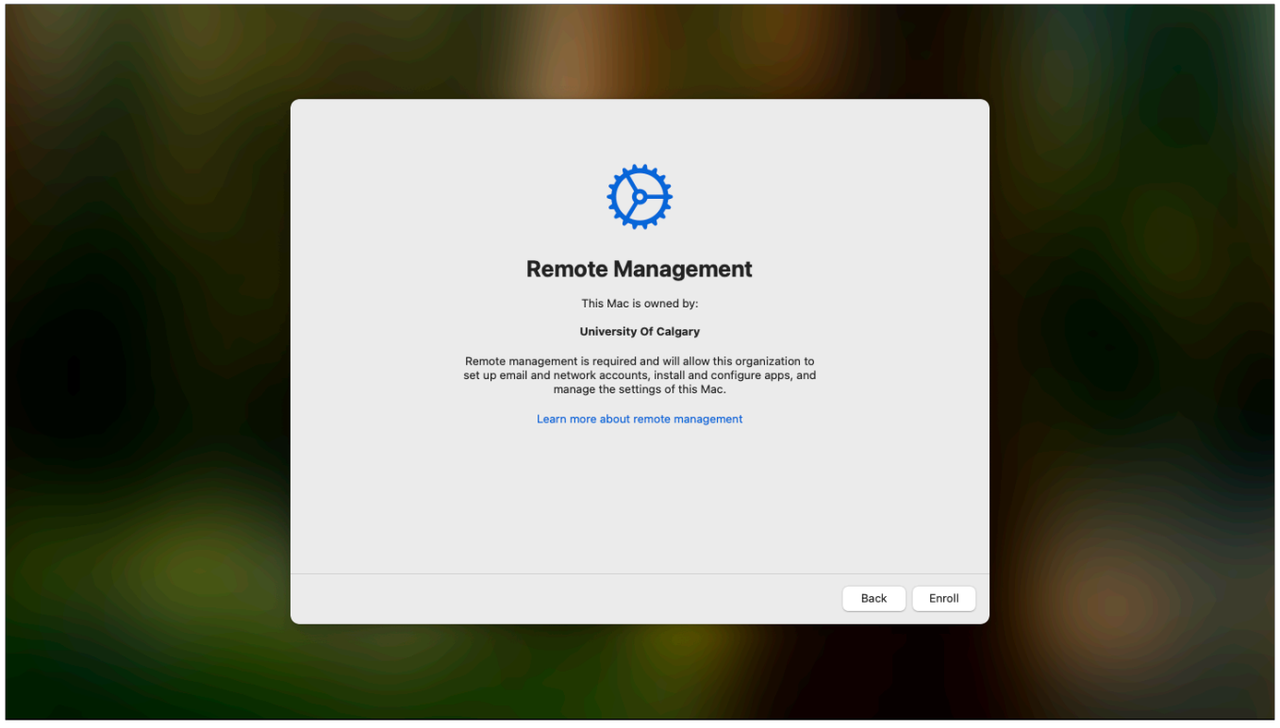
Issue #1: the device needs to be assigned to a PreStage. What Shane is working on for Campus is a plan that would automatically assign a PreStage to a device as soon as it is added to Apple School Manager. That would resolve this issue.

Issue #2 is that you might have a crafty user that goes to the Apple Store, picks up a Mac on their PCard, Apple adds it to ASM, but when the user goes to setup the Mac, they deliberately do not connect it to the Internet. This is the only scenario currently where a user could take a Mac assigned to a PreStage and dodge management. Once the Mac is erased and restored, however, they can no longer do that—Setup Assistant will not proceed until the Mac is enrolled in Jamf Pro. So erasing a brand new Mac both delivers the version of the OS that you want and blocks any management workaround. Compliance squared!

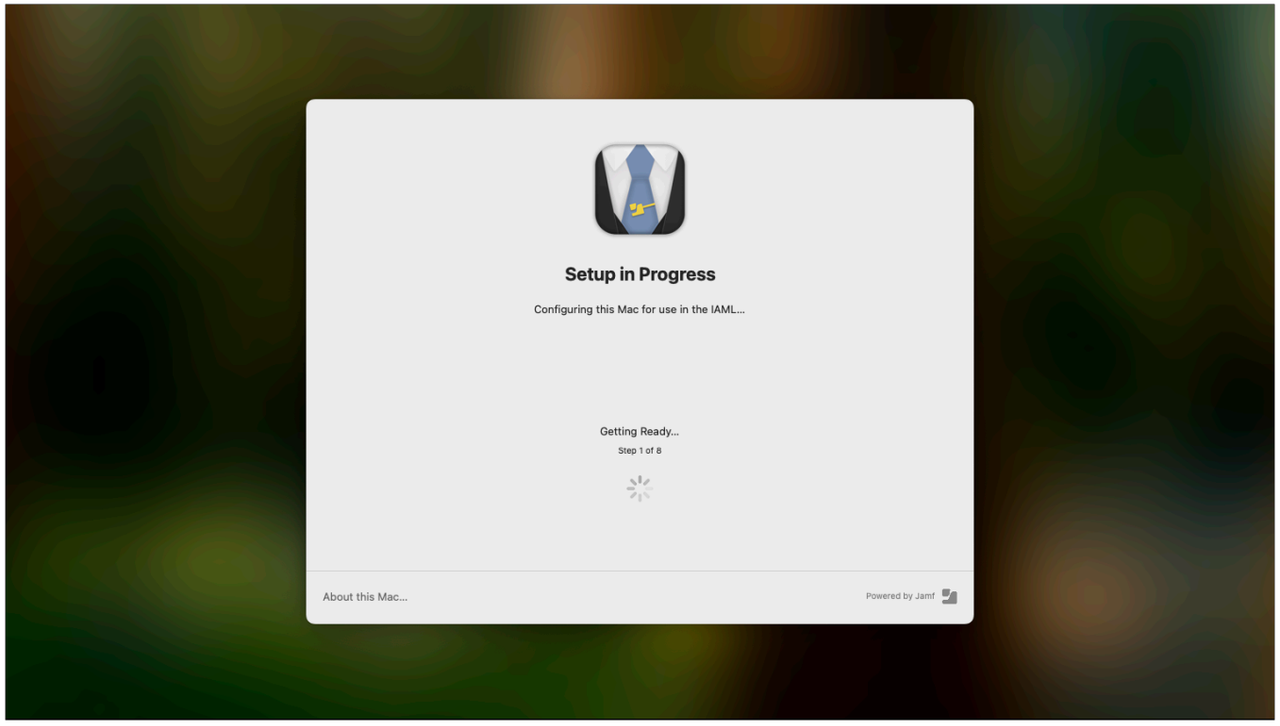
All right, back to our process. I now have a Mac with the desired OS ready for enrollment. I boot the Mac and then then hook it up to the Internet—that's Ethernet on our campus network for me but it also works via Wi-Fi and from off the campus network.



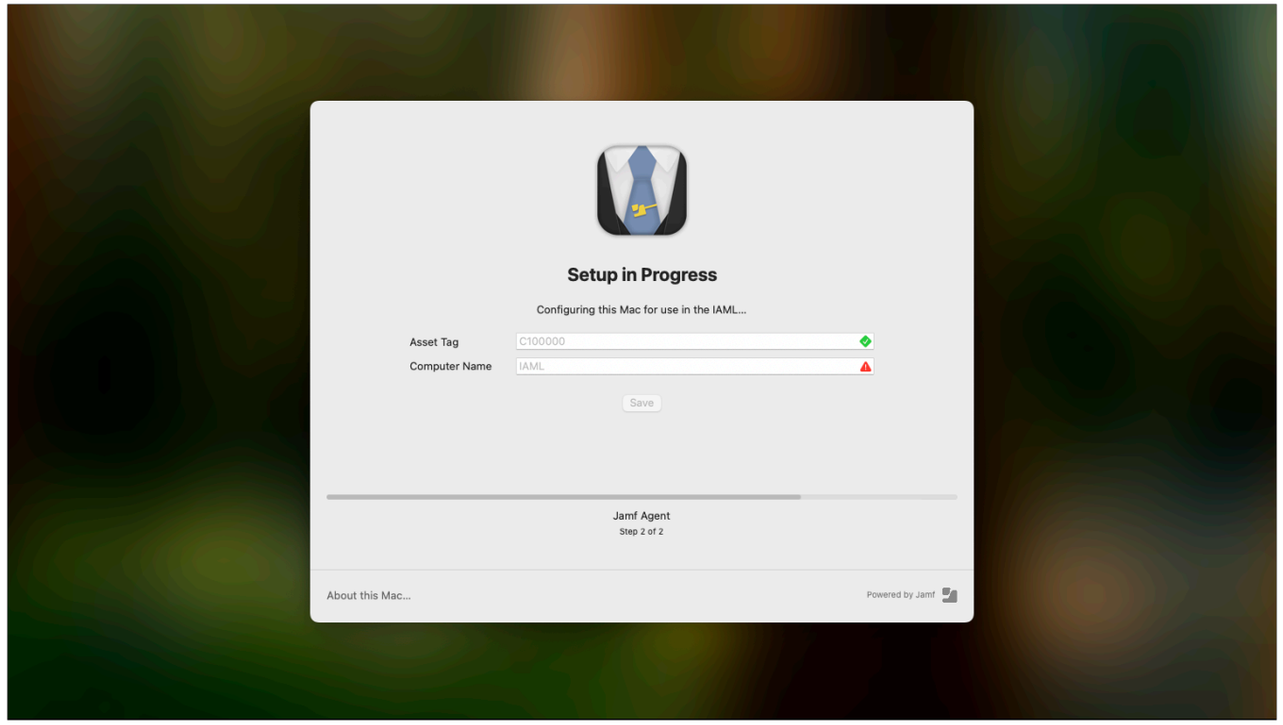
Once I confirm we are in Canada and that I want English as the language, we see this screen. Clicking Continue brings us to the Management screen >



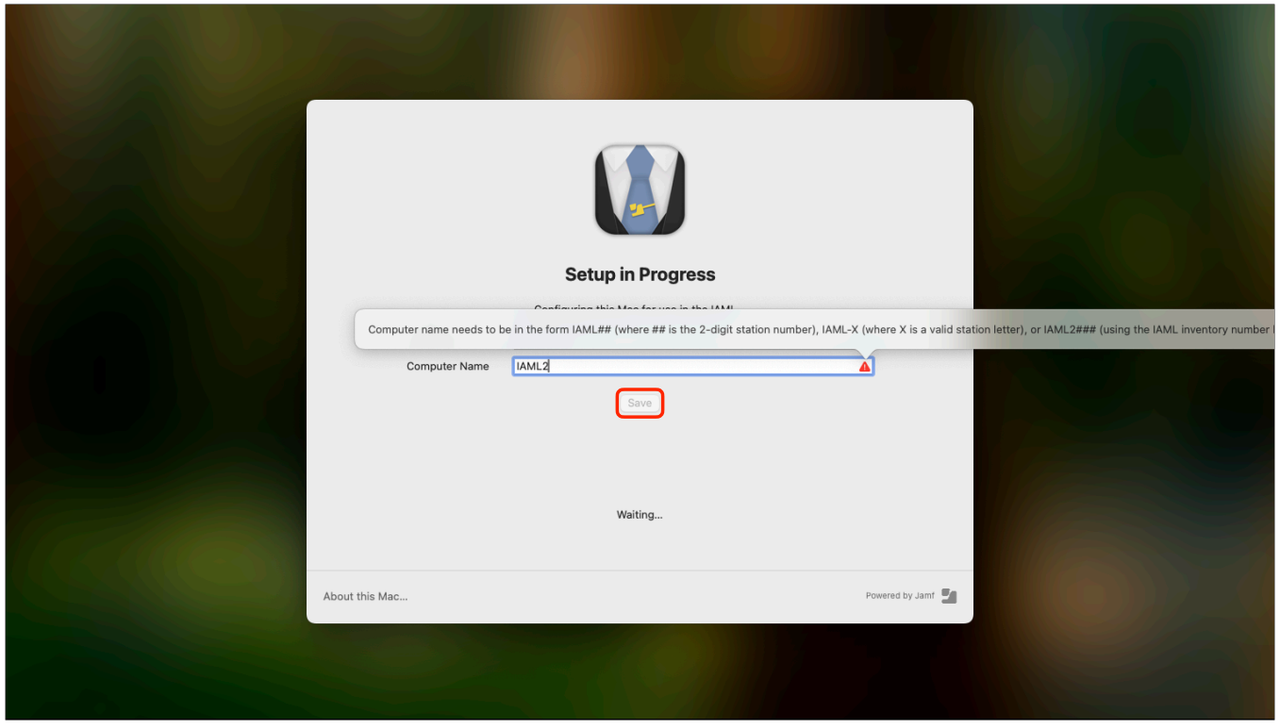
As I mentioned, the user has no choice at this point but to Enroll if they want to use the Mac. So we click Enroll.



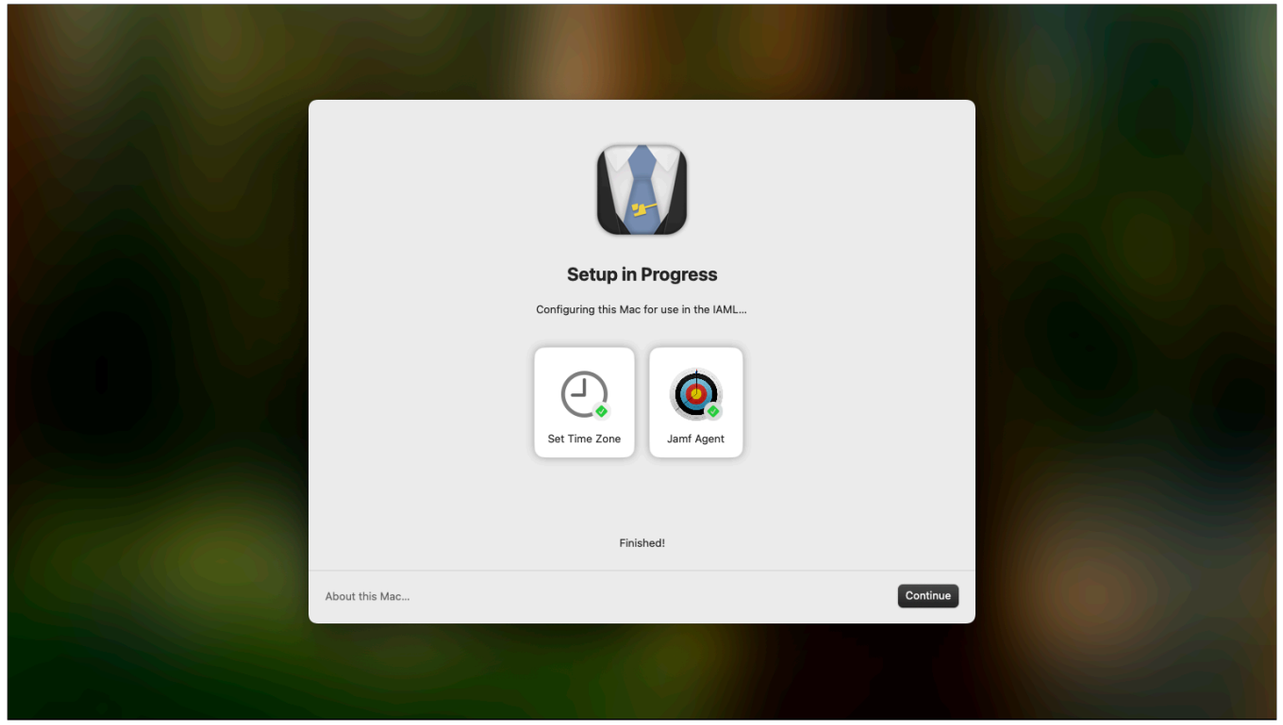
In my setup, this is where Jamf Setup Manager surfaces. You'll see that I have a custom message saying that this is being configured for the IAML. Setup Manager helpfully reports progress on how it is configuring itself.



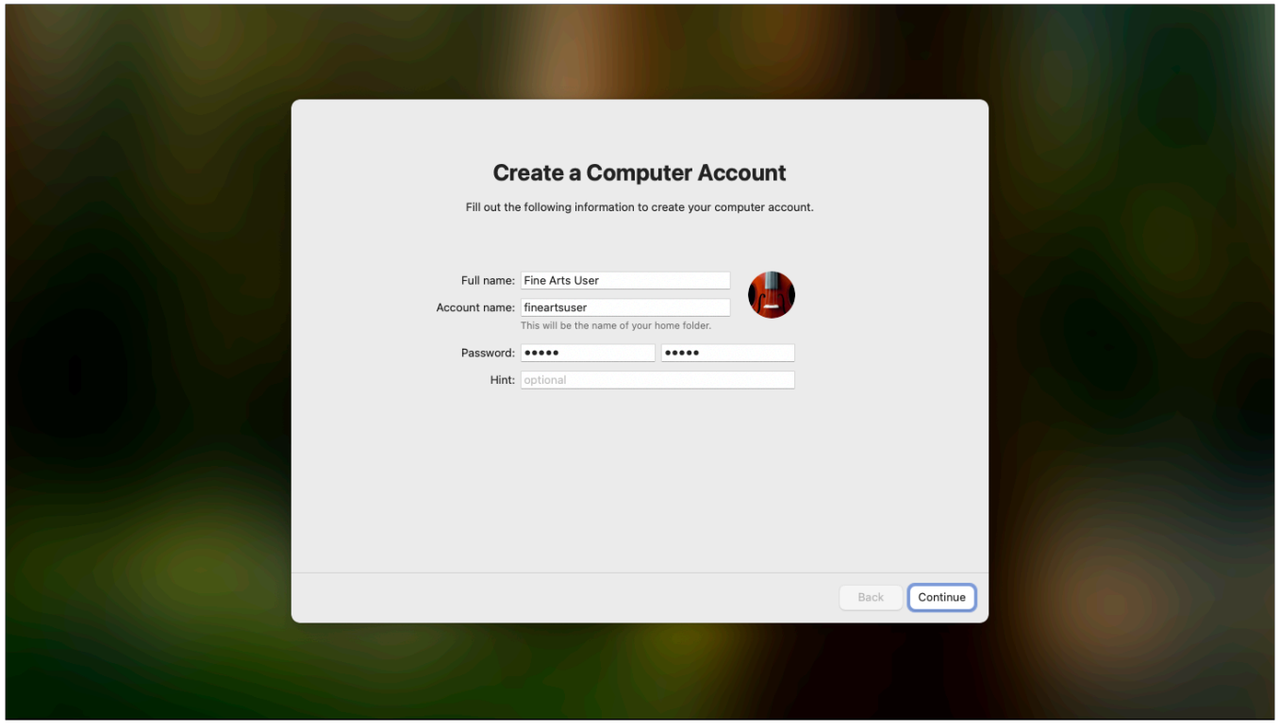
Once it finishes configuring itself, I have it prompt the user — in my case, a technician — to enter the asset tag number and the name of the station using the IAML naming conventions. Notice that you can provide sample text, which it will show in grey but will disappear once you start data entry.



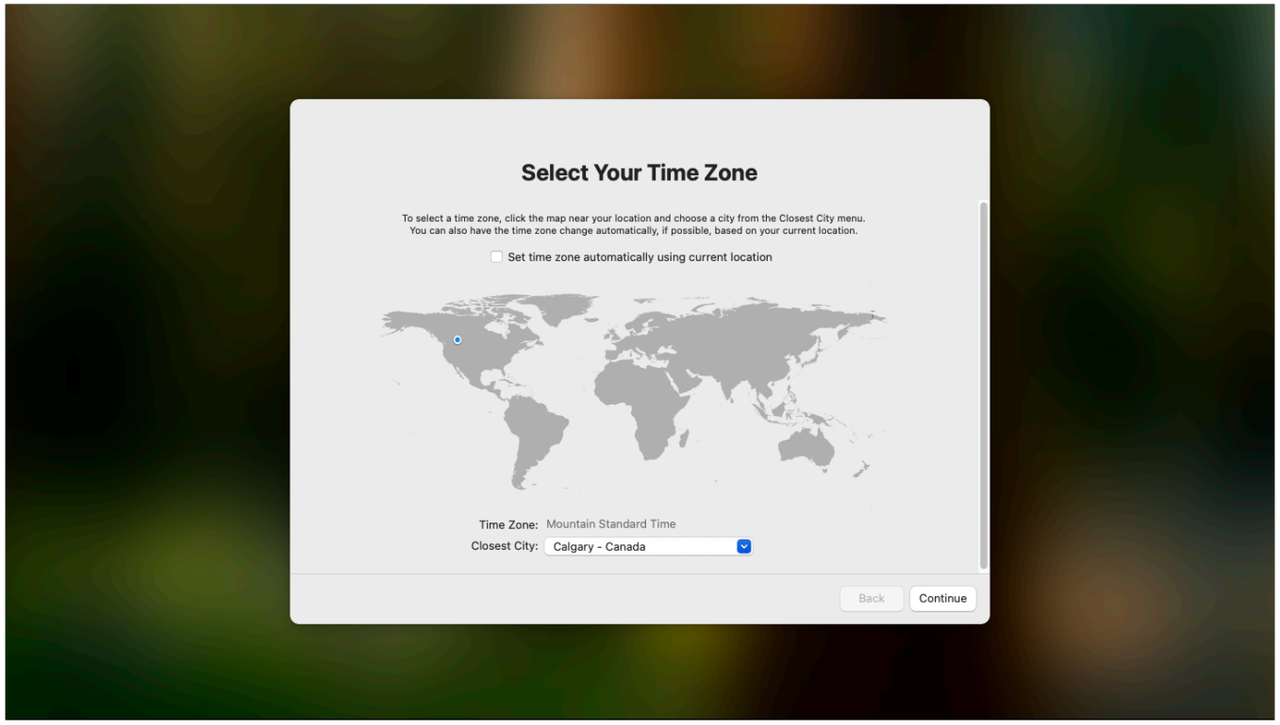
In my case, I want to make sure I don’t make a typo naming the computer, since I have policies that are triggered specifically on what the computer name is. So I’ve made a regular expression to define the valid names. When the current entry doesn't meet that criteria, Setup Manager pops up text that I supplied to help the user enter a valid name. Once I have the fields populated with valid values, the Save button will no longer be greyed out. I click Save and Setup Manager starts processing its payload, which can be based on what I enter. In my case, I have Jamf Pro assign the C Tag number to the Asset Tag field for that Mac and have it change the computer name to the one I just had Setup Manager validate.



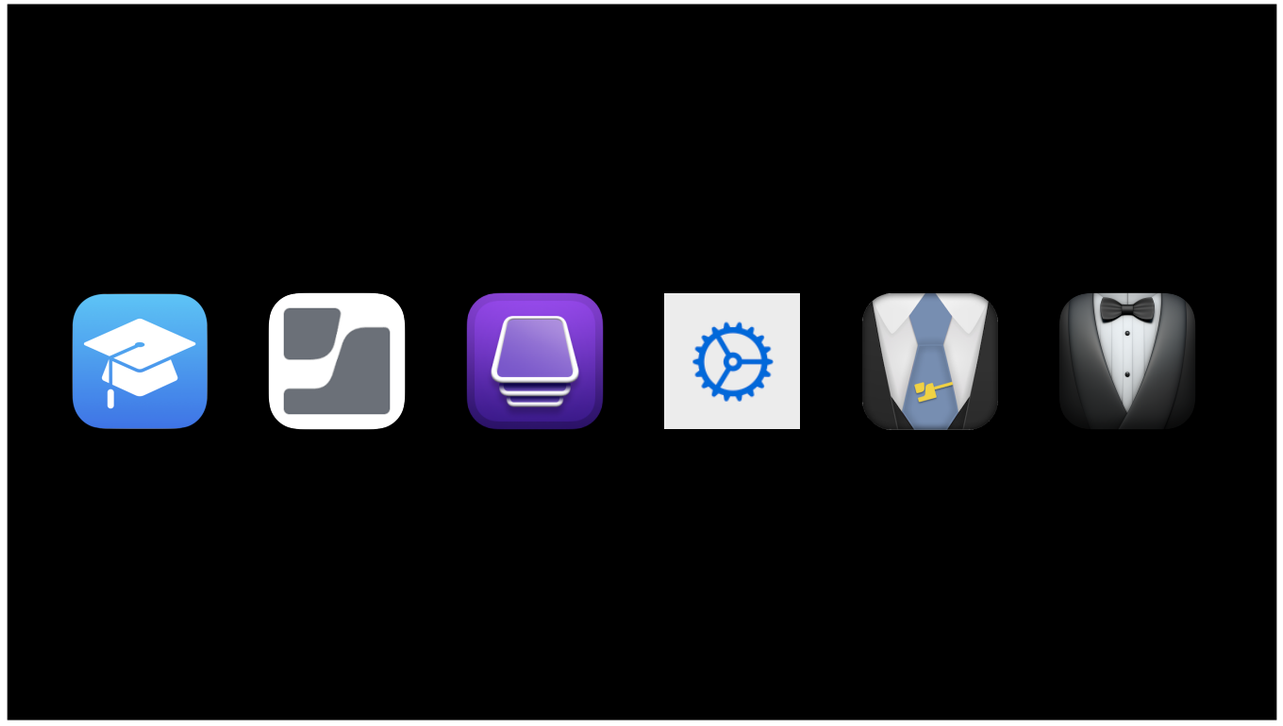
Setup Manager allows you to create tiles for any item whose progress you want to feed back to the user. My payload is very thin, but I decided to indicate that I had set the time zone and that the Jamf Agent would be live after this. Setup Manager is done. I click Continue and I am dropped back into Apple’s Setup Assistant.



For my Labs, I add an emergency Standard user account because of the frequency we see the message “Network accounts are not available” at the login screen. A setting in the PreStage is what makes this a Standard account, not an Admin account. The PreStage is also where you can silently create an admin account for your technical work.



The PreStage lets you control which screens in Setup Assistant you want to skip. Jamf Setup Manager documentation says you need to have at least one step available in order for it to function. For my current PreStage, the only two things you see are account creation and Time Zone. I tried to get it to skip Time Zone, but it doesn't work for some reason. The part that *did* work is that my Setup Manager shell command that set the time zone to Mountain, since it would normally choose Pacific Time as the default. So I can just click Continue. The Mac then logs in with the user I just created. If I hadn't created a user, but was instead using Jamf Connect or AD binding or — soon — Single Sign On, I would get that login screen instead.



So that’s it. 🍎 To Review:
Any Mac the University purchases should be automatically enrolled in Apple School Manager. Once the device is in our ASM account, it is automatically assigned to our Jamf Pro Server. 🍎 Currently, if you want to use a PreStage, you have to scope the device by serial number in Jamf Pro. Shane’s goal is to make this automatic, which means you only need to do this step if you need a different PreStage. 🍎 When you are ready to deploy the device, you can optionally erase the Mac and install the desired firmware and OS using Configurator. 🍎 When the device is booted and connects to the Internet, the device will automatically enroll into management. 🍎 Jamf Setup Manager then runs on top of Setup Assistant, allowing you to apply some settings and deploy basic software. You can even prompt for input from the tech or user. 🍎 Finally, Apple’s Setup Assistant runs, configuring local accounts as needed and skipping any setup steps as configured in the PreStage.
This does require some configuration, but it has allowed me to greatly reduce the manual steps we have to do in my Lab to get a computer in to service. It also reduces human error. This is a technology you want to embrace.

Thanks for your time. I'm open to questions about my experience with this and I am sure Shane would be happy to answer questions about his plans for Campus.