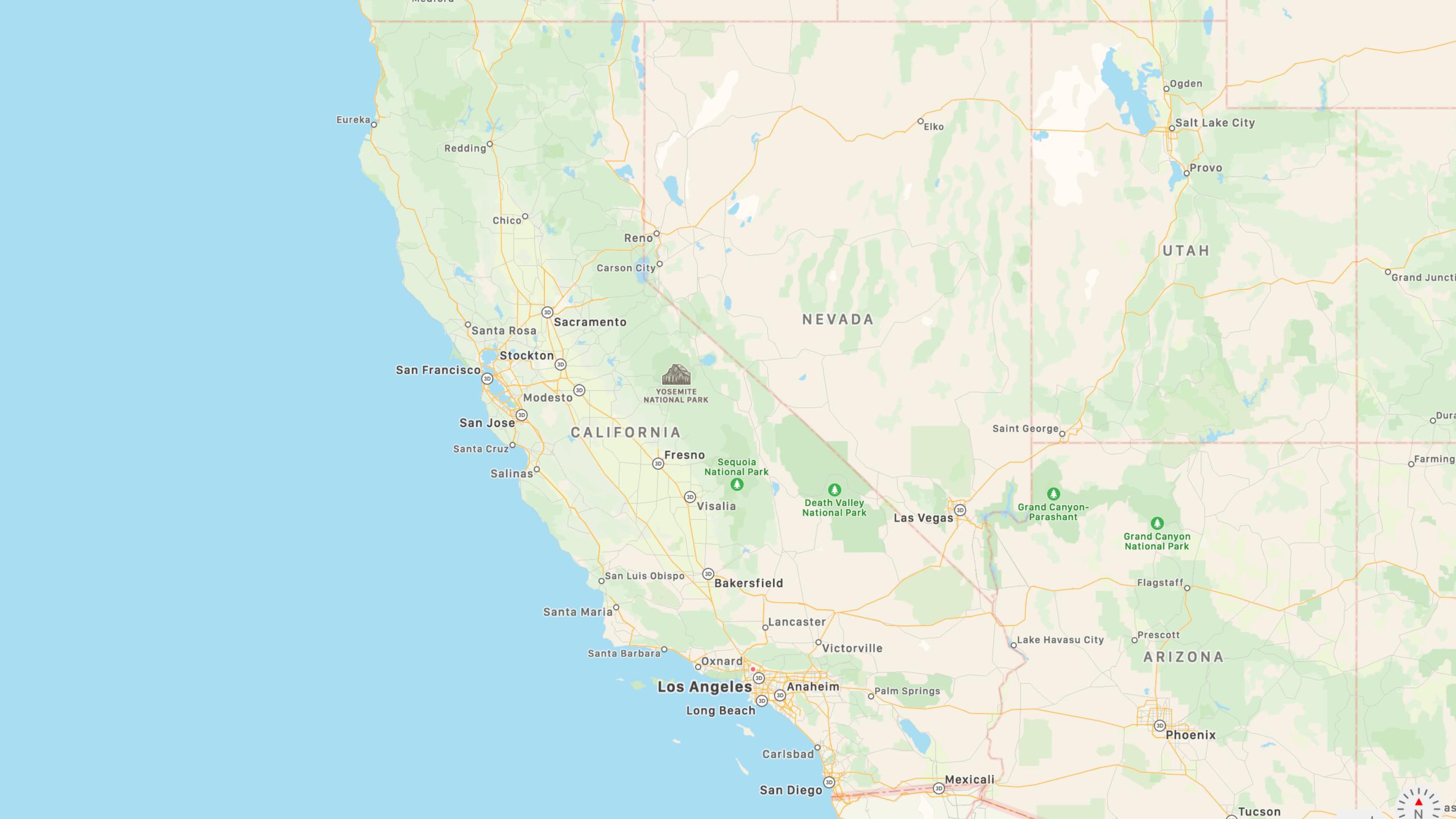
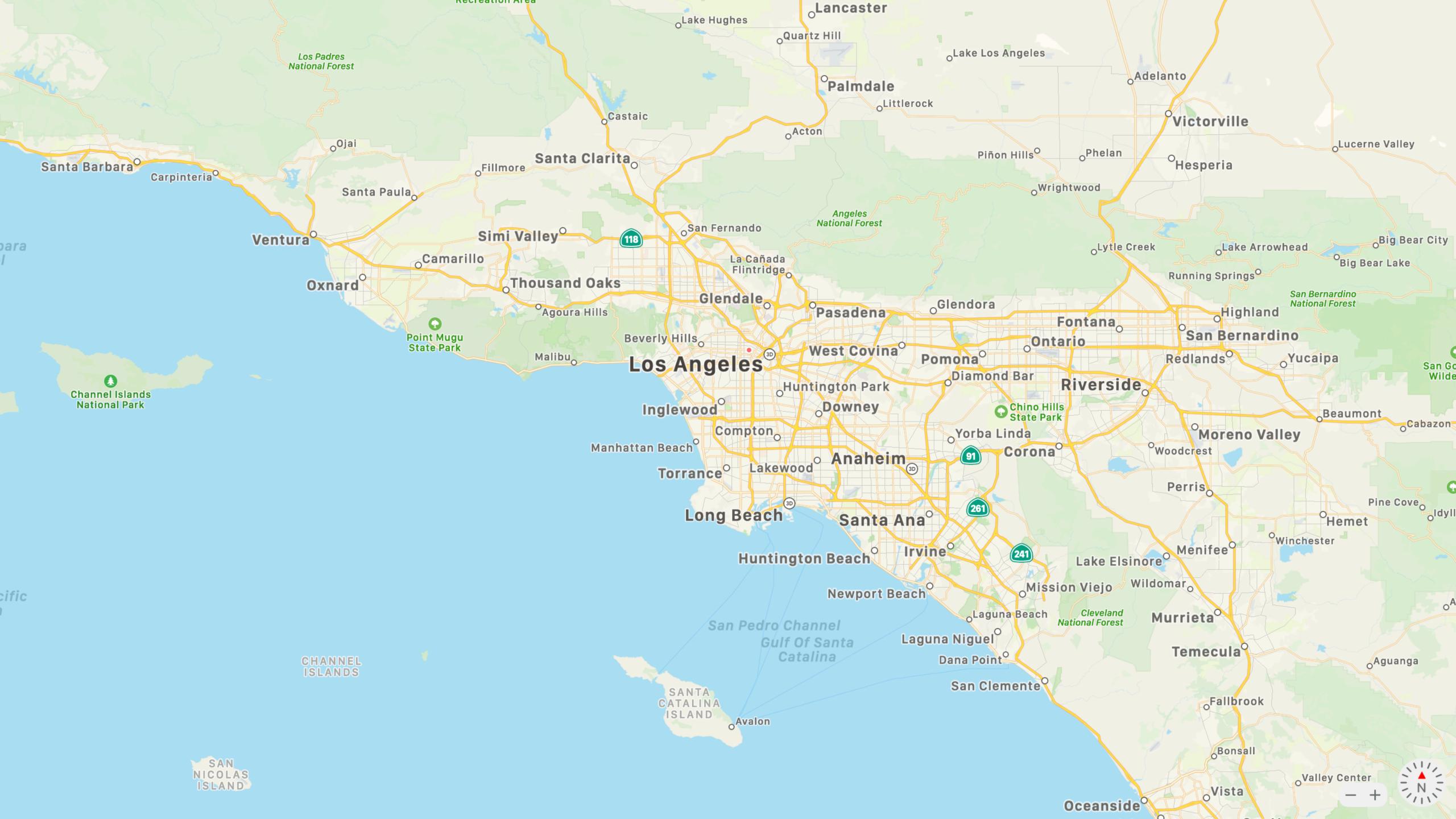
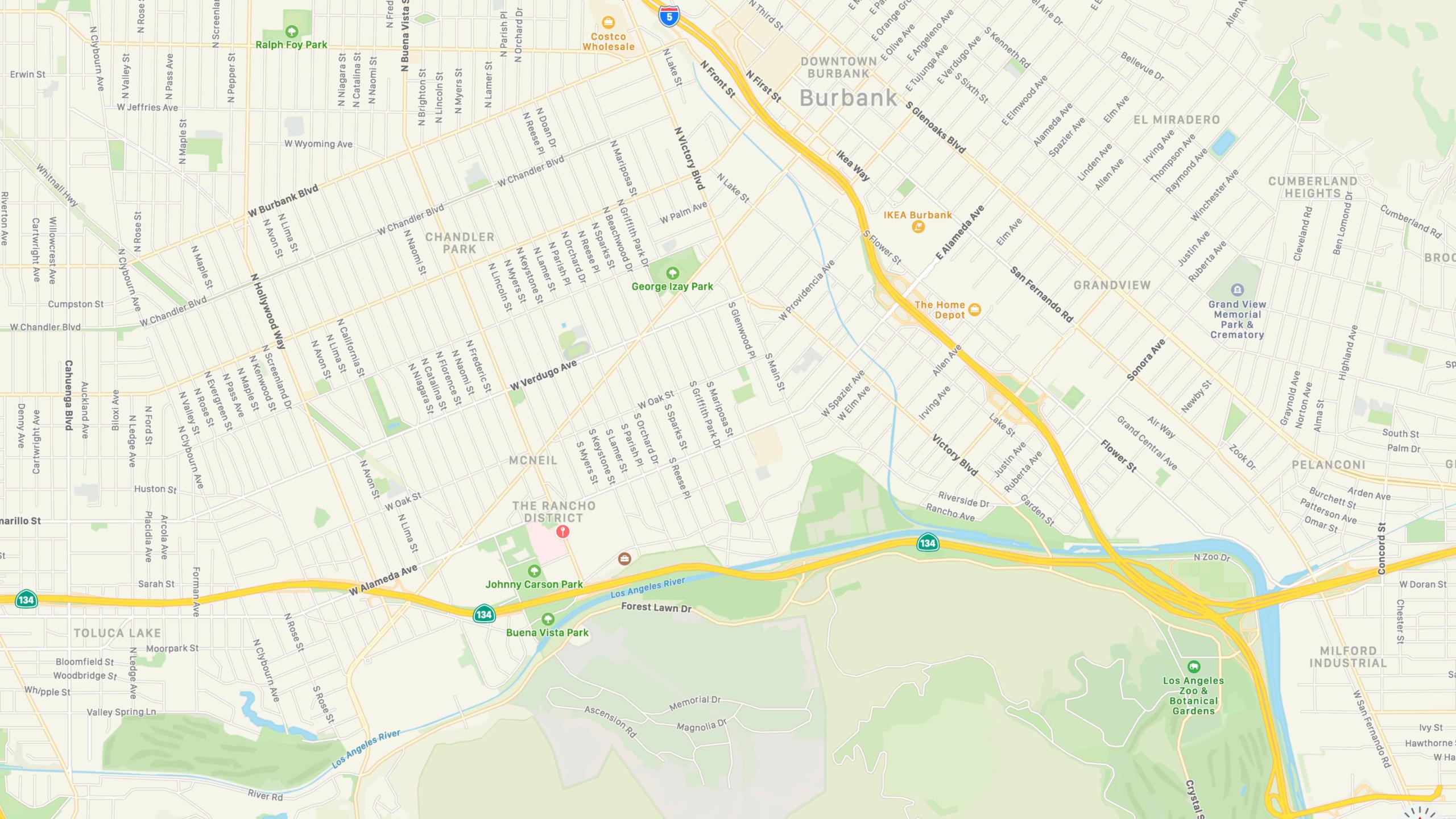
## Provisioning in a Pandemic

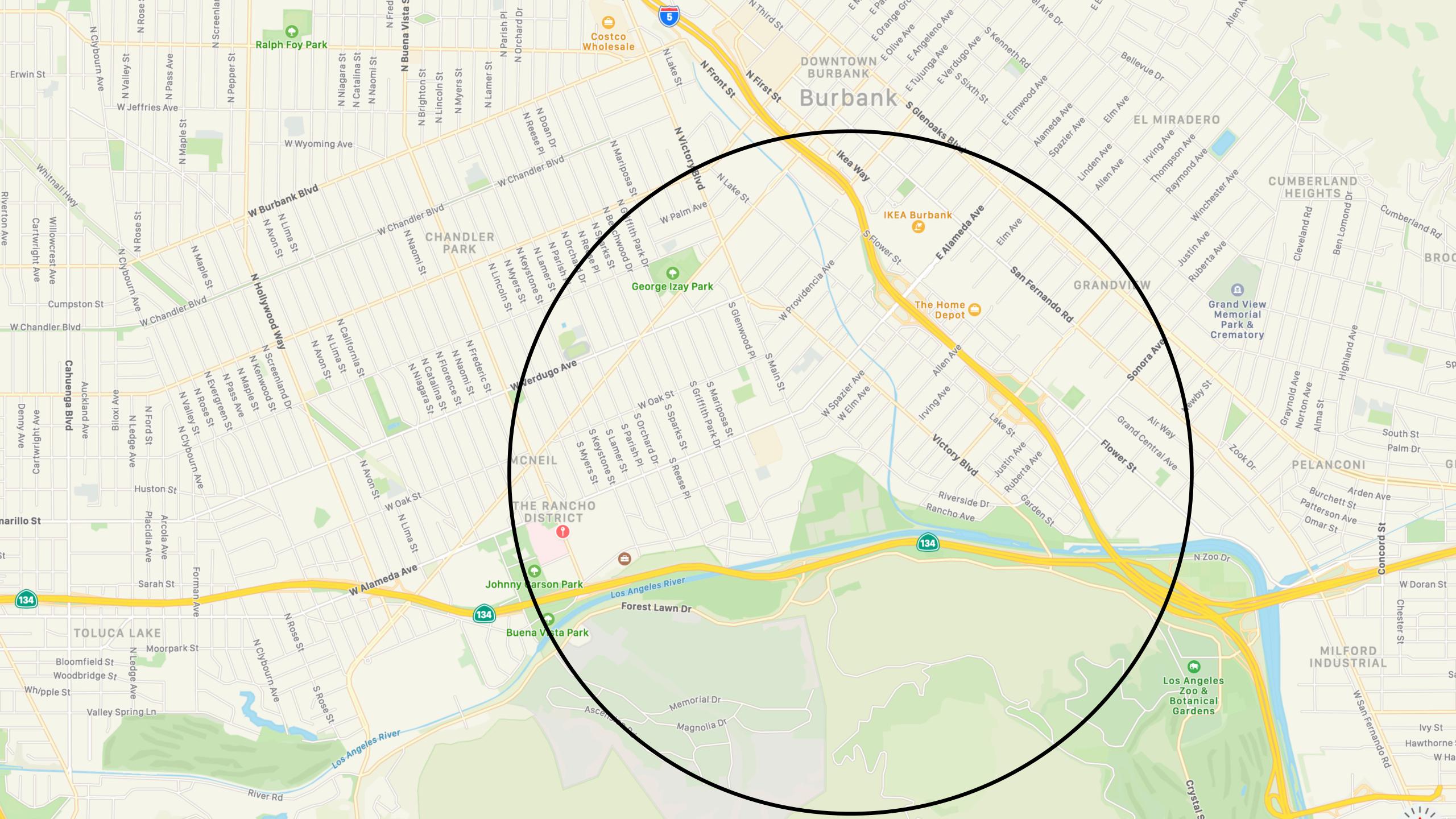
Deploying Macs for a Remote Workforce

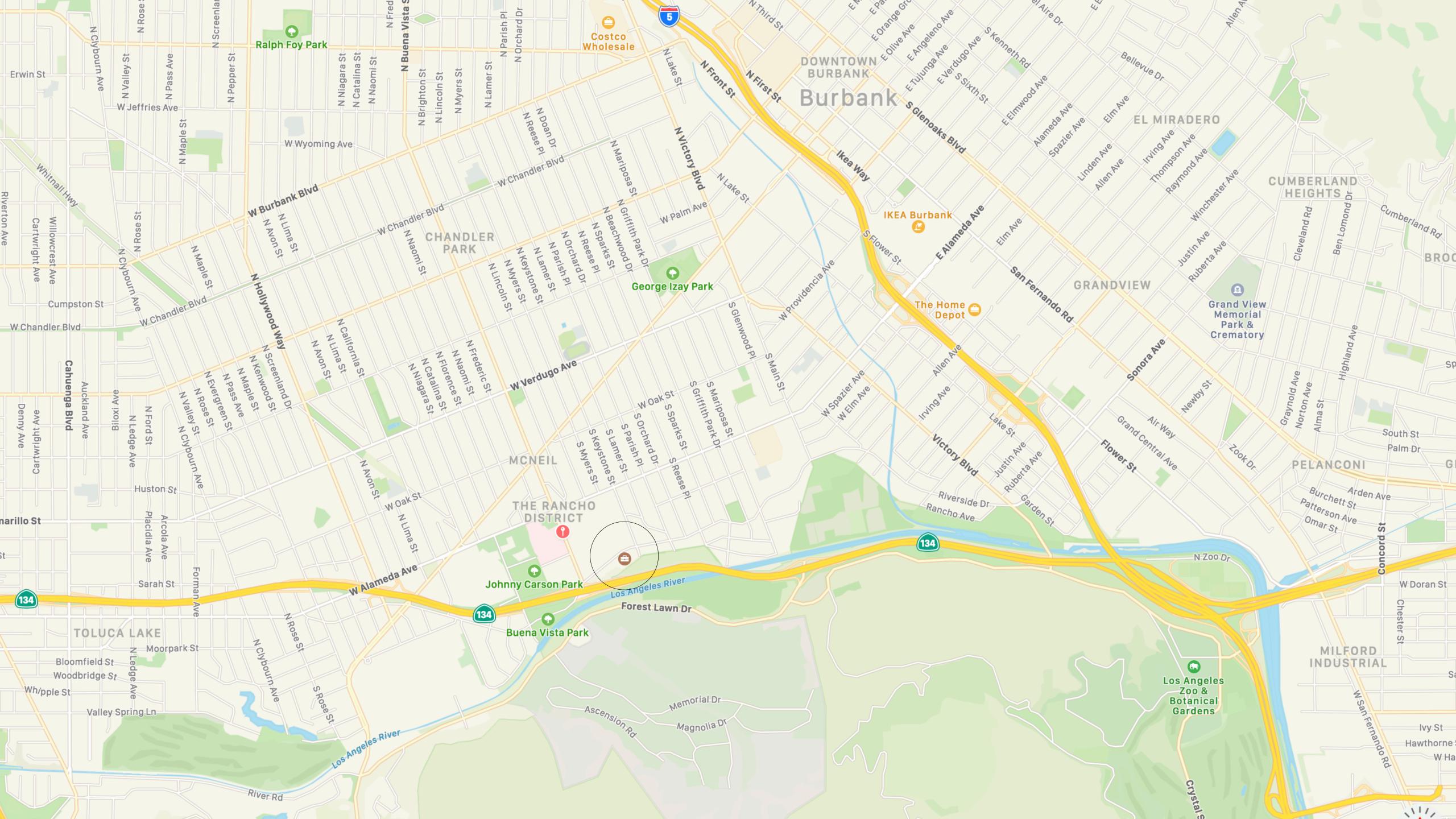


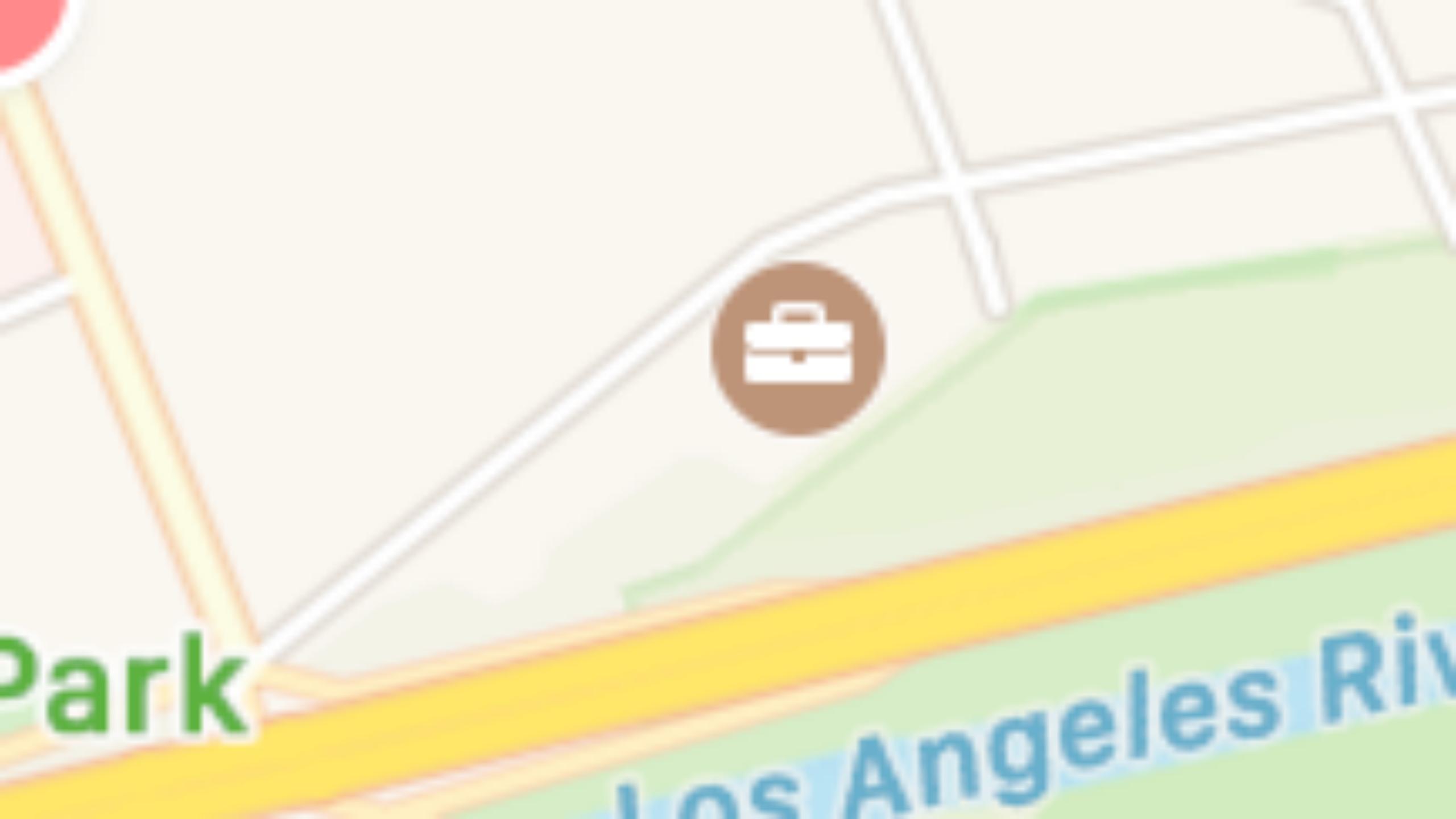


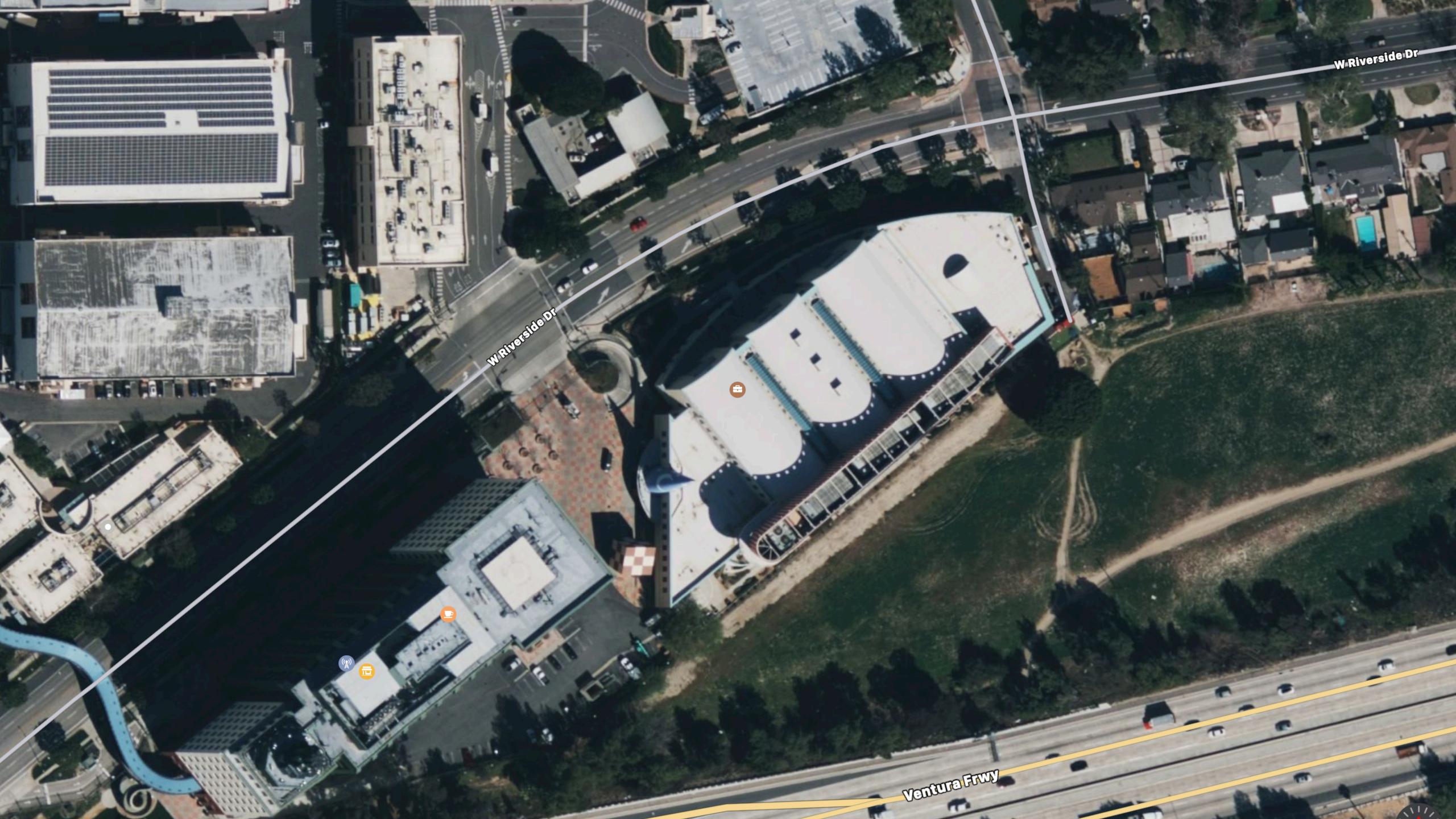






















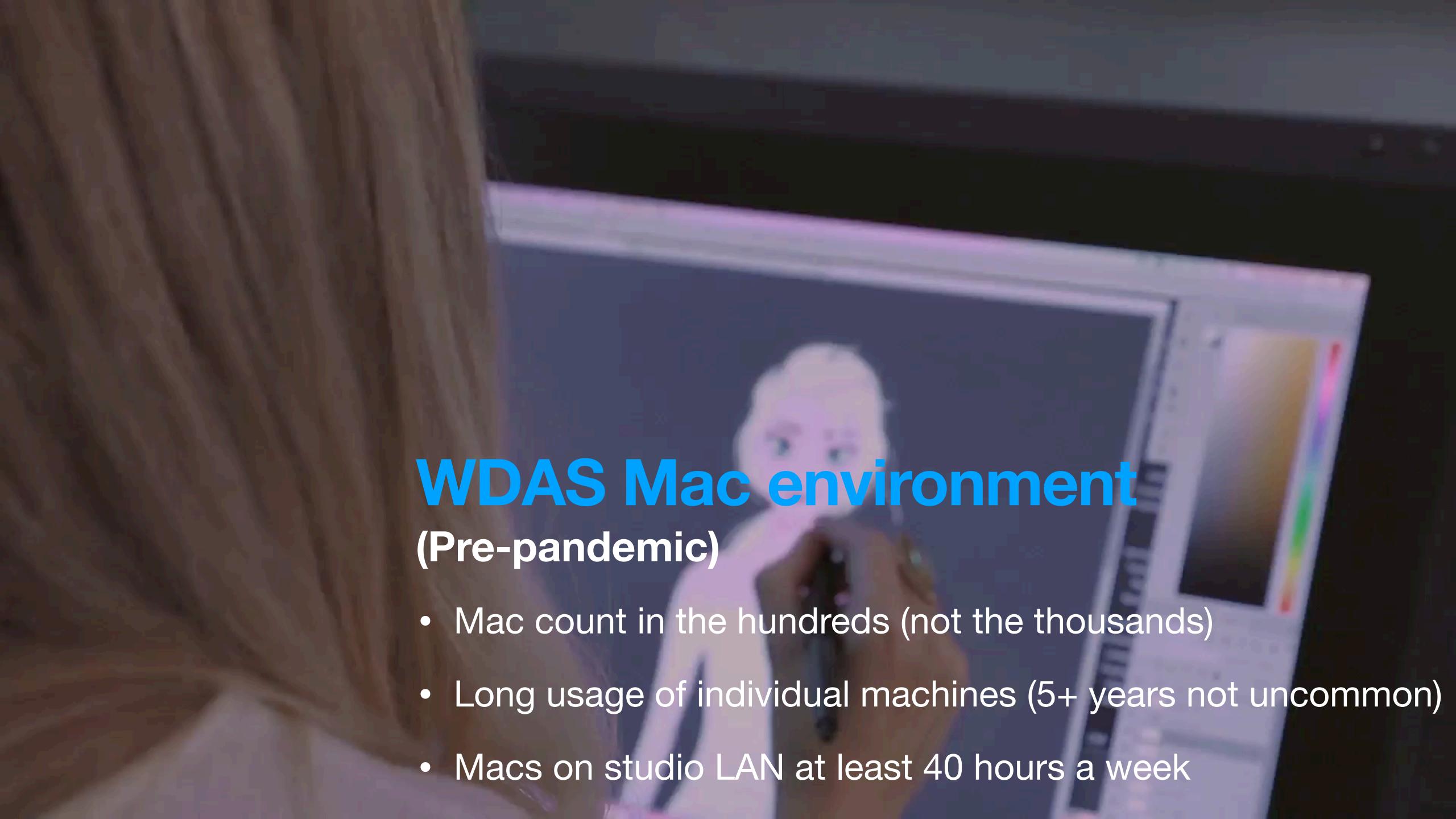


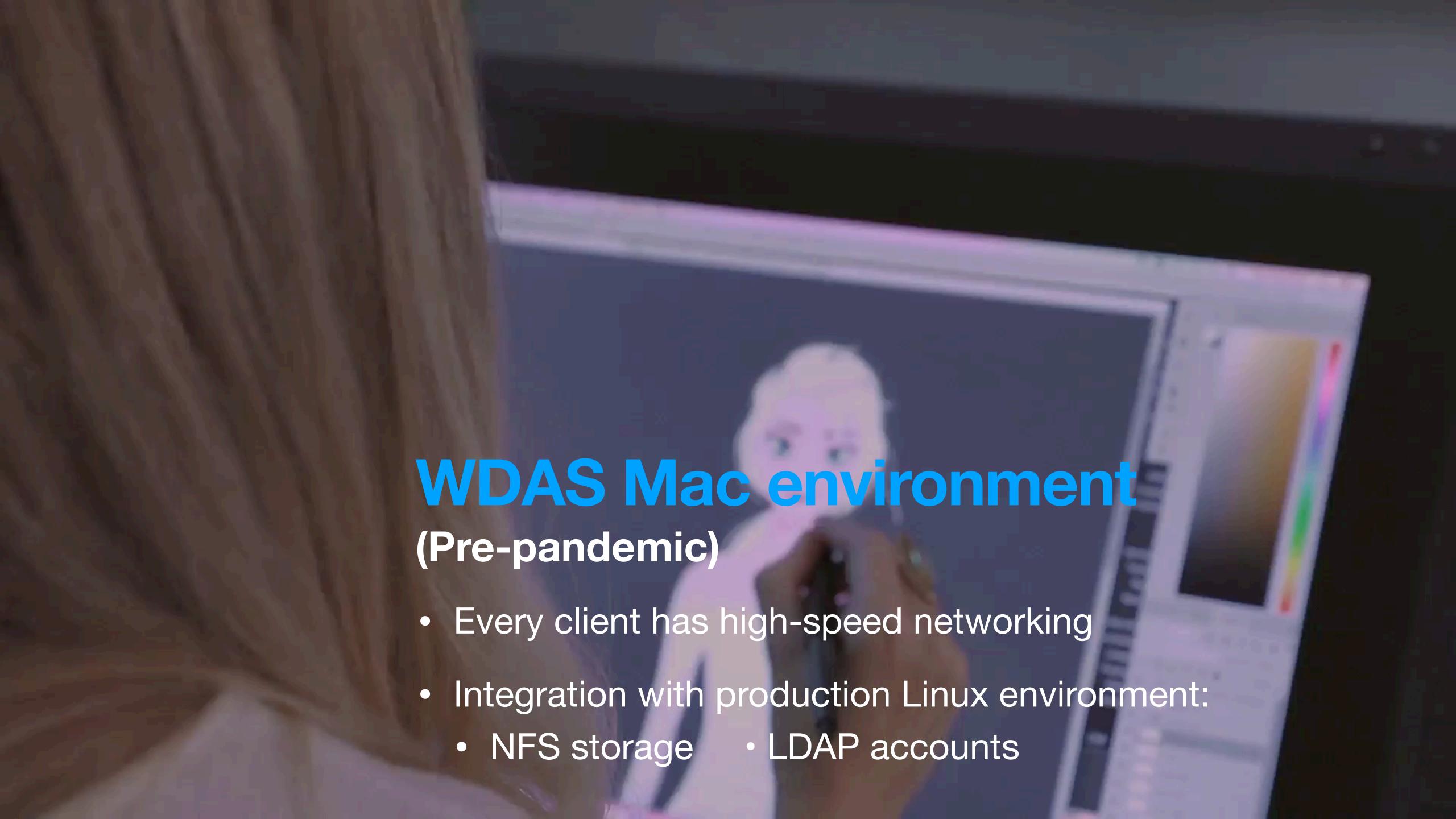


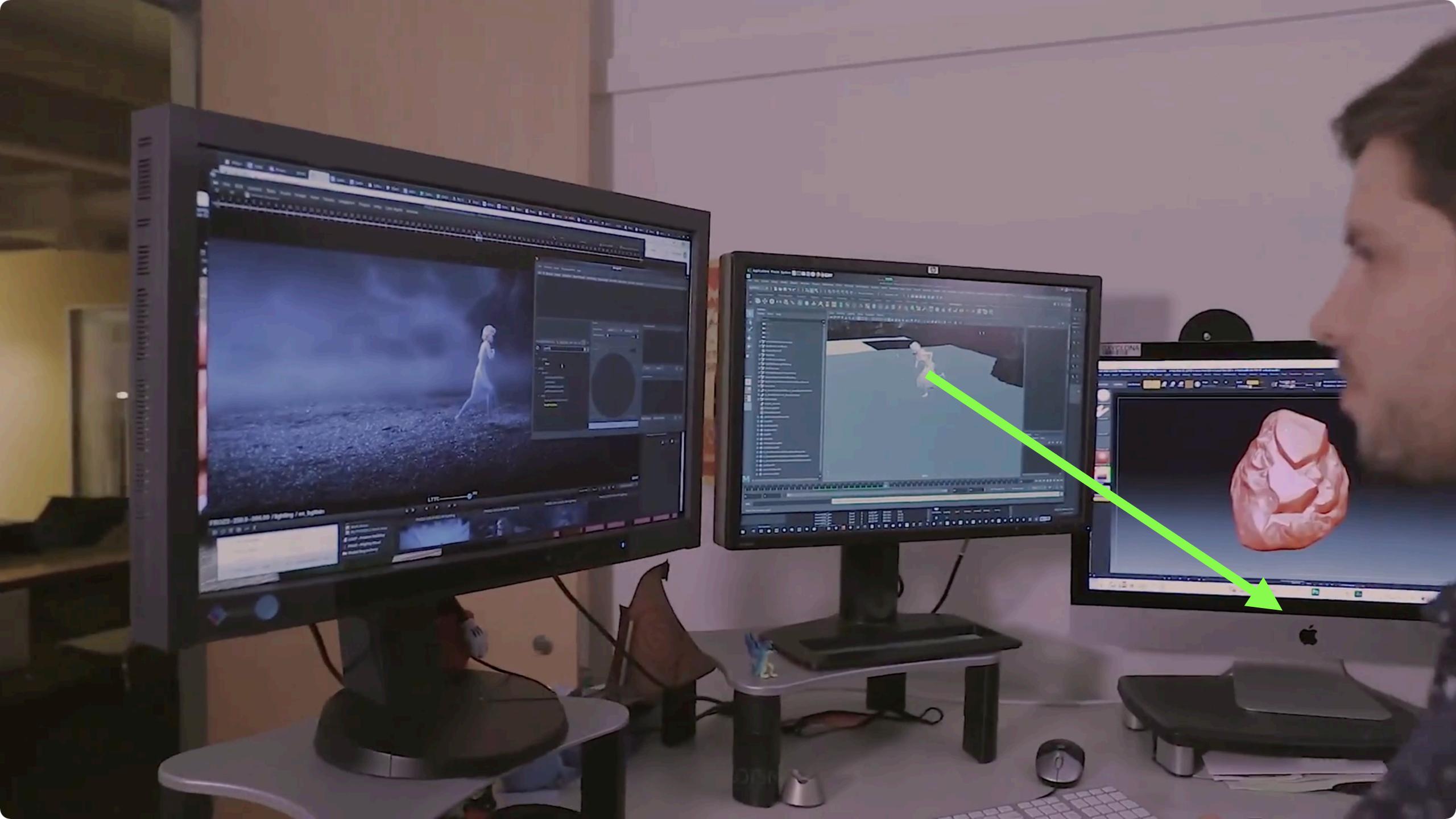


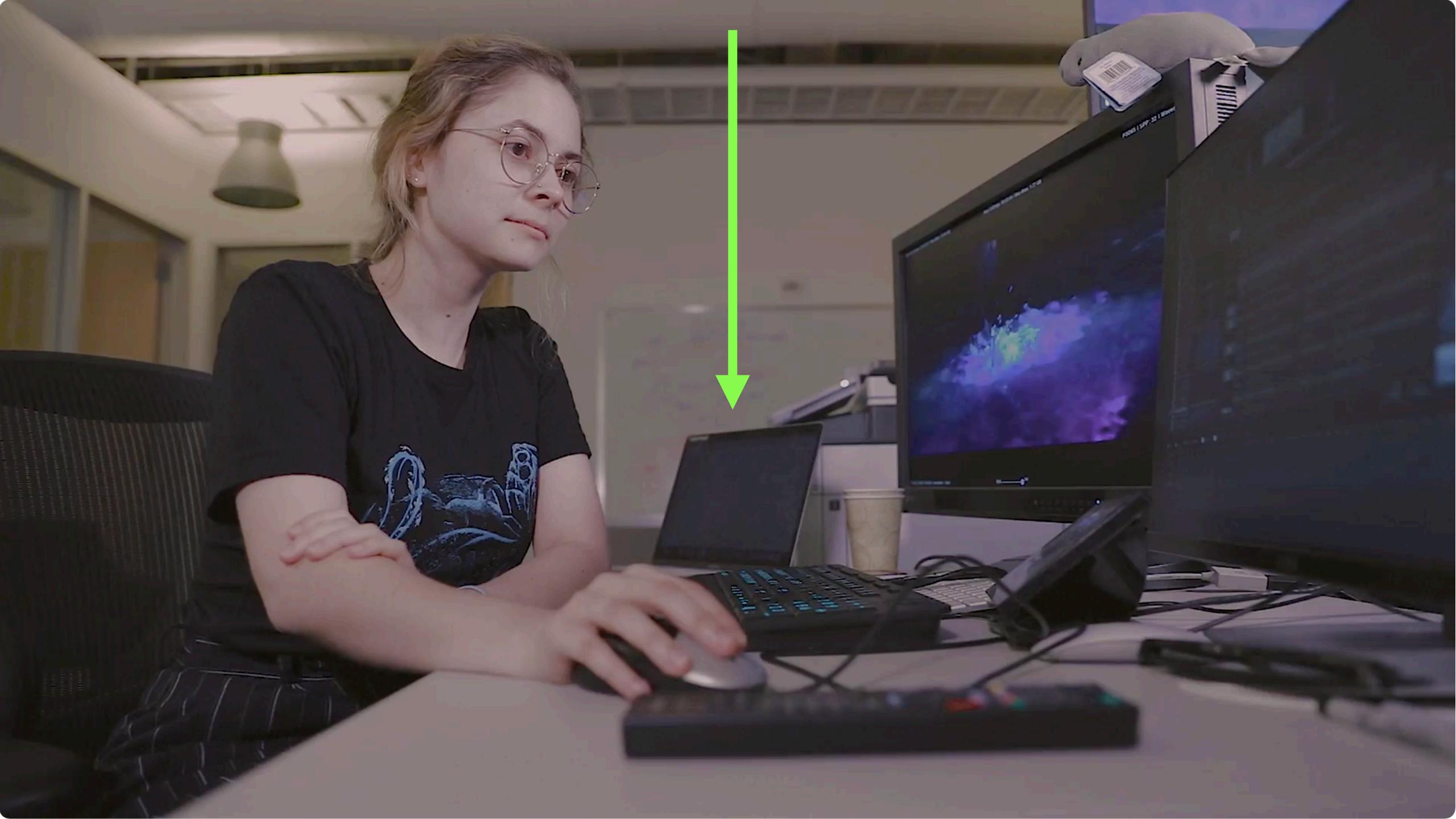


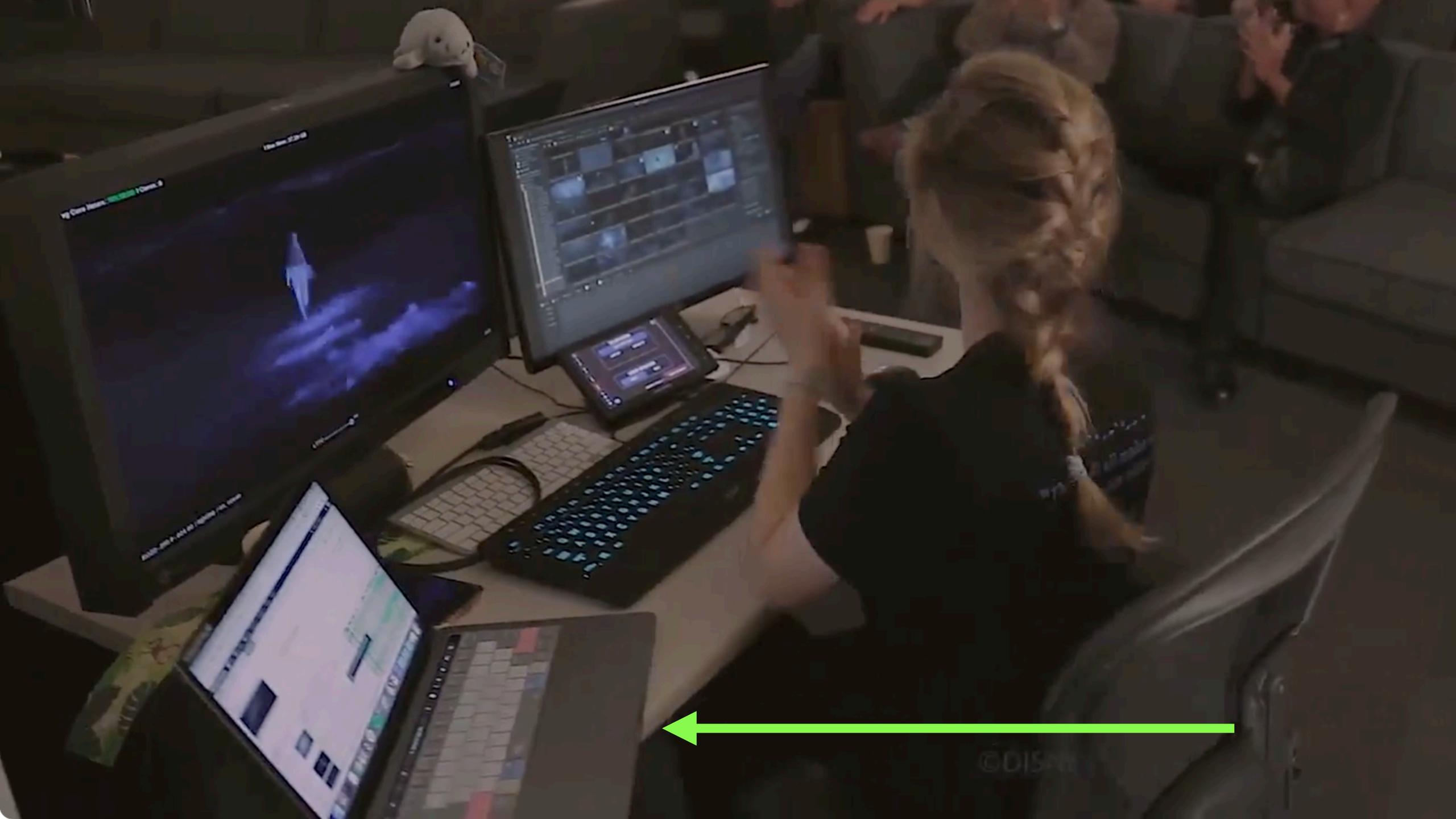












#### 2017 (and earlier)

- NetBoot
- Run Imagr and install a standard image:
  - macOS
  - Local admin account
  - Munki
- Munki takes over at first boot and installs 200+ packages

2017 (and earlier)

#### User experience:

- User gets Mac with all vital software installed and system services configured
- User logs in with their LDAP account and a local (mobile) account is created
- Custom app enforces FileVault and escrows PRK to an internal server
- User can get to work!

2017 (and earlier)

MDM? What for? Solves no problem for us.

#### Late 2017 developments

- Fall 2017: macOS 10.13 High Sierra ships
  - Kernel extension approval
  - UAMDM



#### Late 2017 developments

- Fall 2017: macOS 10.13 High Sierra ships
  - Kernel extension approval
  - UAMDM
- December 2017: iMac Pro ships with T2 chip
  - No NetBoot support
  - Imaging is (mostly) dead



# Setting up a Mac 2017 2018

- NetBoot
- Boot to Recovery
  - Use Bootstrappr to install "bootstrap packages":
     -or Use Installr to install macOS and bootstrap packages:
- Run Imagr and install a standard image:
  - macOS
  - Local admin account
  - Munki
- Munki takes over at first boot and installs 200+ packages





- Boot to Recovery
  - Use Boostrappr (github.com/munki/bootstrappr) to install "bootstrap packages":
     -or-

Use Installr (github.com/munki/installr) to install macOS and bootstrap packages:

- Local admin account
- Munki
- Munki takes over at first boot and installs 200+ packages

- Munki takes over at first boot and installs everything else
  - Most config profiles still delivered by Munki
  - Munki-installed pkg enrolls machine in MDM
  - Manual UAMDM approval



#### Late 2018 developments

- Fall 2018: macOS 10.14 Mojave ships
  - Privacy protections (limited) ("Full Disk Access")



#### 2019 – pretty much the same as 2018

- Boot to Recovery
  - Use Boostrappr (github.com/munki/bootstrappr) to install "bootstrap packages":
     -or-

Use Installr (github.com/munki/installr) to install macOS and bootstrap packages:

- Local admin account
- Munki
- Munki takes over at first boot and installs everything else



# Other Mac Engineering tasks 2019

- Expand use of MDM
- Port Munki GUI apps to Swift
- Port Munki CLI to Python 3
- Bundle Python 3 runtime with Munki

## 2019 developments

- Summer 2019: macOS 10.15 Catalina Developer Preview
  - Python and other scripting runtimes "deprecated"



## Scripting Language Runtimes

#### Deprecations

- Scripting language runtimes such as Python, Ruby, and Perl are included in macOS for compatibility with legacy software. Future versions of macOS won't include scripting language runtimes by default, and might require you to install additional packages. If your software depends on scripting languages, it's recommended that you bundle the runtime within the app. (49764202)
- Use of Python 2.7 isn't recommended as this version is included in macOS for compatibility with legacy software. Future versions of macOS won't include Python 2.7. Instead, it's recommended that you run python3 from within Terminal. (51097165)

### 2019 developments

- Fall 2019: macOS 10.15 Catalina ships
  - Python and other scripting runtimes "deprecated"
  - Privacy protections expanded to Desktop, Documents and more

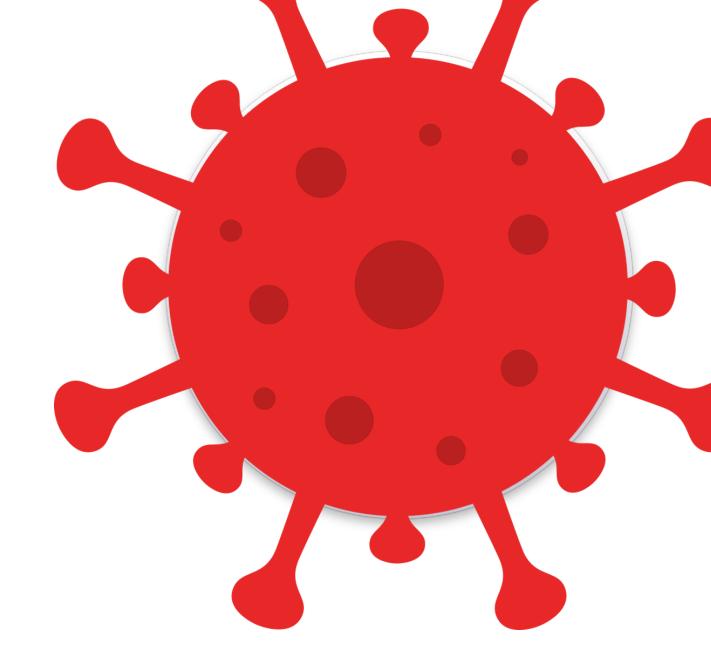


2020 – pretty much the same as 2019



2020 – pretty much the same as 2019

• Or so it seemed...



# 



## Los Angeles Times

# Disney postpones 'Mulan,' 'New Mutants' and 'Antlers' over coronavirus fears

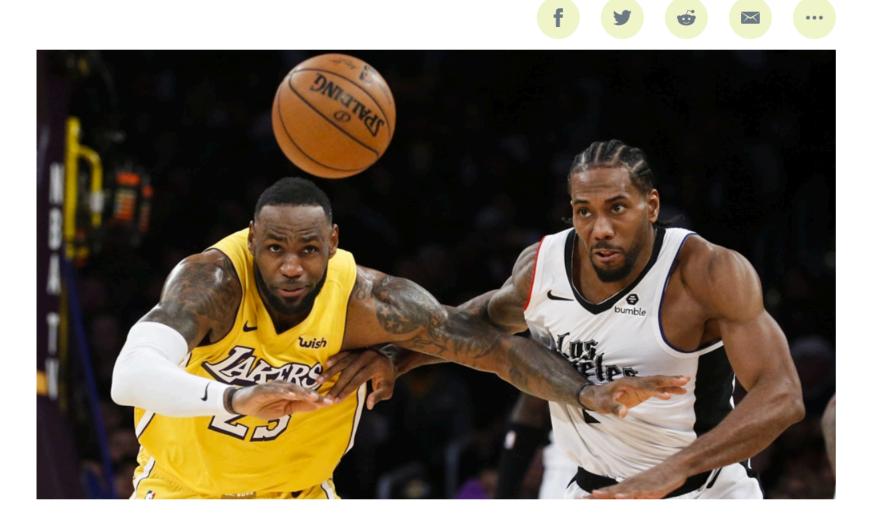


HOME > TV > NEWS

Mar 11, 2020 6:37pm PT

#### NBA Suspends Season Due to Coronavirus Pandemic

By Stuart Oldham ∨





# Disneyland, Disney World, Universal Studios Hollywood to Close Due to Coronavirus

Disneyland will shut down operations due to the coronavirus outbreak, The Walt Disney Co. announced Thursday. Hollywood

BY RYAN PARKER

MARCH 12, 2020 1:31PM



# March 13, 2020

Work from Home begins

# Environmental changes

#### Assumptions no longer true!

Almost everyone in a single building
 Employees spread all over

• <del>Virtually no long-term remote work</del> Everyone is remote

Macs on studio LAN at least 40 hours a week Might rarely connect to the studio LAN

• Every client has high speed networking Home internet connections

# "Might rarely connect to the studio LAN" Why?

- Not enough VPN capacity in early Spring 2020
  - So not everyone could connect even if they wanted to
- Could access some resources without VPN:
  - Email (Gmail) (and calendar)
  - Zoom/Bluejeans/etc
  - Slack
  - Jira
  - other stuff

In a work-from-home world

Need to be able to manage Macs that are not on the "corporate" network!

In a work-from-home world

#### **Early 2020:**

Deployment/management services only available on internal LAN:

- NetBoot
- Bootstrappr/Installr deployment disk images
- Reposado (Apple Software updates)
- Munki

In a work-from-home world

**Early 2020:** 

Deployment/management services available externally:

MDM

In a work-from-home world

#### Munki in the cloud

- We already had some services in AWS
- Graham Gilbert's Terraform modules for AWS at MacDevOps YVR 2019





# Building a Munki repo in 3 minutes with Terraform



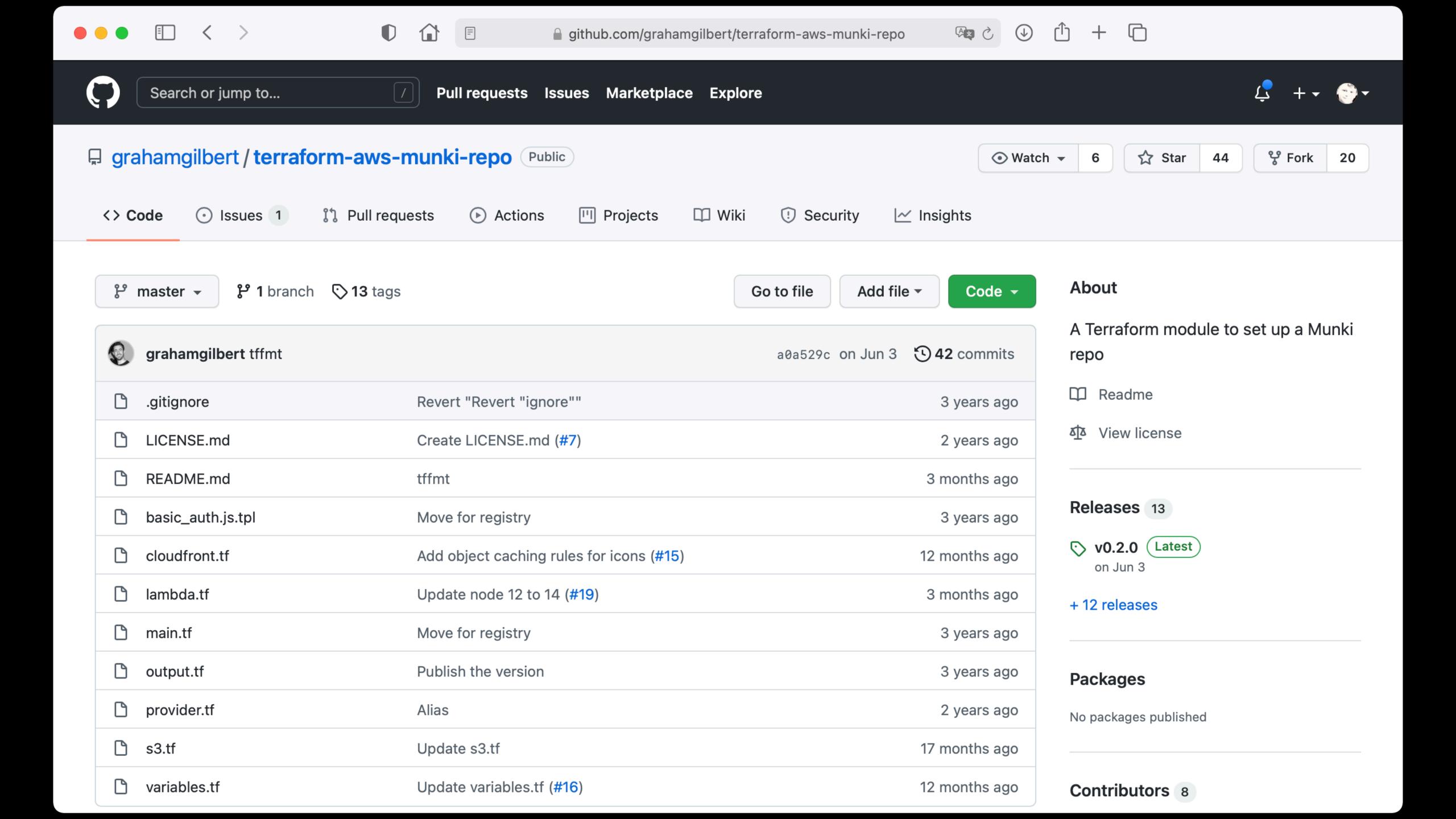
GRAHAM GILBERT • JUNE 14 2019 • MACDEVOPS:YVR

# MAV DD V V V

June 12-14, 2019 Vancouver, Canada MDOYVR.com



https://www.youtube.com/watch?v=Sr5-FoFLpnA



In a work-from-home world

#### Apple Software Update in the cloud

Just use Apple's service

In a work-from-home world

#### **Ongoing management:**

```
MDM
```

Munki ✓

Apple Software Update ✓

#### Initial setup and deployment:

?

# In the Before Times

#### Mac setup

- Boot to recovery
- Install Munki (and some other pkgs)
- Boot to "normal" OS
- Let Munki install everything else
  - (Includes LDAPv3 config and mobile account config)
- User gets fully configured machine:
  - Can log in with LDAP creds and a local account is created

# Company of the Compan

## Mac setup

- Boot to recovery
- Install Munki (and some other pkgs)
- Boot to "normal" OS
- Let Munki install everything else
  - (Includes LDAPv3 config and mobile a count config)
- User gets fully configured machine:
  - · Can log in with LDAP creds and a local account is created

    Doesn't work off Disney Animation network

All this we can do in advance at the studio, then ship the machine

In the New Reality

In a work-from-home world

# Initial deployment/setup without NetBoot or access to internal disk images

- Use DEP/ADE-triggered setup:
  - ABM/DEP/ADE causes enrollment in our MDM
  - MDM installs Munki (and config profiles)
  - Munki installs all other software

# Company of the second of the s

# In the New Reality

## Mac setup

- Boot to recovery
- Install Munki (and some other pkgs)
- Boot to "normal" OS
- Let Munki install everything else
  - (Includes LDAPv3 config and mobile account config)
- User gets fully configured machine:
  - Can log in with LDAP crods and a local account is created
     Doesn't work off Disney Animation network

- · Boot new OS
- · Use DEP/ADE to envoll in MDM
- · MDM installs Munki

# In the New Reality

#### Mac setup

- How to let users create own account?
  - Must have correct UNIX shortname and UID and GID
  - Bonus: with LDAP password (less confusing)

In a work-from-home world

#### Pre-pandemic

Deployment/management services available externally:

- MDM
- Okta

# 

# In the New Reality

#### Mac setup

- How to let users create own account?
  - Must have correct UNIX shortname and UID and GID
  - Bonus: with LDAP password (less confusing)





#### Cloud-based LDAP authentication

Eliminate the need for a local LDAP authentication with the LDAP Interface. Direct your existing LDAP-dependent applications to Okta using standard LDAP protocols. Then users can authenticate against Universal Directory secured by MFA.





#### **Jamf Connect Administrator's Guide**

Version 1.18.1 | Other Versions

- > Preface
- > Release Notes
- > Overview
- Integrating with an Identity Provider

Integrating with Google Identity

Integrating with IBM Cloud Identity

Integrating with Microsoft Azure AD

#### **Integrating with Okta**

Integrating with OneLogin

Integrating with PingFederate

**Jamf Connect Configuration** 

- Jamf Connect Login
- > Jamf Connect Sync
- Jamf Connect Verify
- > Troubleshooting

Jamf Connect Administrator's Guide 1.18.1 / Integrating with an Identity Provider

#### Integrating with Okta

#### Overview

Jamf Connect authenticates Okta users directly to your domain using Okta's authentication API. No changes are required to enable cloud authentication within the Okta admin dashboard.

Integrating Okta with Jamf Connect involves the following steps:

- 1. Enable Okta authentication.
- 2. (Optional) Integrate Jamf Connect with OpenID Connect (OIDC).
- 3. Configure and deploy Jamf Connect.

#### Step 1: Enabling Okta Authentication

Although no changes are required to enable functionality within the Okta admin dashboard, you must modify Jamf Connect Login to use Okta's Authentication API rather than OpenID Connect authentication.

Do one of the following to enable Okta authentication:

- Change the Jamf Connect Login package name to include "okta". This will automatically run the authchanger to enable Okta authentication.
- Manually execute the following command with the authchanger:

/usr/local/bin/authchanger -reset -0kta

For more information about executing commands with the authchanger, see authchanger.



#### Reimagine your Loginwindow

NoMAD is great for keeping your local Mac user account in sync with AD, but wouldn't it be awesome if the accounts started out in sync? NoMAD Login provides this, and more, by allowing for AD logins on macOS without the need to bind to Active Directory.

NoMAD Login is an open source app that has many features, including:

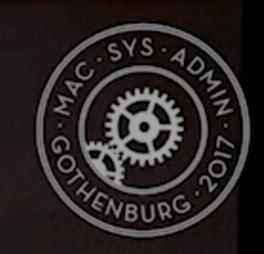
- AD login authentication without binding to AD
- Just-in-time local user creation
- Demobilization of cached AD mobile accounts
- First login FileVault with MDM key escrow support on High Sierra
- Customizable login UI

Support Plans and Implementation support available.

Learn more and download a copy of NoMAD Login here.

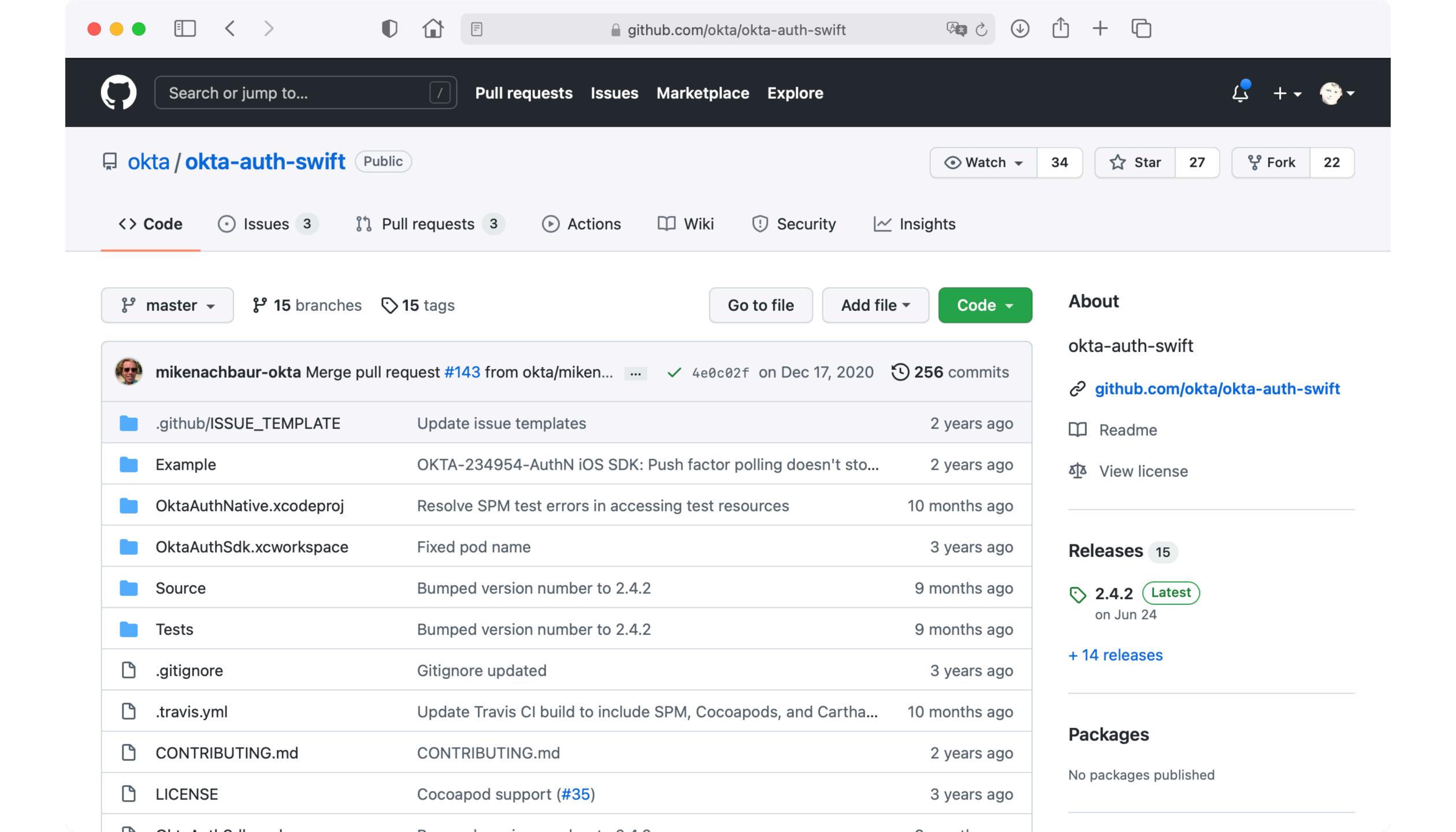
Contact us for information on discounts for purchasing support for NoMAD with NoMAD Login.

# NoMAD Login









#### Welcome to Disney Animation!

This assistant will help you create an account on this Mac for use at Walt Disney Animation Studios.

You'll need to connect to a network with access to the Internet, and you'll need your Disney Animation Okta credentials to proceed.

Help is available from the Disney Animation Help Desk at (1997)



Continue

#### Disney Animation Okta Login



Please log in using your Disney Animation Okta credentials.

If you do not have these credentials, please contact the Help Desk.

Username: gneagle

Password:



Login

#### Select an Authentication Factor:



Okta Verify Push to Greg Neagle's iPhone

Okta Verify code

Phone call to +1 XXX-XXX-2495



Cancel

#### Push request sent!



Waiting for push confirmation...





Cancel

#### **Authentication Successful!**

Getting information about your account...





Continue

#### Disney Animation Setup Complete

All setup tasks complete.

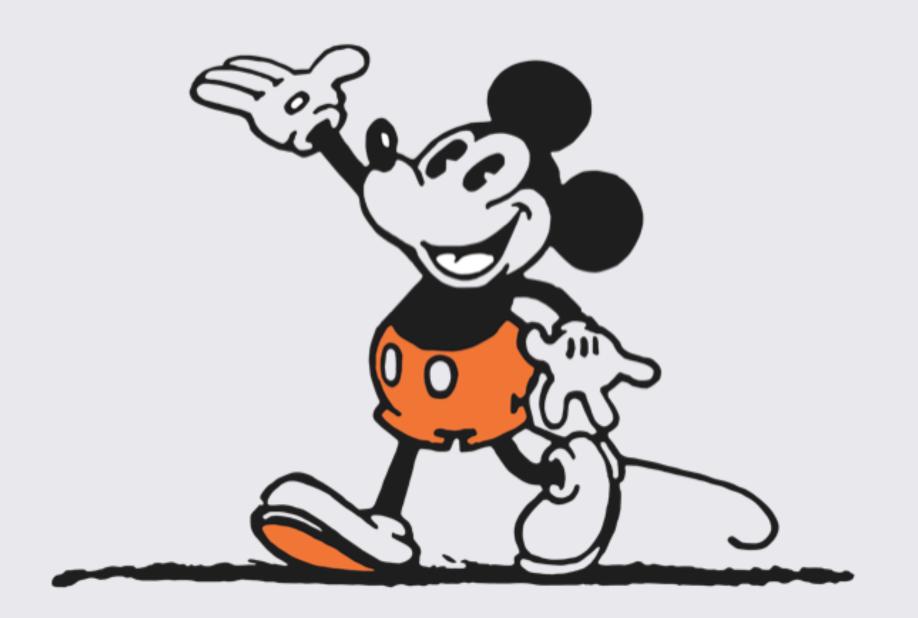
- Set machine name: Done.
- Create user account: Done.
- Create user home: Done.
- Update enrolled MDM user: Done.



Continue

#### Setup Finished

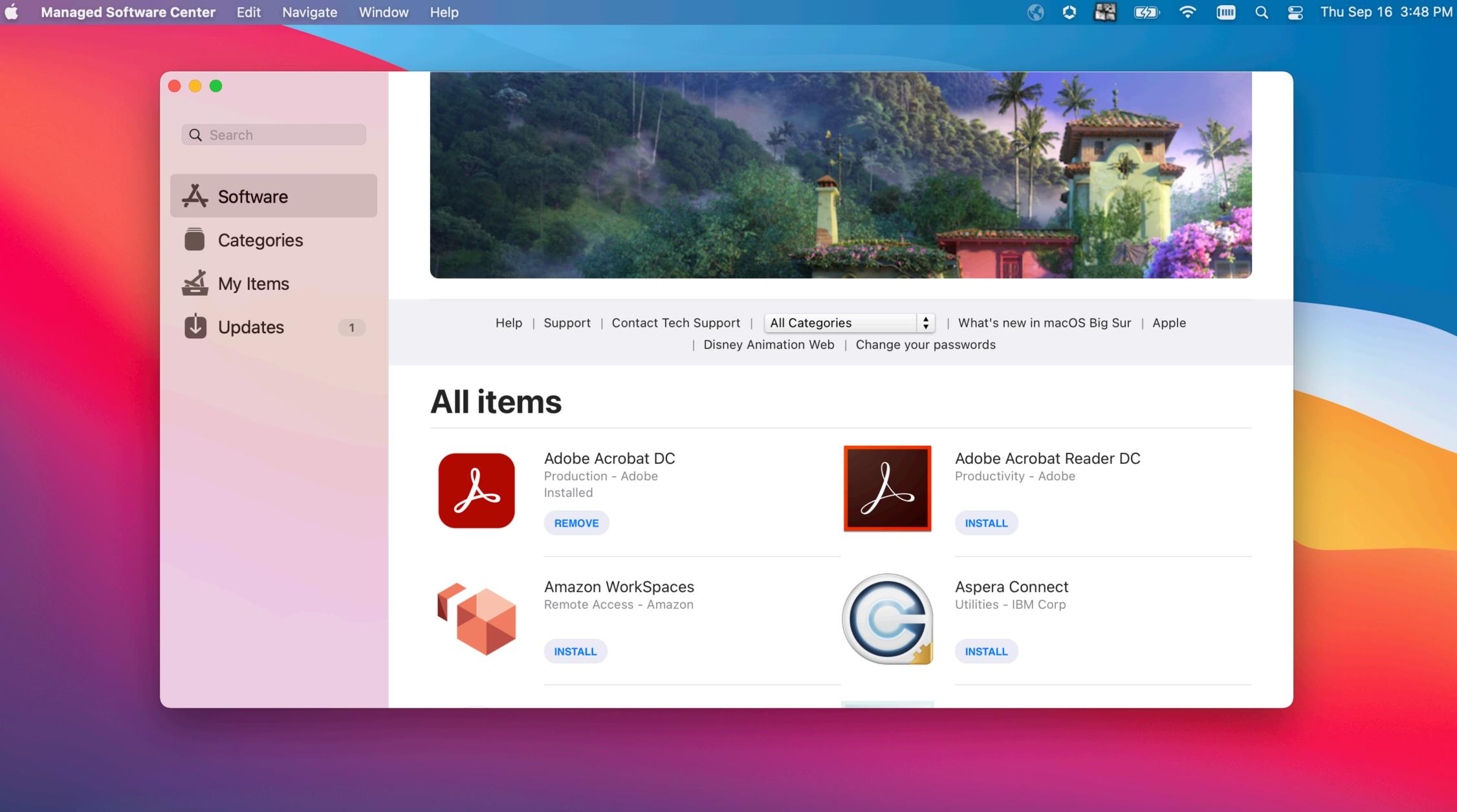
You may now log into your new Mac using your Disney Animation credentials.





Done







































# New Mac setup workflow

#### Big Sur+

- Make sure Mac is assigned "Automatic Mac Deployment" deployment profile in MDM
- Boot Mac
- Apple's Setup Assistant launches
- Mac checks for DEP/ADE enrollment and enrolls in MDM and auto-advances through setup
- MDM installs local admin account. Local account creation is suppressed.
- MDM installs Munki

# New Mac setup workflow

#### Big Sur+

- Setup Assistant exits and Mac drops to loginwindow
- Munki starts installing everything assigned in the machine's manifest
  - Includes Disney Animation Setup Assistant
- Munki finishes; Disney Animation Setup Assistant launches
  - Either: shutdown and ship to user
  - Or user continues with user creation

## New Mac setup workflow

#### Deployment alternatives

#### **Alternative #1:**

- Use new DEP/ADE setup workflow on workbench at the studio
- Run until Disney Animation Setup Assistant launches
- Shut Mac down and ship to user

More reliable.
User can get to work
Sooner.

#### **Alternative #2:**

- Ship unconfigured Mac to user
- User boots Mac
- DEP/ADE setup workflow sets up Mac

Less technician work.

More risk of failure.

User has to wait longer to get to work.

### ABM/DEP/ADE MDM bits

Are there enough acronyms?



#### **Applications**

Native

Web

Access Policies

macOS

Overview

Details

Logging

Application Setting

Books

Orders

All Apps & Books Set

#### Edit Application - munkitools-5.5.0.4362

Internal | ❷ Status: Active | Managed By: WDAS | Application ID: munkitools-5.5.0.4362.pkg | App ...

Files Images

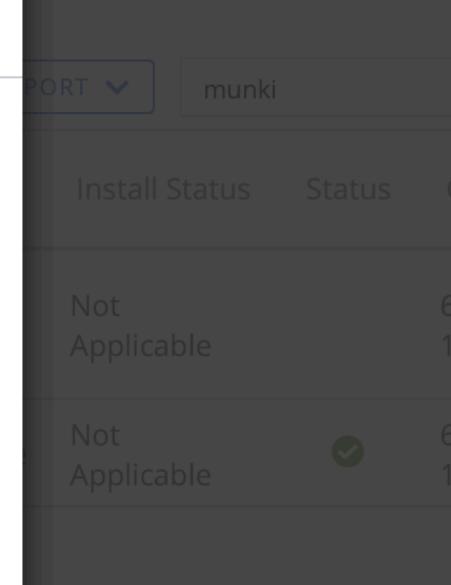


#### Bootstrap Package

Distribution installer packages installed immediately on enrollment (macOS 10.12.6+)

SAVE & ASSIGN

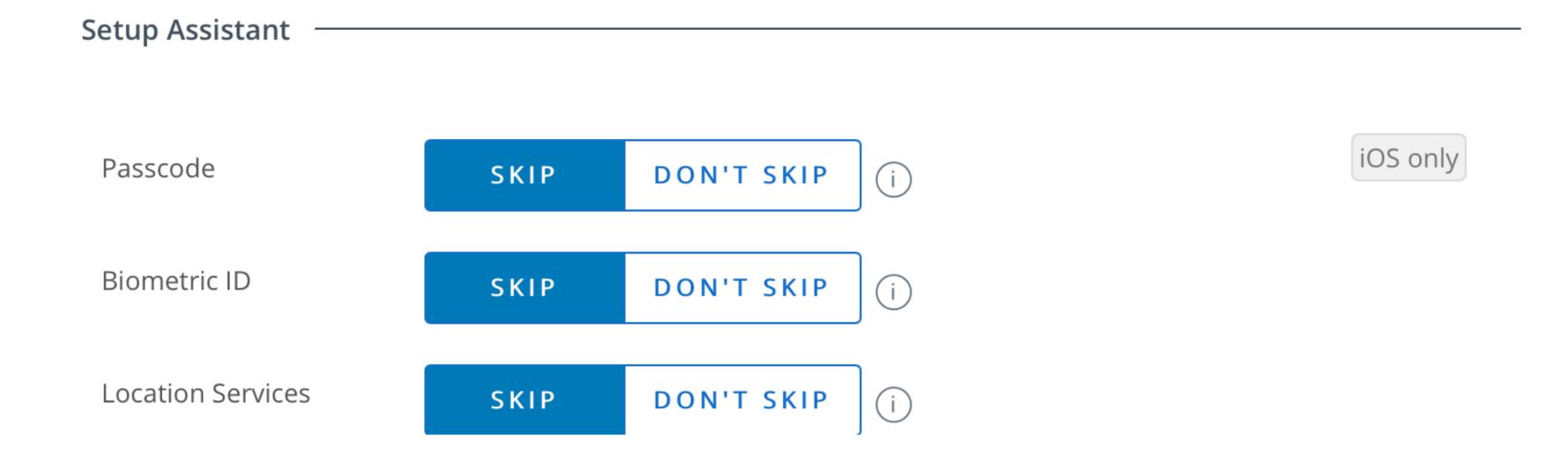
CANCEL



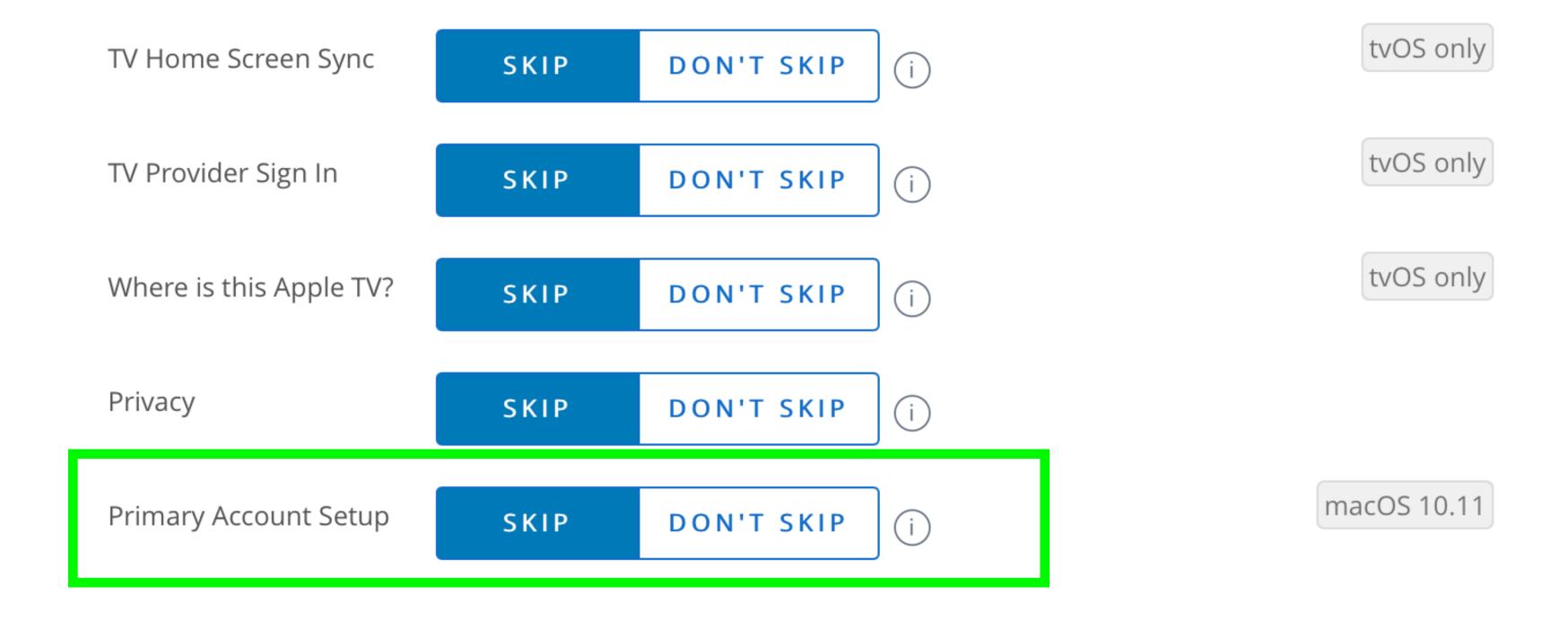
Edit Profile X



macOS and tvOS only



Edit Profile X



**Primary User Account** 



Disney Animation Setup Assistant





Setup Assistant

#### Create a Computer Account

Fill out the following information to create your computer account.

Full name:	Johnny Appleseed		
Account name:	japple		9
This will be the name of your home folder.			
Password:	•••••	•••••	
Hint:	optional		

# jamf CONNECT

••••••
Sign In





Network Connection



## More potential alternatives

Cloud-based login and account provisioning

- JumpCloud <a href="https://jumpcloud.com">https://jumpcloud.com</a>
- OneLogin <a href="https://www.onelogin.com">https://www.onelogin.com</a>
- Credentia <a href="https://www.credentia.app">https://www.credentia.app</a>
- there are probably more...

# Demo

# Recap

## Recap

#### (here's what you can tell your boss)

#### Pre-pandemic:

- Most Disney Animation Macs in a single building
- Most provisioning and management tools worked only on the internal LAN
- Provisioning required manual technician effort (NetBoot, booting to Recovery)

#### Now:

- Disney Animation Macs can be anywhere with Internet access
- Management tools available in "the cloud" (MDM, Munki-in-AWS)
- Provisioning based on ABM/DEP/ADE
- Can (optionally) ship unconfigured Macs directly to users

# The Enc

And everyone lived happily ever after