Management Through Automation

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Automated User Based Deployment

- This workflow automatically deploys an application to a specific group of people
- The deployment is based on a user group that lives in Microsoft Entra
- The group can only be modified by specific people
- A script takes care of processing the group membership and makes changes to the Jamf server using the Jamf API

Goal

- The goal is to fully automate the deployment of a security tool to people who need to have it
- Aids in automating compliance
- Helps automate a process for our security team
- It reduces time needed to get the tool to the right people through manual scoping

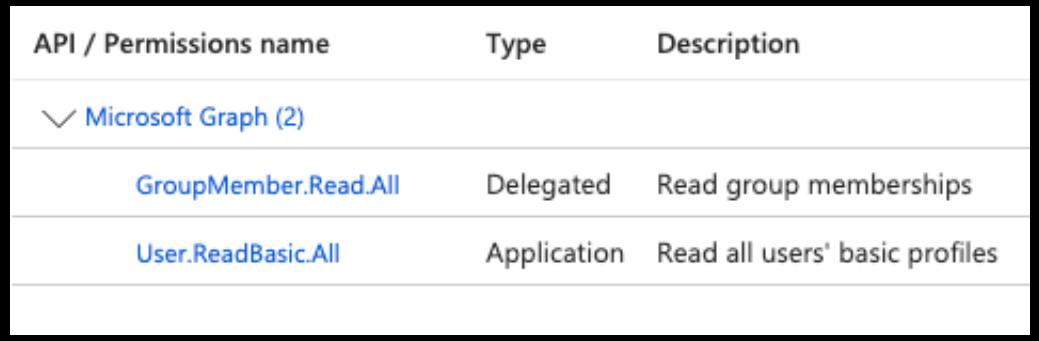
What is the tech stack?

- Microsoft Entra
- Microsoft Entra Graph API
- Jamf server
- Jamf Pro API
- Shell
- Github Actions
- Python (will hopefully be an alternative soon)

What to Build

Enterprise App Registration

- App must have the appropriate API permissions
- You may need to talk to your Microsoft Entra admin
- Test that it works

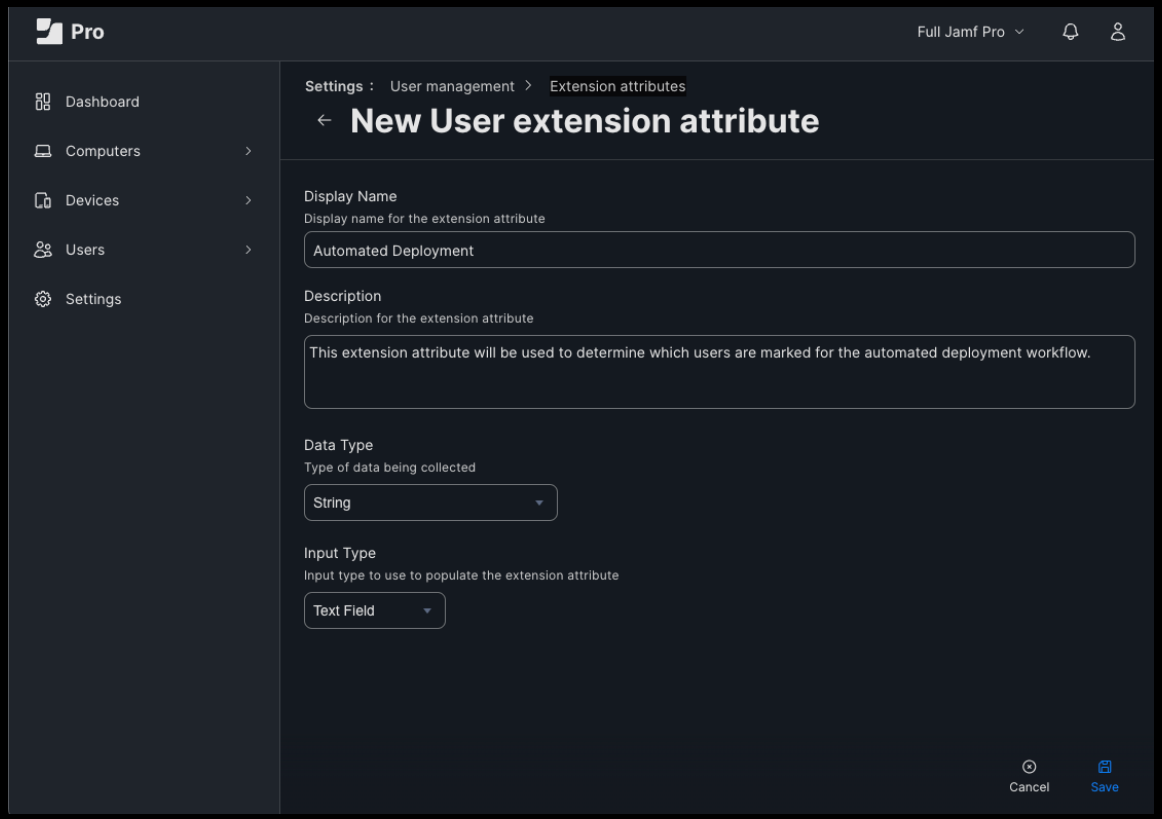


API / Permissions name	Type	Description
Microsoft Graph (2)		
GroupMember.Read.All	Delegated	Read group memberships
User.ReadBasic.All	Application	Read all users' basic profiles

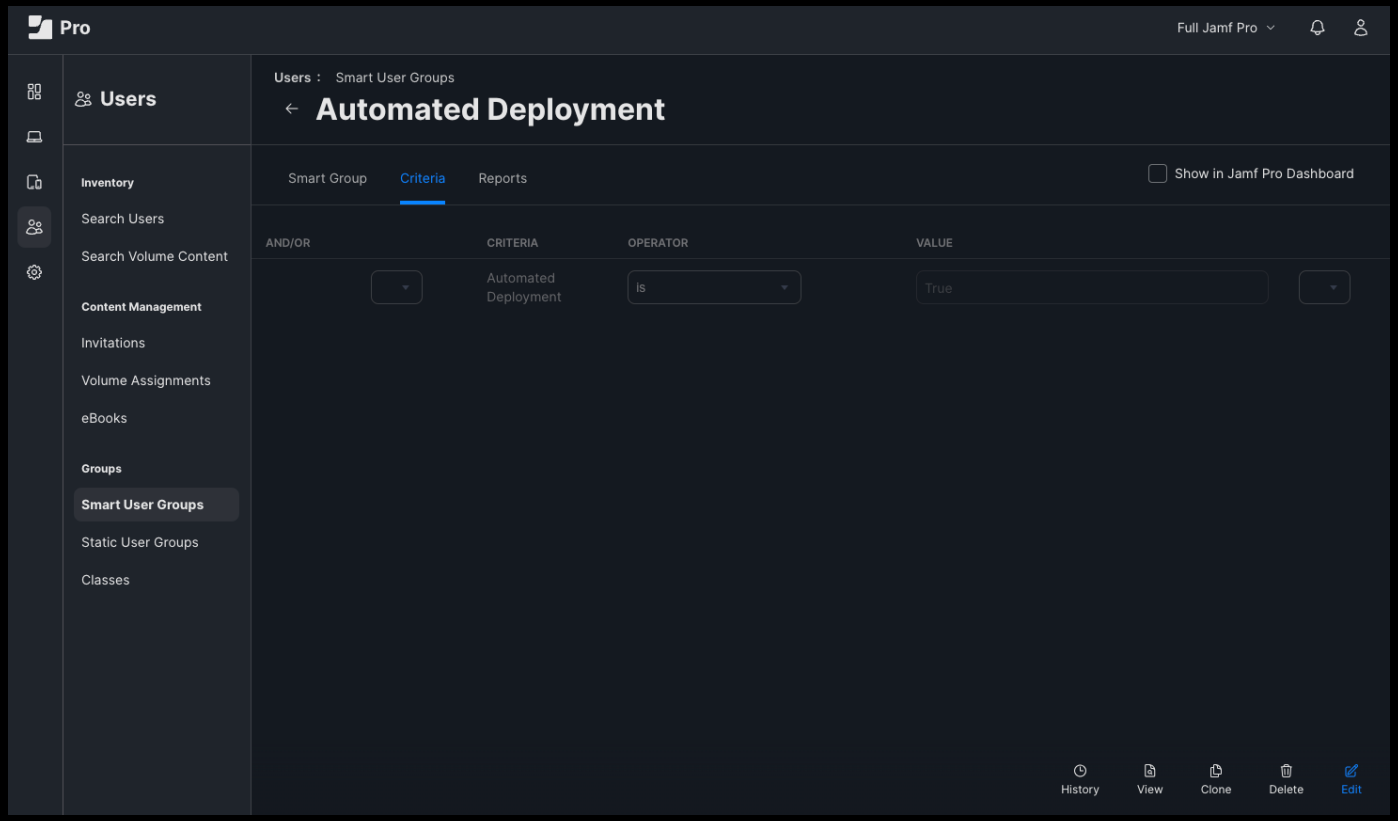
Entra Security Group

- A group in Microsoft Entra
- This group will be the one read by the Enterprise App we created in the previous slide
- This group will be the source of truth for the deployment
- Group membership can be automated as well

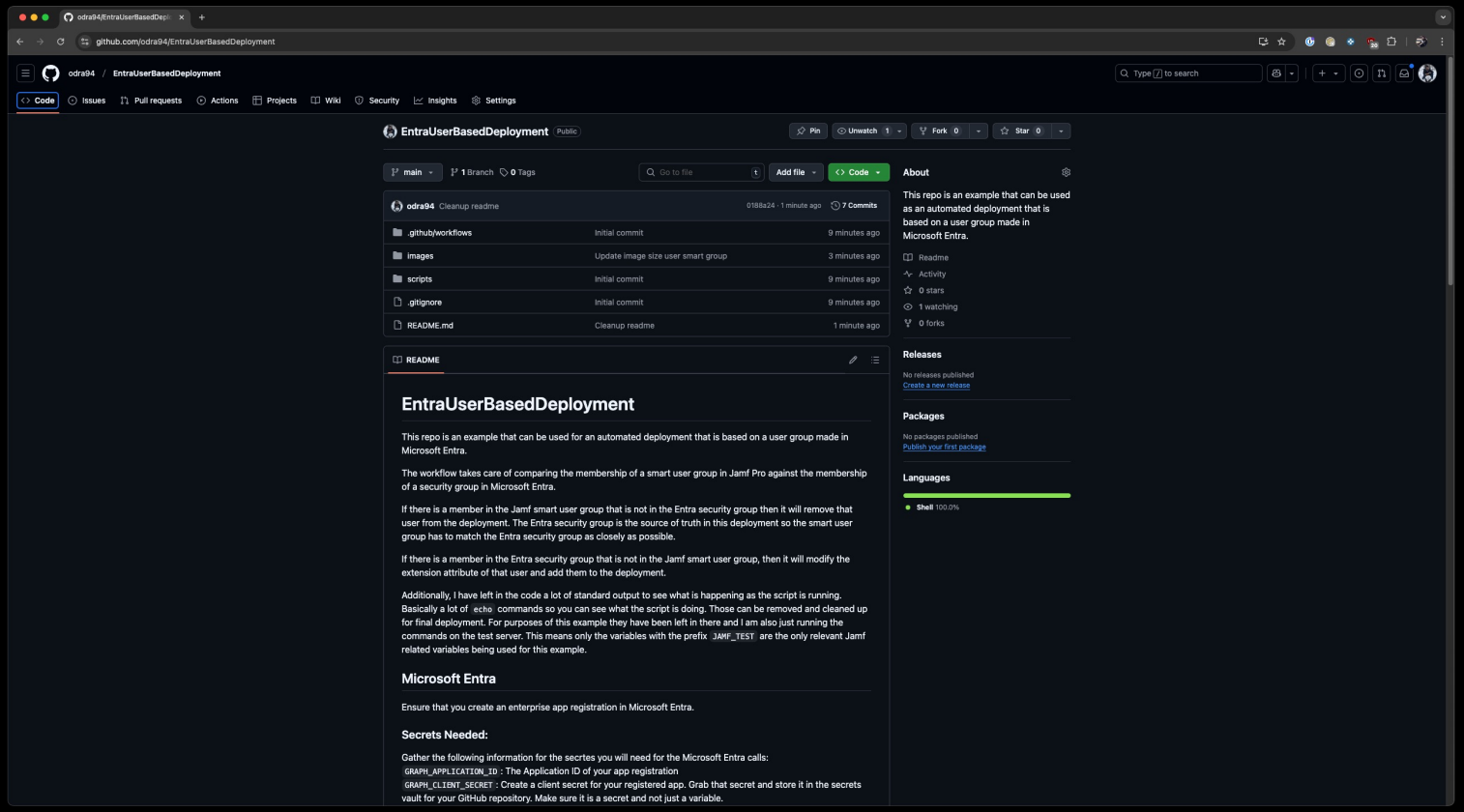
User Extension Attribute



Smart User Group



GitHub Repository

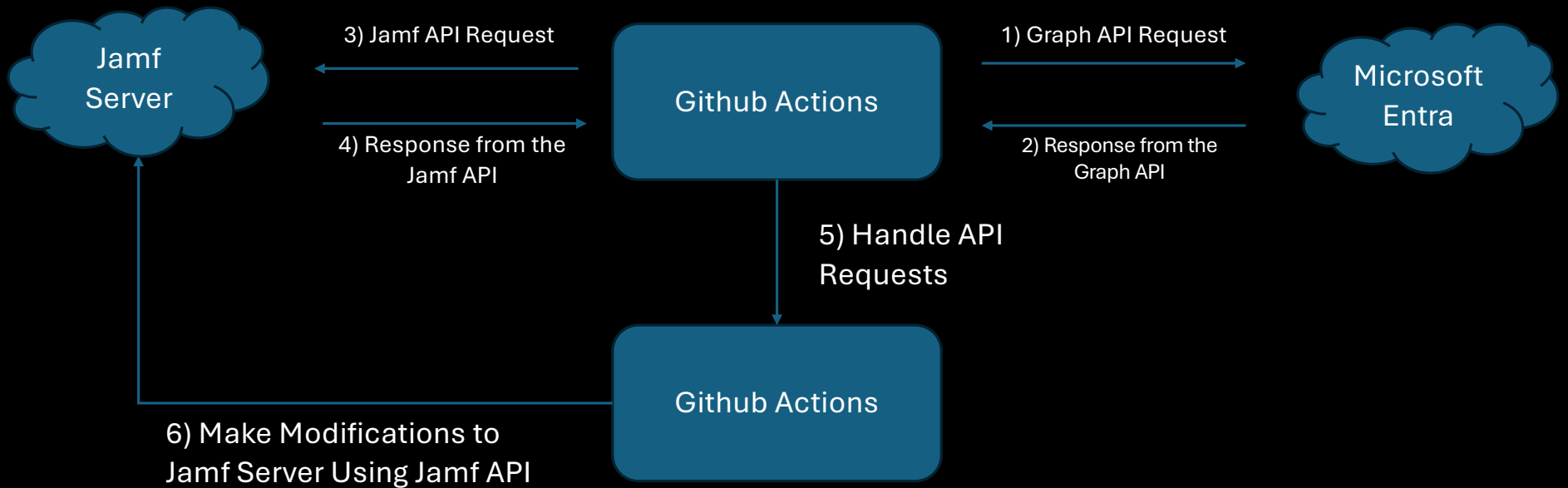


https://github.com/odra94/EntraUserBasedDeployment

Considerations

- Processing only the necessary users
- Reducing the number of API calls that need to happen to reduce load on servers
- Reduce script run time as much as possible
- Keep the workflow scalable and efficient

Workflow


Jamf Server
3) Jamf API Request
4) Response from the Jamf API
Github Actions
1) Graph API Request
2) Response from the Graph API
Microsoft Entra
5) Handle API Requests
Github Actions
6) Make Modifications to Jamf Server Using Jamf API

Removing a User From The Deployment

jamf_output.txt

```
johndoe@email.com
mike@email.com
jimothy@email.com
bob@email.com
```

Compare Files

graph_output.txt

```
johndoe@email.com
mike@email.com
bob@email.com
```

```
❯ diff jamf_output.txt graph_output.txt
3d2
< jimothy@email.com
```

Adding a New User To The Deployment

jamf_output.txt

```
johndoe@email.com
mike@email.com
bob@email.com
```

Compare Files

graph_output.txt

```
johndoe@email.com
mike@email.com
jimothy@email.com
bob@email.com
```

```
❯ diff jamf_output.txt graph_output.txt
2a3
> jimothy@email.com
```

What is Next for this Deployment?

- Defining an established interval to run this workflow based on the security team's needs
- Developing a Python version of this script that is compatible with Microsoft Entra (Azure Functions) or AWS (Lambda)
- Automating the population of the Entra security group
- Automating the removal of the application that was deployed once a user is no longer in scope
- More robust error handling

ReEnroll – Automated Re-Enrollment

- This workflow is designed to automate the re-enrollment process of devices into Jamf Pro
- The deployment is based on Jamf smart groups
- The Jamf smart groups are based off management accounts and extension attributes
- The script uses Jamf API to send commands and gather device inventory information

ReEnroll – Goals

- The goal is to automate the process of re-enrolling a device in Jamf Pro
- Verify the enrollment process is complete and communicating with the Jamf server
- Verify if the LAPS enabled account exists and is valid
- Using swiftDialog, keep the end user informed on the process

What is the tech stack?

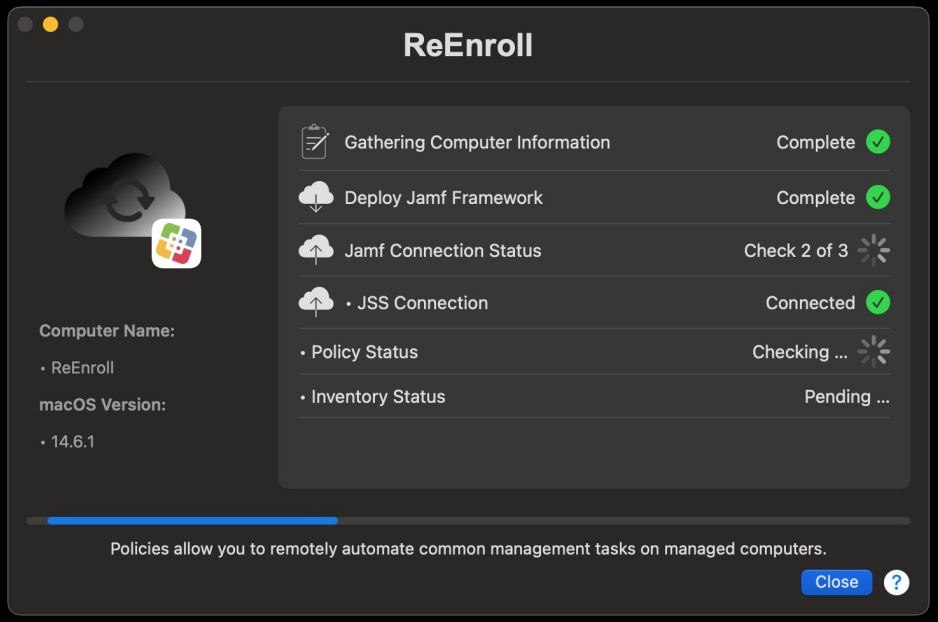
- Jamf Pro server
- Jamf Pro API
- Shell
- swiftDialog

How ReEnroll Works?

- **Enrollment Phase**
  - Gather device information using Jamf API
  - Deploy Jamf Management Framework, Enrollment Invitation, or Profiles Renew – Enrollment command
- **Verify Jamf Communications**
  - Check JSS connection
  - Policy Check-In
  - Inventory Update
- **Validate Jamf LAPS Account**
  - Check for LAPS account
  - Verify LAPS password

End-User Experience

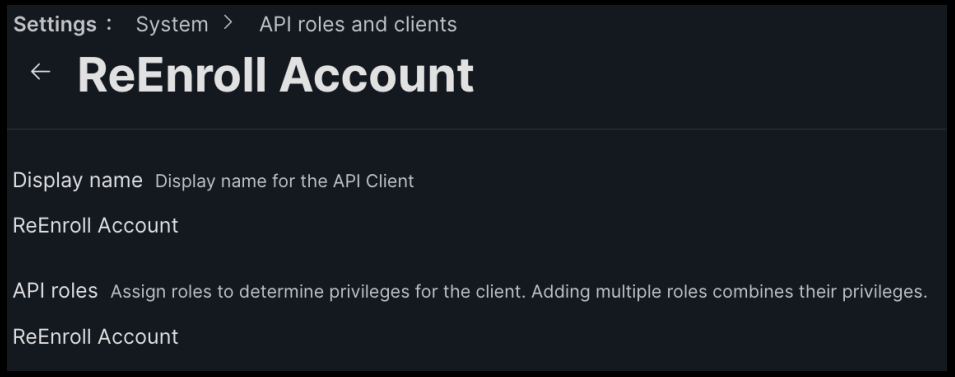
- **Interactive**
  - **A swiftDialog window will be displayed with progress and information on the workflow**
- **Silent**
  - **The workflow will run silently in the background to not disturb the end-user**



What to Build

Jamf API Account

- Jamf API account must have the appropriate API permissions
- Depending on what workflow you want to accomplish
- You can have more or less API permissions based on your needs



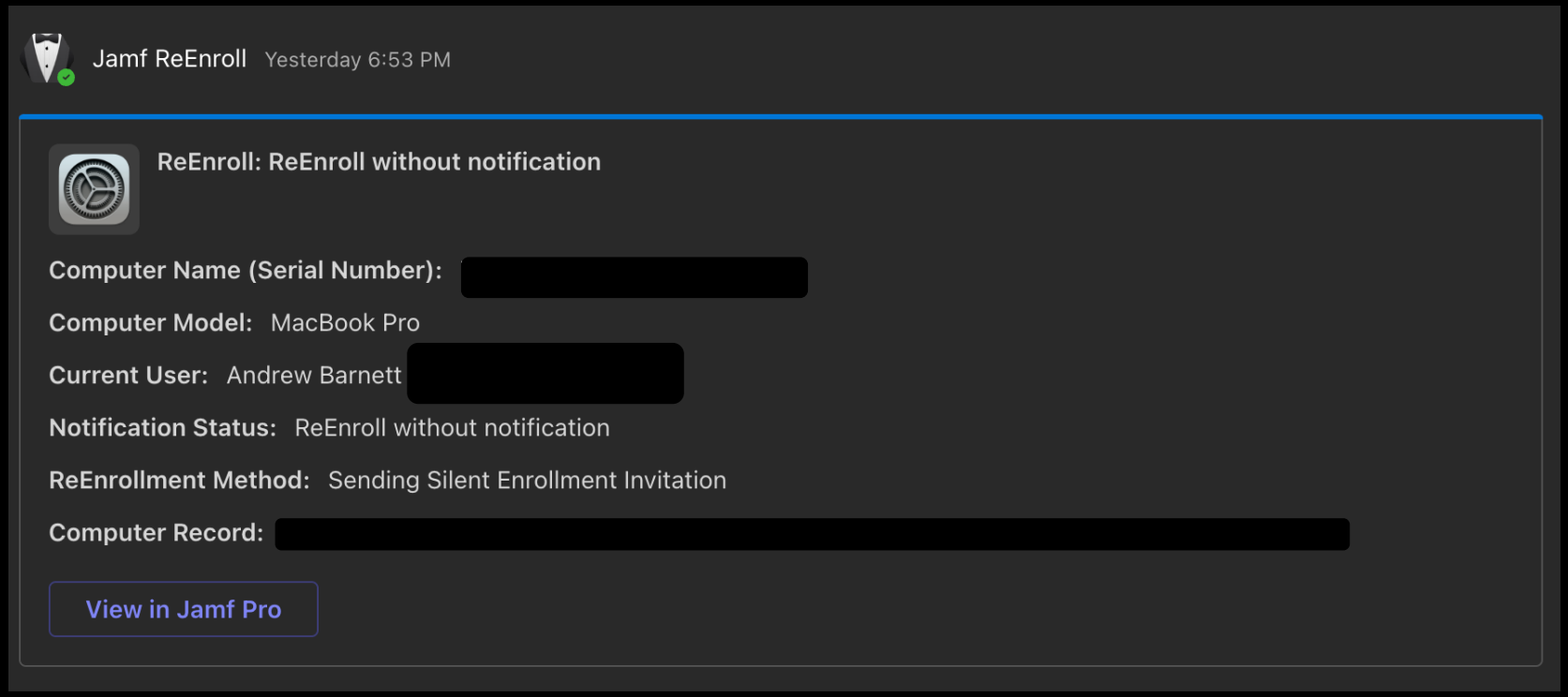
ReEnroll Variables

```
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
# Skip Check-In, LAPS Admin Account Username and User to Exempt/Target for Deletion Options
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

# Skip Jamf connection verification after enrollment
skipCheckIN="false"                                             # [ false (default) | true ]
# Skip LAPS admin account verification after enrollment
skipLAPSAdminCheck="false"                                      # [ false (default) | true ]
# LAPS admin account username (add the Jamf managed local admin account username here)
lapsAdminAccount="$6"                                             # [ add the LAPS admin account username here ]
# Skip User Exemption/Targeted Deletion
skipAccountDeletion="false"                                     # [ false (default) | true ]
# Define the exempt user list from being deleted (Add the username in quotes, with a space in between each)
exempt_users=("Shared" "Guest" "$loggedInUser")                 # [ add the exempt user list here ]
# Define the targeted user list to be deleted (Add the username in quotes, with a space in between each)
targeted_users=("$lapsAdminAccount" "anotherAccount" )          # [ add the targeted user list here ]
# Jamf Enrollment Invitation ID (https:/company.jamfcloud.com/enroll?invitation=1542270881__;!!KwNVnq) (Invitation ID in this example would be: 1542270881)
enrollmentInvitation="$7"                                         # [ add the Invitation ID here ]

# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
# ReEnroll Computers Options
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

# Send redeploy Jamf Management Framework command
redeployFramework="true"                                # [ true (default) | false ]
# Send enrollment invitation command
sendEnrollmentInvitation="failure"                      # [ true  | false | failure (default) ]
# Send profiles renew -type command
renewProfiles="failure"                                 # [ true | false | failure (default) ]
```

ReEnroll Variables

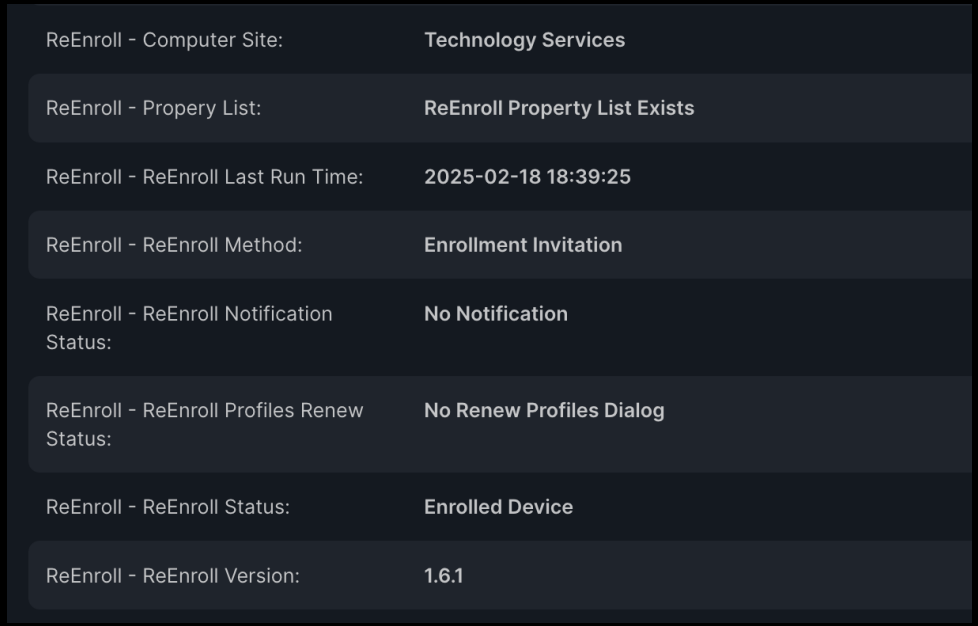
```
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
# Launch Daemon information
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

# Skip Launch Daemon after script completion
skipLaunchDaemon="false"                                    # [ false (default) | true ]
# Launch Daemon information
organizationName="company"                                  # [ add the organization name here ] #
organizationReverseDomain="com.company"                     # [ add the organization reverse domain here ]

# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
# Additional Settings
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

# Add additional logging
debugMode="false"                                                   # Debug Mode [ false (default) | verbose ] Verbose adds additional logging
# Verify and Update Computer Site after enrollment
updateComputerSite="true"                                   # Update Computer Site [ true (default) | false ]
# Move Computer to new Site
newComputerSiteID=""                                        # Move Computer Site [ blank (default) ] (Only used if updateComputerSite is true and newComputerSiteName is set)

# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
# Swift Dialog Settings
# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

# Display a ReEnroll progress dialog
displayReEnrollDialog="$8"                                   # Display ReEnroll Dialog [ true | false (default) ]
# Unattended Exit Options
unattendedExit="true"                                        # Unattended Exit [ true | false (default) ]
# Unattended Exit Seconds
unattendedExitSeconds="30"                                   # Number of seconds to wait until a kill Dialog command is sent
```

ReEnroll - Webhooks



Jamf Extension Attributes

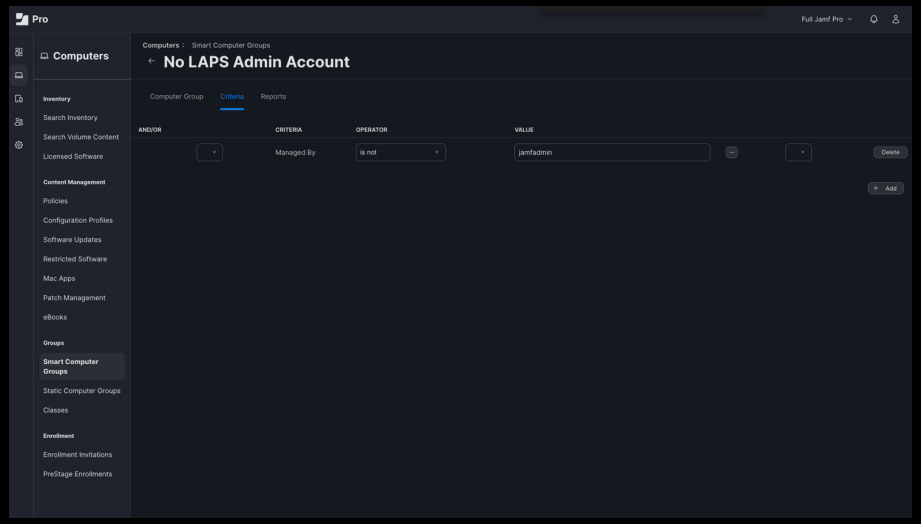
- Jamf Extension attributes to keep inventory updated on workflow
- Can be used to create further Jamf smart groups
- Useful for further troubleshooting of a device if necessary



ReEnroll - Computer Site:	**Technology Services**
ReEnroll - Propery List:	**ReEnroll Property List Exists**
ReEnroll - ReEnroll Last Run Time:	**2025-02-18 18:39:25**
ReEnroll - ReEnroll Method:	**Enrollment Invitation**
ReEnroll - ReEnroll Notification Status:	**No Notification**
ReEnroll - ReEnroll Profiles Renew Status:	**No Renew Profiles Dialog**
ReEnroll - ReEnroll Status:	**Enrolled Device**
ReEnroll - ReEnroll Version:	**1.6.1**

Jamf Smart Group

- Smart Group Scope
  - Jamf Management Accounts on the device
  - Device last check-in (example: Last Check-In over 30 days)
  - ReEnroll workflow completed



Things To Consider…

- If a device is on macOS 14 or higher and the profiles renew command is sent but didn’t go through ADE, the device will get a full screen enrollment prompt
- If you are attempting to add a LAPS enabled account, you will have to use the enrollment invitation or profiles renew command
- If you decide to add a LAPS enabled account, and you have an account being created in PreStage Enrollments. The two accounts can not have the same username.

Future Development

- Manage using Configuration Profiles
- Automation using LaunchDaemon
- Scheduling for automation based on Configuration Profiles

Links to Repositories

- Automated User Based Deployment
- https://github.com/AndrewMBarnett/ReEnroll