

macOS Device Management

VMware Workspace ONE UEM 1902

You can find the most up-to-date technical documentation on the VMware website at:

<https://docs.vmware.com/>

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Introduction to Workspace ONE UEM for macOS

1

Workspace ONE UEM provides complete management solutions for macOS devices. Workspace ONE UEM's Mobile Device Management (MDM) solution enables enterprises to manage Corporate-Dedicated, Corporate-Shared or Employee Owned (BYOD) macOS devices throughout the entire device lifecycle.

Workspace ONE UEM supports macOS versions 10.9 and higher, and all devices running those operating system versions.

This guide shows administrators how to enroll devices or allow end users to enroll themselves, create profiles to manage compliance, configure the Workspace ONE Intelligent Hub, manage applications, manage devices through the Workspace ONE UEM console and on the Self-Service Portal, integrate with macOS tools like File Vault 2, and enable Product Provisioning.

This chapter includes the following topics:

- [Workspace ONE UEM macOS Management Prerequisites](#)

Workspace ONE UEM macOS Management Prerequisites

To manage macOS devices, make sure you have the all the prerequisites mentioned in this section.

You must have the following materials ready:

- **Active Environment** – This is your active Workspace ONE UEM environment and access to the UEM console.
- **Appropriate Admin Permissions** – This type of permission allows you to create profiles, policies and manage devices within the UEM console.
- **Enrollment URL** – This is the web address entered into Safari to begin the enrollment procedure. This location is specific to your company's enrollment environment. For example, this enrollment URL will follow the format of `https://<companyspecificdeviceservicesurl>/enroll`.
- **Group ID** – This is a unique identifier for the organization group where the device is enrolled that defines all configurations the device receives.

- **Credentials** – This is a username and password combination used to identify and authenticate the user account to which the device belongs. This can be AD/LDAP user credentials.
- **Apple ID for Apple Business Manager** – An Apple ID is needed to purchase managed distribution or the user-based licenses when using the Volume Purchase Program with a macOS deployment and to enroll macOS device through Device Enrollment Program (DEP)

Note Apple ID that is used for VPP or DEP should not be entered in the settings or preferences on the device. For example, do not use for iTunes or iCloud.

- **Apple Push Notification service (APNs) Certificate** – This is a certificate issued to your organization to authorize use of Apple's cloud messaging services.

Supported Devices

Workspace ONE UEM currently supports devices running macOS 10.9 and higher, including:

- MacBook
 - iMac
 - MacBook Pro
 - Mac Mini
 - MacBook Air
 - Mac Pro
 - iMac Pro
-

macOS Device Enrollment

2

Each device in your organization's deployment must be enrolled in your organization's environment before it can communicate with Workspace ONE UEM and access internal content and features. macOS devices enroll using MDM functionality built into the native OS in conjunction with Workspace ONE UEM functionality.

Enrollment Methods

There are three ways to initiate enrollment for macOS devices:

- Enroll a device using the Workspace ONE Intelligent Hub
- Sideload devices with an MDM profile
- Utilize Apple Business Manager's Device Enrollment Program

End user Enrollment Using the Workspace ONE Intelligent Hub

The Hub-based enrollment process secures a connection between macOS devices and your Workspace ONE UEM environment through the Workspace ONE Intelligent Hub app. The Workspace ONE Intelligent Hub application facilitates User-Approved Device Enrollment, and then allows for real-time management and access to device information.

For more information, see:

- [Chapter 7 Apps for macOS Devices](#)
- [Enroll with macOS Hub](#)

Admin Enrollment Using a Sideloaded Staging Profile

Device Staging on the Workspace ONE UEM console allows a single admin to outfit devices for other users on their behalf, which can be particularly useful for IT admins provisioning a fleet of devices. Admins can sideload a staging profile for a single user devices and multi-user devices.

Single-User Staging

Single-user staging allows an admin to stage devices for a single user, such as a company-issued laptop. LDAP binding or pre-registration is required when staging devices for single users.

For more information, see [Stage macOS Devices for Single User Enrollment](#).

Single Staging with Pre-Registration and Local User

Workspace ONE UEM also supports a new single staging enrollment flow for a local user with pre-registration to help macOS admins who are moving towards a deployment model without domain join. For more information, see [Single Staging with Pre-Registration and Non-Domain Joined Local User](#).

Multi-User Staging

Multi-user device staging allows an admin to provision devices intended to be used by more than one user, such as a customer service kiosk computer. Multi-user staging allows the device to dynamically change its assigned user as the different network users log into that device.

For more information, see [Configure Multi-User Staging for macOS Devices](#).

Bulk Device Enrollment

Depending on your deployment type and device ownership model, you may want to enroll devices in bulk. Workspace ONE UEM provides bulk enrollment capabilities for macOS devices using the Apple Business Manager and Automated Enrollment.

Bulk Enrollment with Apple Business Manager

Deploying a bulk enrollment through the Apple Business Manager's DEP allows you to install a non-removable MDM profile on a device, which prevents end users from being able to remove the profile from their devices. You can also provision devices in Supervised mode to access additional security and configuration settings.

For more information about Apple Business Manager, see *Integration with Apple Business Manager*.

This chapter includes the following topics:

- [Enroll with macOS Hub](#)
- [Stage macOS Devices for Single User Enrollment](#)
- [Single Staging with Pre-Registration and Non-Domain Joined Local User](#)
- [Apple Business Manager - DEP](#)
- [Custom Bootstrap Packages for Device Enrollment](#)

Enroll with macOS Hub

The Hub-based enrollment process secures a connection between macOS devices and your Workspace ONE UEM environment. Install the Workspace ONE Intelligent Hub application to facilitate enrollment and enable real-time management and access to relevant device information.

Download the Workspace ONE Intelligent Hub from **<https://getwsone.com>**. As soon as the Workspace ONE Intelligent Hub is installed, the device begins prompting the user for enrollment authentication.

- 1 Navigate to **<https://getwsone.com>** and download the Workspace ONE Intelligent Hub application on the device.
- 2 Open the pkg file and follow the prompts to install the application. An Workspace ONE UEM authentication window appears.
- 3 Enter the credentials as required.


You may be notified at this time if your user account is not allowed or blocked because your account is blacklisted and not approved for enrollment.
- 4 Follow the prompts in the Workspace ONE Intelligent Hub.
 - a For devices running macOS 10.13.1 and below, proceed to step 7.
 - b For devices running macOS 10.13.2 and above, proceed to step 6.
- 5 The device switches to the System Preferences page. Continue to follow the on-screen prompts.
- 6 Enter admin username and password to install the MDM profile.
- 7 Once the process is completed, the Workspace ONE Intelligent Hub shows an Enrollment Complete screen and the device immediately begins receiving configurations assigned by the administrator.
- 8 Quit the enrollment app.

macOS Intelligent Hub Download

Download the Workspace ONE Intelligent Hub from **getwsone.com**. However, you can also download the Workspace ONE Intelligent Hub for macOS devices at any time by logging into either UEM console or Self-Service Portal (SSP).

Download options:

- **Workspace ONE UEM console** – Navigate to **Groups & Settings > All Settings > Devices & Users > Apple > Apple macOS > Hub Application** and select **Download Hub**.
- **Self-Service Portal** – Log into the SSP and select **Download Hub** from the top action menu.

Once the Workspace ONE Intelligent Hub is installed, the icon  appears at the top of the display indicating it is active and no additional end user interaction is necessary.

Enable the Workspace ONE Intelligent Hub for Web-based Enrollment on macOS Devices

If you are utilizing web-based enrollment, enable the Workspace ONE Intelligent Hub to be downloaded before or after enrollment through the UEM console.

Prerequisites

For web enrollment using the UEM console v7.3 and higher, make sure that the **Require Hub Enrollment for macOS** option is enabled (Navigate to **Groups & Settings > All Settings > Devices & Users > General > Enrollment** and select the check box).

Procedure

- 1 From the UEM console Dashboard, navigate to **Devices > Device Settings > Apple > Apple macOS > Hub Application**.
- 2 Select the **Download macOS Hub Post Enrollment** check box for web-based enrollment.
- 3 Select **Save**.
- 4 Navigate to **getwsone.com** to download the Workspace ONE Intelligent Hub and begin the enrollment process.

Stage macOS Devices for Single User Enrollment

Single-User Device Staging on the Workspace ONE UEM Console allows a single administrator to outfit devices for other users on their behalf, which can be useful for IT administrators provisioning a fleet of devices.

Device staging through Workspace ONE Direct Enrollment is not supported. If you must stage a device, whether for single or multiple users, you must enroll the device using Workspace ONE Intelligent Hub instead of Workspace ONE Direct Enrollment.

Important LDAP binding is required when staging devices. To create this payload, see [Binding a Device to the Directory Service](#) in this guide.

Procedure

- 1 Navigate to **Accounts > Users > List View** and select **Edit** for the user account for which you want to enable device staging.
- 2 In the **Add / Edit User** page, select the **Advanced** tab.
 - a Scroll down to the **Staging** section.
 - b Select **Enable Device Staging**.
 - c Select the staging settings that apply to this staging user.

- 3 **Single User Devices** stages devices for a single user. This user is the next Network User to log into the device. Toggle the type of single user device staging mode to either **Standard** or **Advanced**. Standard staging requires an end user to enter login information after staging, while Advanced means that the staging user can enroll the device on behalf of another user.
- 4 Ensure that **Multi User Devices** is set to **Disabled**.
- 5 Enroll the device using one of the two following methods.
 - a Enroll using the Workspace ONE Intelligent Hub by entering a server URL and Group ID.
 - b Open the device's Internet browser, navigate to the enrollment URL, and enter the proper Group ID.
- 6 Enter your staging user's credentials during enrollment. If necessary, specify that you are staging for **Single User Devices**. You will only have to do this if multi-user device staging is also enabled for the staging user.
- 7 Complete enrollment for either Advanced or Standard staging.
 - a If you are performing Advanced staging, you are prompted to enter the user name of the end-user device owner who is going to use the device. Proceed with enrollment by installing the Mobile Device Management (MDM) profile and accepting all prompts and messages.
 - b If you are performing Standard staging, then when the end user completes the enrollment, they are prompted to enter their own credentials in the login window.

Results

The device is now staged and ready for use by the new user.

Configure a Sideload Enrollment Profile for macOS Devices

Obtain the MDM profile to prepare to sideload devices.

Do this by using Automated Enrollment functionality to generate an enrollment profile for the desired organization group. Then, enroll devices using the MDM profile for standard or advanced staging. Last, download the Workspace ONE Intelligent Hub to complete enrollment and authenticate devices.

Procedure

- 1 Configure a **Staging** user account in the UEM console, if you have not already. This can be a **Basic** user account you manually create or a **Directory** user account that is enabled with staging. If configuring Multi-user staging for macOS devices, then choose a **Directory** user account. For more information on creating users, see *Mobile Device Management* .
- 2 Navigate to **Devices > Device Settings > Devices & Users > Apple > Automated Enrollment**.
- 3 Select **Enabled** for **Automated Enrollment**. You may need to **Override** the current organization group to do this.
- 4 Choose **macOS** as the **Platform**.

- 5 Select the **Staging Mode** drop down menu.
 - a **Single user device** – Stage the device for one user.
 - b **Multi-user device** – Stage the device for multiple users.
- 6 Choose the **Default Staging User**.
 - a Only staging users are available as Default Enrollment User options. Later, when staging is completed, the user's device details are updated in the UEM console and the device is associated with that end user.
- 7 Select **Save and Copy URL > OK** to save the .mobileconfig file that includes the name of the organization group.
- 8 Select **Export** to export the .mobileconfig file. This profile is needed when staging devices.
- 9 Navigate to **Groups & Settings > All Settings > Devices & Users > Apple > Apple macOS > Hub Application** and select **Download Hub Download** to install the Workspace ONE Intelligent Hub.
- 10 Enroll using a local account and install the Workspace ONE Intelligent Hub. At this time, all profiles are pushed to the device.
- 11 Distribute the device to the end user. The end user must log in from the device's Login Window to complete the staging process.

Configure Multi-User Staging for macOS Devices

Multi-user device/shared device staging allows an IT administrator to provision devices intended to be used by more than one user. Multi-User staging allows the device to change its assigned user dynamically as the different network users log into that device.

Device staging through Workspace ONE Direct Enrollment is not supported. If you must stage a device, whether for single or multiple users, you must enroll the device using Workspace ONE Intelligent Hub instead of Workspace ONE Direct Enrollment.

Procedure

- 1 Navigate to **Accounts > Users > List View** and select **Edit** for the user account for which you want to enable device staging.
- 2 In the **Add / Edit User** page, select the **Advanced** tab.
 - a Scroll down to the **Staging** section.
 - b Select **Enable Device Staging**.
 - c Select the staging settings that apply to this staging user.
- 3 **Single User Devices** stages devices for a single user. Toggle the type of single user device staging mode to either **Standard** or **Advanced**. Standard staging requires an end user to enter login information after staging, while Advanced means that the staging user can enroll the device on behalf of another user.

- 4 Ensure that **Multi User Devices** is set to **Enabled**.
- 5 Enroll the device using one of the two following methods.
 - a Enroll using the Workspace ONE Intelligent Hub by entering a server URL and Group ID.
 - b Open the device's Internet browser, navigate to the enrollment URL, and enter the proper Group ID.
- 6 Enter your staging user's credentials during enrollment. If necessary, specify that you are staging for **Single User Devices**. You only have to do this if multi-user device staging is also enabled for the staging user.
- 7 Complete enrollment for either Advanced or Standard staging.
 - a If you are performing Advanced staging, you are prompted to enter the user name of the end-user device owner who is going to use the device. Proceed with enrollment by installing the Mobile Device Management (MDM) profile and accepting all prompts and messages.
 - b If you are performing Standard staging, then when the end user completes the enrollment, they are prompted to enter their own credentials in the login window.

Results

The device is now staged and ready for use by the new users.

Single Staging with Pre-Registration and Non-Domain Joined Local User

Before VMware Workspace ONE UEM version 9.3, Workspace ONE UEM Staging for macOS required a macOS to be domain joined to a directory service (Multi-Staging or Single-Staging). After the staging enrollment, an end user logs into the macOS with Domain credentials. The device then gets checked out to the corresponding directory user within the UEM console.

From VMware Workspace ONE UEM version 9.3, macOS admins are moving towards a deployment model without a domain join. VMware Workspace ONE UEM now supports this deployment model by providing a new single staging enrollment flow for a local user with the pre-registration in the UEM console. Because Workspace ONE UEM MDM can only manage one local user, the new enrollment flow to map the staging user APNs token to the directory user that is pre-registered to the device is created.

Use Cases for Single-Staging with Pre-Registration

- Admin needs the device before the end user, but does not want to domain join and use the existing local account.
- Admin does not want to domain join, but uses Enterprise Connect or NoMAD to keep the password synced.

- Admin wants the device for setup, then integrate the API to an internal device checkout system.
- Admin creates their own custom GUI authentication dialog box which calls a Workspace ONE UEM API to switch the device to the end user.

Create Single-Staging Flow with Pre-Registration

Create a single-staging user in the UEM console before pre-registering the device.

Prerequisites

- Pre-registration is only supported for Single-Staging
- Device must be assigned to a staging user before the pre-registration or API flow to work

Procedure

- 1 [Create Single-Staging User](#) in the UEM console.
- 2 [Pre-Register Device to the Enrollment User](#) (basic or directory user in the UEM console).
- 3 Enroll the device to the single staging user (DEP staging or Web enrollment or Hub enrollment).

Create Single-Staging User

The first step to pre-register macOS devices to the UEM console is to create a single-staging enrollment user.

Procedure

- 1 Navigate to **Accounts > Users > List View** and then select **Add > Add User**.
- 2 Enter the general information such as Username, Password, Full name, email address in the **General** tab for a single staging user in the **Add/Edit User** page.
- 3 In the **Advanced** tab, under **Staging**, enable **Device Staging** and **Single User Devices**.
- 4 Select **Save** to save the enrollment user.

What to do next

Once single staging user is created, the next step is to pre-register the macOS device.

Pre-Register Device to the Enrollment User

In the UEM console, pre-register the device through the device identifiers (such as serial, udid, and so on) to the directory or basic enrollment user.

Procedure

- 1 Navigate to **Devices > Lifecycle > Enrollment Status**. Select **Add** and then select **Register Device**.

- 2 In the **User** tab, enter a **basic user** or **directory user** in the User's **Search Text** text box and select the user from the search list.
- 3 Enable **Show Advanced Device Information Options** check box and enter the device identifiers of the device.
- 4 Select **Save**.

What to do next

After the pre-registration of the device is complete, the next step is to enroll device to the Workspace ONE UEM single-staging user.

Device Enrollment to the Single-Staging User

Log into the macOS device with a local user and enroll through DEP Staging, Hub Enrollment, Web Enrollment, or Apple Configurator with a Workspace ONE UEM single-staging user.

If using DEP, the managed local user must be the user created during Setup Assistant process. For more information, refer the enrollment sections. After enrollment completes, the UEM console automatically checks out the user from the staging use to the pre-registered basic user. All assigned user profiles, commands, or applications start installing onto the device.

Single Staging with API

As an alternative to pre-registration, use Single-Staging with API to switch the user from the Workspace ONE UEM staging user to the Workspace ONE UEM directory or basic user.

Before using Single-Staging with API, ensure that the device is enrolled through Hub enrollment, Web enrollment, or Apple Configurator with a Workspace ONE UEM single-staging user.

Use the following (v2) API to switch the device assignment:

```
PATCH /api/mdm/devices/{id}/enrollmentuser/{enrollmentuserid}
```

where,

- id – Workspace ONE UEM device ID
- enrollmentuserid – Workspace ONE UEM user ID

The header request must be:

```
Accept - application/json;version=2
```

Ensure you receive 200 OK as a return response which indicates that the device switching is complete with no errors. All assigned user profiles, commands, or applications start coming down to the device.

Apple Business Manager - DEP

Devices can also be staged through Apple Business Manager's Device Enrollment Program (DEP). DEP is a streamlined staging method that is best for corporate-owned devices.

DEP on macOS enables you to:

- Apply standard staging to devices.
- Configure Setup Assistant panes to skip during installation.
- Enforce enrollment for all end users.
- Customize and streamline the enrollment process to meet your organization's needs.
- Hold a device in the Awaiting Configuration state when it reaches the Setup Assistant screen.
- Create a local Hidden Admin account and allow end users to skip the Account Creation screen.

For additional Apple information, see the [Apple Business Manager Guide](#) or contact your Apple Representative.

Custom Bootstrap Packages for Device Enrollment

In a typical device enrollment, the Workspace ONE Intelligent Hub must be installed on a device before any other installer packages can be executed. The Bootstrap Package allows installer packages to deploy to a device immediately after the device is enrolled.

Bootstrap Packages

Workspace ONE UEM uses the latest Apple MDM commands for deploying Bootstrap Packages. For enrolled devices on macOS 10.13.6 and higher, the `InstallEnterpriseApplication` command is used. For macOS 10.13.5 and lower devices the legacy `InstallApplication` command is used.

Historically, the Workspace ONE Intelligent Hub handles the download and installation of application files. Bootstrap Packages allow .pkg files to install immediately after enrollment whether or not the Workspace ONE Intelligent Hub is installed.

You may want to use alternative tools for device and application management. Bootstrap package enrollment comprises an enrollment flow paired with a bootstrap package that installs the alternative tooling and configures the device before the end user begins using the device.

Bootstrap Package Use Cases

Bootstrap Packages may be useful in certain deployment scenarios. This list is not exhaustive.

- You want to create a custom-branded end user experience, such as launching a window as soon as enrollment completes, to inform the user about the installation process and instruct them to wait to use the device until provisioning and installation complete.

- Your deployment does not include the Workspace ONE Intelligent Hub, but you still have critical software to deploy to devices.
- You want to use Munki for Application Management, and need the Munki client to install immediately after enrollment so the user can begin installing apps, rather than going through the Workspace ONE Intelligent Hub and AirWatch Catalog.
- Your deployment only uses MDM for certificate management and software management, and uses Chef or Puppet for configuration management. In this configuration, Chef or Puppet must be installed as soon as enrollment completes to finish configuring the device.

Bootstrap Package Creation

Bootstrap packages are deployed to the device as soon as enrollment completes. Bootstrap packages deployed from the Console will not deploy to existing enrolled devices unless the devices are specifically queued using the Assigned Devices list for the package.

You must create packages before you deploy them. There are several tools available that can create a package for use in the Bootstrap Package functionality. Created packages must meet two criteria:

- The package must be signed with an Apple Developer ID Installer Certificate. Only the package needs to be signed, not the app, since the Apple Gatekeeper does not check apps installed through MDM.
- The package must be a distribution package (product archive), not a flat component package.

When you have created a bootstrap package, you must deploy the package to your devices. For more information, see [Deploy a Bootstrap Package](#).

Deploy a Bootstrap Package

Bootstrap packages allow you to make your end users' devices usable sooner after the device enrolls than a traditional enrollment. Once you have created a bootstrap package, you must deploy the package to your devices.

Prerequisites

You must create bootstrap packages before you deploy them. There are several tools available that can create a package for use in the Bootstrap Package functionality. For more information, see [Custom Bootstrap Packages for Device Enrollment](#).

Procedure

- 1 Navigate to **Apps & Books > Internal > Add Application**.

2 Upload a .pkg file that meets these requirements:

- a Package must be signed with an Apple Developer ID Installer certificate.
- b Package must be a distribution package.

For more information about the bootstrap package requirements, see [Custom Bootstrap Packages for Device Enrollment](#).

3 Select **Continue** and modify the items in the **Details** tab and the **Images** tab if necessary.

4 Select **Save & Assign**, and then select **Add Assignment** to configure the **App Delivery Method**.

By default, the **App Delivery Method** is set to **Auto**. In this configuration, the assigned bootstrap package will only install on newly-enrolled devices.

To install the bootstrap package on enrolled devices, select **On Demand**. On-Demand package deployments require you to manually push the package to devices.

To manually deploy a bootstrap package to enrolled devices, navigate to **Applications > Internal Apps > List View**. Select the package you want to assign to open the **Application Details**. Use the **Devices** tab to select devices to push the package to.

Software Distribution and Management

3

Before Workspace ONE UEM console v9.3, most of the macOS applications or software were deployed through Product Provisioning. From v9.3, Workspace ONE UEM also offers a flexible deployment through an integration with Munki, an widely renowned open source tool.

Now all macOS application file types (.dmg, .pkg, .mpkg) can be managed in the Internal Applications section on the UEM console (**Apps & Books > Applications > Native > Internal**).

The flexible deployment feature resides in the **Assign** sections of the application area and offers advantages to the assigning process.

- Configure deployment assignments.
- Assign multiple deployments simultaneously.
- Order assignments so that critical deployments are not missed due to the limited bandwidth.
- Customize assignments for multiple smart groups.

This chapter includes the following topics:

- [Requirements to Deploy macOS Applications for Software Distribution](#)
- [Configure Software Management](#)
- [Generate Metadata Using VMware AirWatch Admin Assistant Tool](#)
- [Upload Applications to Deploy to macOS Devices](#)
- [Assign Applications to macOS Devices](#)
- [Methods used by Munki to Install Applications](#)
- [Troubleshooting macOS Software Distribution](#)

Requirements to Deploy macOS Applications for Software Distribution

To deploy macOS applications with the software distribution, use the supported file types, platform version, and agents.

Supported Platform Version

macOS 10.10+

Supported File Types

PKG, DMG, MPKG

Supported Agents

- Workspace ONE Intelligent Hub for macOS 3.0
- (Optional) Workspace ONE 1.0 native application

Considerations

- **pkginfo metadata file generation** – You can upload all primary macOS software file types through **Books & Apps > Internal Applications**. A PKG file can be a Bootstrap package, or it can be managed through full lifecycle management. To configure advanced management features for macOS software through the integrated Open-Source Munki library in the Workspace ONE Intelligent Hub, you must generate a metadata file for the application before uploading the application to the UEM console. You can generate a pkginfo metadata file using [Generate Metadata Using VMware AirWatch Admin Assistant Tool](#).
- **Third-Party Integration** – Apart from using the Admin Assistant tool to generate metadata or a pkginfo file, you can also integrate with AutoPkg and AutoPkgr tools that have ready-made software with configuration features. They perform periodic checks for updates to the third-party software and notify the admins.
- **Migration from Munki setup to Workspace ONE UEM** – You can add the existing application with the direct link of the application on your current Munki Repository server. This method is advantageous, as there is no requirement for an actual upload of the file to Workspace ONE UEM, which uses Workspace ONE UEM File Storage space.
- **CDNs and File Storage Systems** – All deployments use a content delivery network (CDN) to deploy applications. This method has the advantage of sending the content to devices in the network and to remote devices. It also offers increased download speed and reduces the bandwidth on the Workspace ONE UEM servers.

Configure Software Management

Configure Workspace ONE UEM to recognize the deployment of macOS applications through the software distribution method.

Prerequisites

To initiate the software management lifecycle for macOS applications, enable the software management feature (SaaS or on-premises) on the UEM console.

Procedure

- 1 Navigate to **Settings > Devices & Users > Apple > Apple macOS > Software Management**.

- 2 Enable Software Management. At this point, make sure that you verify if the **File Storage** is enabled. If there is no file storage enabled, you are requested to enable it.
- 3 On-Premises environments use a file storage system to store the large macOS applications and also use a CDN to download the applications and to reduce the bandwidth on other servers.

Generate Metadata Using VMware AirWatch Admin Assistant Tool

The VMware Admin Assistant tool uses a Munki command-line utility to give admins an easy way to create the pkginfo metadata files that you must enforce software management.

Prerequisites

Workspace ONE UEM requires pkginfo metadata file with the application file to manage the deployment in the UEM console.

Note The VMware Admin Assistant Tool is available in the UEM console, and at <https://getwsone.com/AdminAssistant/VMwareWorkspaceONEUEMAdminAssistant.dmg>. The Admin Assistant is also built with an auto-update mechanism, which updates to the latest version based on the AppCast.XML file available at <https://getwsone.com/AdminAssistant/VMwareWorkspaceONEUEMAdminAssistant.xml>.

Procedure

- 1 Click open the Admin Assistant tool. The Assistant dialog box asks you to upload the application installer files for the Assistant to parse.
- 2 Upload an application installer file by dragging and dropping a .pkg, .dmg, .app, or .mpkg file, or browse your local files for an installer file.
 - a When you drop or select a file, the tool initiates the process. If needed, you can add more files during this time.
 - b If you select an .app file, the tool creates a .dmg containing the file.

What to do next

After the parsing is finished, the tool prompts you to reveal the parsed metadata files in Finder. Store the metadata files in a local folder where you can easily retrieve them during the Software distribution procedure.

Upload Applications to Deploy to macOS Devices

Deploy internal applications to your mobile network by upload internal applications with local files in the UEM console.

Procedure

- 1 Navigate to **Apps & Books > Applications > Native > Internal** and select **Add Application**.
- 2 Select **Upload > Local File** and browse for the application file on your system. Select the .dmg, .pkg, or .mpkg file to upload.
- 3 Upload the required application metadata file (.plist).

To create a metadata file, download and install the VMware Workspace ONE UEM Admin Assistant Tool to your macOS computer. For more information about how to use the VMware AirWatch Admin Assistant Tool, see [Generate Metadata Using VMware AirWatch Admin Assistant Tool](#).

- 4 Complete the **Images** tab.

Setting	Description
Icon	Upload or drag the images of the application to display in the AirWatch Catalog as the icon for the application.

- 5 Configure **Scripts** settings to run the installation, uninstallation, and verification of the application. By providing pre-install scripts and post-install scripts, you can perform additional configuration tasks or install additional items without the need of repacking the applications or software. Simply paste the script and Workspace ONE UEM formats it to be used by Munki. For more information on the exit behavior of each script type, see [Software Distribution Scripts](#).

Setting	Description
Pre-Install Script	Define a pre-install script to run before attempting installation. See Software Distribution Scripts for information on the exit code behavior of the script.
Post-Install Script	Define a post-install script to run after a successful installation. See Software Distribution Scripts for information on the exit code behavior of the script.
Pre-Uninstall Script	Define a pre-uninstall script to run before an attempted uninstall. See Software Distribution Scripts for information on the exit code behavior of the script.
Uninstall Method	<p>Select from the drop-down and customize the behavior of the Uninstall Methods. The options are:</p> <ul style="list-style-type: none"> ■ Remove Packages ■ Remove Copied items ■ Remove app ■ Uninstall script <p>See Software Distribution Scripts for information on the exit code behavior of the script.</p>
Post Uninstall Script	<p>Define a post-uninstall script to run after a successful uninstall. See Software Distribution Scripts for information on the exit code behavior of the script.</p> <p>Note Failure of the pre-install script cancels the installation attempt and failure of the post-install script logs errors, but the install is considered complete.</p>

Setting	Description
	With some software, you have to configure what exactly defines a successful install or uninstall. Munki allows software configuration through setting an Install or Uninstall Check Script.
Install Check Script	If present, the script runs to determine if the application must be installed. A return code of 0 means install is needed, any other return code causes install to be skipped.
Uninstall Check Script	If present, the script runs to determine if the application must be uninstalled. A return code of 0 means uninstall is needed, any other return code causes uninstall to be skipped.

6 Configure the **Deployment** tab settings.

Setting	Description
Blocking	<p>Enable Blocking Applications to define any applications or processes that might block the clean installation of a managed macOS applications. .</p> <p>Defined applications that must be closed before the installation to prevent those applications from being quit unexpectedly before saving. Additionally, the end users are notified on the device by the Workspace ONE Intelligent Hub to close the defined applications.</p> <p>Disable Blocking Applications to override any blocking behavior and continue with the installation. If there is an app open which blocks the installation, it will be automatically closed.</p> <p>List the blocking applications that must be closed. If the app is in / Applications/ folder, it can be defined as just the app name and the path will be automatically discovered. For example "Firefox" or "Firefox.app".</p> <p>Optionally the full path to the exact process can be used, but is not advised if end users do not have the ability to easily quit the app. Thus you should not block any faceless background apps or helper apps.</p>
Restart Action	<p>Select the restart action for the application. The available actions are:</p> <ul style="list-style-type: none"> ■ Require Shutdown ■ Require Restart ■ Recommend Restart ■ Require Logout
Condition	Define the condition for the application to be installed on the device.
Desired State Management	<p>Currently when installing macOS software, administrators have an option to enable or disable the Desired State Management settings based on the business needs. Desired State Management is enabled by default to enforce application management during macOS software installation.</p> <p>If enabled, and if the end-user deletes the app, the application is automatically reinstalled on the next Hub sync.</p> <p>If disabled, and if the end-user deletes the app, the application is not automatically reinstalled, unless pushed from the UEM Console or Catalog.</p>

7 Configure the **Terms of Use** tab.

- 8 Terms of use states specifically how users are expected to use the application. When the application pushes to devices, users view the terms of use that they must accept to use the application. If users do not accept, they cannot access the application.
- 9 Select **Save & Assign**.

Uninstallation Methods

There are multiple methods available for the uninstallation of software and the appropriate method is selected by default by the VMware Admin Assistant tool based on the file type. If needed, you can override the default with any of the following methods.

Remove Copied Items

The Remove Copied Items method is primarily used for DMG file types, where it pulls from the `items_to_copy array[dicts]` array in the `pkginfo` file and deletes all file paths in the array.

Remove App

The Remove App method pulls from the `installs array [dicts]` in the `pkginfo` file and deletes all file paths in the array.

Remove Packages

The Remove Packages method is used primarily for PKG file types. This method:

- Uses receipts and analyzes the packages to remove
 - Tries to determine what all files were installed through Bom file
 - Deletes receipt
- Removes non-associated packages only

Uninstall Script

Uninstall scripts are written in a shell script. This method is:

- Used for any installer type
- Used to perform custom uninstall operation. If you have a customized deployment for an application, then write a corresponding uninstall script to remove the custom configurations.

Software Distribution Scripts

Use macOS software distribution scripts to perform additional configurations or validation of tasks in the **Script** section of the **Add or Edit Application** page of the console.

By inserting scripts, you can:

- Avoid repacking installers by using pre-install scripts
- Avoid post-install user prompts by scripting additional configurations
- Perform validation

■ Customise uninstallation

The following table provides exit code behavior for each script type.

Script Type	Exit Code 0 Behavior	Other exit Code Behavior
Pre-Install	Continue Install	Skip Install
Post-Install	Successfully Installed	Installed Successfully with Warnings
Pre-Uninstall	Continue Uninstall	Skip Uninstall
Post-Uninstall	Uninstall Successfully	Uninstall successfully with Warnings
Install Check Script	Install is Needed	Skip Install
Uninstall Check Script	Uninstall is Needed	Skip Uninstall

Software Distribution Conditions

Conditions are a set of attributes provided by the integrated open source Munki library for determining install applicability. Conditions are defined at a per-application level and are evaluated before download and install of the software.

There are some built-in conditions supported by Munki.

Conditions Format

Conditions are written in the format:

```
machine_type == "laptop" AND os_vers BEGINSWITH "10.7"
```

Conditional Comparison Attributes

Attribute	Type	Description	Example Comparison
hostname	String	Hostname	hostname=="Lobby imac"
arch	String	Processor architecture. For example: 'powerpc', 'i386', 'x86_64'	arch=="x86_64"
os_vers	String	Full OS Version. For example: "10.7.2"	os_vers BEGINSWITH "10.7"
os_vers_major	Integer	Major OS Version. For example: '10'	os_vers_major == 10
os_vers_minor	Integer	Minor OS Version. For example: '7'	os_vers_minor == 7
os_vers_patch	Integer	Point release version. For example: '2'	os_vers_patch >=2
machine_model	String	'MacMini1,1', 'iMac4,1', 'MacBookPro8,2'	machine_model == "iMac4,1"
machine_type	String	'laptop' or 'desktop'	machine_type == "laptop"
ipv4_address	Arrays of string	This contains current IPv4 addresses for all interfaces	ANY ipv4_address CONTAINS '192.168.161.'
munki_version	String	Full version of the installed munkitools	munki_version LIKE "**0.8.3**"

serial_number	String	machine serial number	serial_number == "W9999999U2P"
date	UTC date string	Date and time. Note the special syntax required to cast a string into an NSDate object.	date > CAST("2013-01-02T00:00:00Z", "NSDate")

Assign Applications to macOS Devices

Once you configure an application, add a single assignment or multiple assignments. If you add multiple assignments, prioritize the importance of the assignment by moving its place in the list up for most important or down for least important.

Procedure

- 1 Navigate to **Apps & Books > Applications > Native > Internal** or **Public**.
- 2 Upload an application and select **Save & Assign** or select the application and choose **Assign** from the actions menu.
- 3 Select **Add Assignment** and complete the following options.

Setting	Description
Select Assignment Groups	Type a smart group name to select the groups of devices to receive the assignment.
App Delivery Method	<ul style="list-style-type: none"> ■ On Demand – Deploys content to a catalog or other deployment Hub and lets the device user decide if and when to install the content. This option is the best choice for content that is not critical to the organization. Allowing users to download the content when they want helps conserve bandwidth and limits unnecessary traffic. ■ Automatic – Deploys content to a catalog or other deployment Hub on a device upon enrollment. After the device enrolls, the Workspace ONE Intelligent Hub automatically installs the app without needing user interaction. This option is the best choice when it is critical to your organization and its mobile users.
Deployment Begins On Internal Applications	<p>Set a day of the month and a time of day for the deployment to start.</p> <p>The Priority setting governs which deployments push first. Workspace ONE UEM then pushes deployments according to the Effective configuration.</p> <p>To set a beginning date with enough bandwidth for successful deployment, consider the traffic patterns of your network .</p>

- 4 Select **Add**.
- 5 Use the **Move Up** and **Move Down** options to order assignments if you have more than one. Place critical assignments at the top of the list. This configuration displays as the **Priority**.
- 6 Select **Save & Publish**.

Manage Software Distribution Updates

Once the macOS application or software is deployed, the deployed application or software can be managed from the UEM console. You can manage updates by uploading a new version of the file onto the UEM console.

Procedure

- 1 Navigate to **Apps & Books > Native**.
- 2 Select the application that you want to update.
- 3 On the top right of the **Details** page, select **Add Version**.
- 4 Upload the installer and the .pkginfo file of the new version.
- 5 If necessary, perform additional changes and then **Save**.
- 6 Select **Save & Assign**.

Methods used by Munki to Install Applications

Munki uses information from the pkginfo file and looks for the software items to decide whether or not a given item must be installed.

To create a functional pkginfo items, understand the methods used by Munki to check the list of software items.

Important Most of the content under this section are from Munki website.

Methods

In the order of precedence, listed below are the methods used by Munki in determining whether the given item should be installed (or removed):

- [Install Check Script](#)
- [Install Items](#)
- [Receipts](#)

When combining these methods, only the highest priority method is used. For example, if a given pkginfo item has both an "installs" list and a "receipts" list, the receipts will be ignored for purposes of determining installation status. Even in this case, though, receipts may be used when removing an item, as they help Munki determine exactly which files were installed.

Install Check Script

A pkginfo item may optionally contain an **installcheck_script**. Install ckeck script provides a method for determining if an software item needs to be installed, where providing **installs/receipts** is inadequate or impractical.

Command-line tools typically installed through port (macports) or Python modules installed using easy_install or pip are prime examples as they provide no easy method for determining their installed version.

An install check_script should be written such that an exit code of 0 indicates that the item is currently not installed and should therefore be installed. All non-zero exit codes indicate that the item is installed.

An example of installcheck_script illustrating a check to determine if the current version of the argparse Python module is installed.

```
#!/bin/sh# Grab current version of installed python moduleversion="$(python -c 'import argparse;print
argparse.__version__' 2>/dev/null)"# Compare with the version we want to installif [ ${version:-0} <
1.2.1 ]; thenexit 0elseexit 1fi
```

Uninstall Check Script

Optionally, an explicit **uninstallcheck_script** can be provided to determine whether or not an software item should be removed. In this case, the script with an exit code of 0 indicate that the item is currently installed and that removal should occur. All non-zero exit codes indicate that the item is not installed.

Install Items

The install items list is generated by the VMware AirWatch Admin Assistant for some types of installation items(.dmg), but not for Apple packages (.pkg or .mpkg). You can generate (or modify) this list and is the most flexible mechanism for determining installation status.

The **installs** list can contain any number of items such as applications, preference panes, frameworks, or other bundle-style items, info.plists, simple directories, or files. You can use any combination of items to help Munki determine if an item is installed or not.

An example of an auto-generated "installs" list for Firefox 6.0

```
<key>installs</key><array><dict><key>CFBundleIdentifier</key><string>org.mozilla.firefox</string><key>CFBundleName</
key><string>Firefox</string><key>CFBundleShortVersionString</key><string>6.0</string><key>minosversion</key><string>10.5</
string><key>path</key><string>Applications/Firefox.app</string><key>type</key><string>application</string></dict></array>
```

To determine if Firefox 6 is installed or not, Munki checks for an application with a CFBundleIdentifier of org.mozilla.firefox and if found, verifies that its version (CFBundleShortVersionString) is at least 6.0. If Munki cannot find the application or its version is lower than 6.0, it considers Firefox-6.0 as not installed. Installs lists can contain multiple items. If any item is missing or has an older version, the item is considered not installed. You can manually generate items to add to an **installs** list using the following makepkginfo,

```
/Library/Application\ Support/AirWatch/Data/Munki/bin/makepkginfo -f /Library/Interne
```

```
t\ Plug-Ins/Flash\ Player.plugin
```

```
<?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>installs</key>
<array>

<dict>

<key>CFBundleShortVersionString</key>
<string>10.3.183.5</string>
<key>path</key>
<string>/Library/Internet Plug-Ins/Flash Player.plugin</string>
<key>type</key>
<string>bundle</string>

</dict>

</array>

</dict>
</plist>
```

Copy and paste the entire **installs** key and value, or copy just the dict value and add it to an existing installs list inside your pkginfo file. Munki checks for the existence of /Library/Internet Plug-Ins/Flash Player.plugin and if found, check its version. If the version is lower than 10.3.183.5, the item would be considered not installed. You can generate installs items for any filesystem item, but Munki only knows how to determine the versions for bundle-style items that contain an Info.plist or version.plist with version information.

For other filesystem items, Munki can only determine existence (in the case of a non-bundle directory), or can calculate a checksum (for files). For files with checksums, the test fails (and therefore the item will be considered not installed) if the checksum for the file on disk does not match the checksum in the pkginfo.

```
<key>installs</key>
<array>

<dict>

<key>md5checksum</key>
<string>087fe4805b63412ec3ed559b0cd9be71</string>
<key>path</key>
<string>/private/var/db/dslocal/nodes/MCX/computergroups/loginwindow.plist</string>

</dict>

</array>
```

```

    <key>type</key>
    <string>file</string>

  </dict>

</array>

```

If you want Munki to only check for the existence of a file and do not care about its contents, remove the generated md5checksum information in the installs item info. Make sure the provided path is intact.

```

<key>installs</key>
<array>

  <dict>
    <key>path</key>
    <string>/private/var/db/dslocal/nodes/MCX/computergroups/loginwindow.plist
    </string>
    <key>type</key>

    <string>file</string>

  </dict>

</array>

```

Receipts

When an Apple-style package is installed, generates a receipt on the machine. Metapackages generate multiple receipts. The VMware AirWatch Admin Assistant adds the names and versions of those receipts to a receipts array in the pkginfo for a package.

Following is a receipts array for the Avid LE QuickTime codecs, version 2.3.4.

```

<key>receipts</key>
<array>

  <dict>

    <key>filename</key>
    <string>AvidCodecsLE.pkg</string>
    <key>installed_size</key>
    <integer>1188</integer>
    <key>name</key>
    <string>AvidCodecsLE</string>
    <key>packageid</key>
    <string>com.avid.avidcodecsle</string>
    <key>version</key>
    <string>2.3.4</string>

  </dict>

</array>

```

```

    </dict>

  </array>

```

If Munki is using the receipts array to determine installation status, it checks for the existence and the version of each receipt in the array. If any receipt is missing or has a lower version number than the version specified for that receipt in the receipts array, the item is considered not installed. Only if every receipt is present and all versions are the same as the ones in the pkginfo (or higher) is the item considered installed. To troubleshoot issues, use the pkgutil tool to examine the installed receipts.

```

# pkgutil --pkg-info com.avid.avidcodecsle
No receipt for 'com.avid.avidcodecsle' found at '/'.

```

In this case, the receipt for the Avid LE QuickTime codecs was not found on this machine. A common complication with receipts is, with many metapackages, the installation logic results in only a subset of the subpackages being installed. Generally, the receipts list contains a receipt for every subpackage in a metapackage (and needs this info if Munki is asked to remove the software item based on package receipts). But if it is normal and expected that not every subpackage will actually be installed, Munki will continually mark the item as not currently installed and offer to install it again and again. One solution for this issue is to add an optional key with the value of true to the receipts that are optionally installed. Munki will then not consider these receipts when determining installation status.

```

<key>receipts</key>
<array>

  <dict>

    <key>filename</key>
    <string>mandatory.pkg</string>
    <key>installed_size</key>
    <integer>1188</integer>
    <key>name</key>
    <string>Mandatory</string>
    <key>packageid</key>
    <string>com.foo.mandatory</string>
    <key>version</key>
    <string>1.0</string>

  </dict>
  <dict>

    <key>filename</key>
    <string>optional.pkg</string>
    <key>installed_size</key>

```



```

<integer>1188</integer>
<key>name</key>
<string>Optional</string>
<key>optional</key>
<true/>
<key>packageid</key>
<string>com.foo.optional</string>
<key>version</key>
<string>1.0</string>

</dict>

</array>

```

Another solution for this situation is to provide an **installs** array that lists items that are installed by the package. Munki can use installs array information instead of the receipts to determine installation status.

Troubleshooting macOS Software Distribution

This section helps you understand how to troubleshoot problems related to the macOS software distribution process. It also details you on the path to verify the logs.

Troubleshooting Issues

- How to verify on the device locally that an application is assigned?

All assigned applications are shown in the `/Library/Application Support/Workspace ONE UEM/Data/Munki/Munki_Repo/manifests/device_manifest.plist` in the `managed_installs` array.

Furthermore, all assigned applications have their corresponding pkginfo stored in the catalog plist at `/Library/Application Support/Workspace ONE UEM/Data/Munki/Munki_Repo/catalogs/device_catalog.plist`

- How to verify on the console that an application is assigned?

In the internal applications **List View** page, select the application to go to the application **Details** page. Then select the **Devices** tab. This page shows the application install statuses for all assigned and enrolled devices.

- How to get direct access to Munki logs?

Munki Logs can also be directly accessed on the device in the path:

`/Library/Application Support/Workspace ONE UEM/Data/Munki/Managed\Installs/Logs/`, where they are saved as `ManagedSoftwareUpdate.log` files.

- Where to look for device report data on the UEM console?

The UEM console reports data from the device in a few locations.

- Navigate to **Apps & Books > Applications > Native > Internal**. Select an application and access **Application Details > Devices** tab to view the install statuses for each device.

- Navigate to **Devices & Users > Devices > List View** and select a device to access **Device Details > Troubleshooting** tab. You can view the activities performed on the device and filtering options to show the information relating to the software distribution.

macOS Device Profiles

4

Profiles are the primary means to manage devices. Configure profiles so your macOS devices remain secure and configured to your preferred settings.

You can think of profiles as the settings and rules that, when combined with compliance policies, help you enforce corporate rules and procedures. They contain the settings, configurations, and restrictions that you want to enforce on devices.

A profile consists of the general profile settings and a specific payload. Profiles work best when they contain only a single payload.

macOS profiles apply to a device at either the user level or the device level. When creating macOS profiles, you select the level the profile applies to. Some profiles can only be applied to the user level or device level.

Device Access

Some device profiles configure the settings for accessing a macOS device. Use these profiles to ensure that access to a device is limited only to authorized users.

Some examples of device access profiles include:

- Secure a device with a Passcode profile. For more information, see [Configure a Passcode Policy Profile](#)
- Configure Apple's Gatekeeper functionality, which secures application downloads and controls specific settings related to user passwords. For more information, see [Configure a Security and Privacy Settings Profile](#).
- Configure accessibility options to accommodate end users' needs. For more information, see [Configure an Accessibility Profile](#).

Device Security

Ensure that your macOS devices remain secure through device profiles. These profiles configure the native macOS security features or configure corporate security settings on a device through Workspace ONE UEM.

Some examples of device security profiles include:

- Use a Wi-Fi profile to connect enrolled devices to your corporate Wi-Fi without sending the network credentials to users. For more information, see [Configure a Network Access Profile](#).
- Implement digital certificates to protect corporate assets. For more information, see [Configure a SCEP/Credentials Profile](#)
- Ensure access to internal resources for your devices with the VPN profile. For more information, see [Configure a VPN Profile](#) and [Configure a VPN On Demand Profile](#).

Device Configuration

Configure the various settings of your macOS devices with the configuration profiles. These profiles configure the device settings to meet your business needs.

Some examples of device configuration profiles include:

- Set up access to Microsoft Outlook and corporate files with an Exchange Web Services profile. For more information, see [Configure an Exchange Web Services Profile](#).
- Integrate VMware Fusion with VMware Workspace ONE UEM MDM capabilities to allow for management of both the host device and corporate applications in a virtual machine scenario. For more information, see [Configure a VMware Fusion Profile](#).
- Ensure that the devices remain up to date with the macOS Updates profile. For more information, see [Configure a Software Update Server Profile](#).

This chapter includes the following topics:

- [Configure a Passcode Policy Profile](#)
- [Configure a Network Access Profile](#)
- [Configure a VPN Profile](#)
- [Configure a VPN On Demand Profile](#)
- [Configure an Email Profile](#)
- [Configure an Exchange Web Services Profile](#)
- [Configure an LDAP Profile](#)
- [Configure a CalDAV or CardDAV Profile](#)
- [Configure a Web Clips Profile](#)
- [Configure a SCEP/Credentials Profile](#)
- [Configure a Privacy Preferences Control Profile](#)
- [Configure a Dock Profile](#)
- [Configure a Restrictions Profile](#)
- [Configure a Software Update Server Profile](#)

- [Configure a Parental Controls Profile](#)
- [Configure a Directory Profile](#)
- [Configure a Security and Privacy Settings Profile](#)
- [Configure a Full Disk Encryption Profile \(macOS\)](#)
- [Configure a Login Items Profile](#)
- [Configure a Login Window Profile](#)
- [Configure an Energy Saver Profile](#)
- [Configure a Time Machine Profile](#)
- [Configure a Finder Profile](#)
- [Configure an Accessibility Profile](#)
- [Configure a Printer Configuration Profile](#)
- [Configure a Messages Profile](#)
- [Configure a Proxy Profile](#)
- [Configure a Mobility Profile](#)
- [Configure a Managed Domains Profile](#)
- [Configure a VMware Fusion Profile](#)
- [Configure a Web Content Filter Profile](#)
- [Configure an AirPlay Whitelist Profile](#)
- [Configure an AirPrint Profile](#)
- [Configure an Xsan Storage Profile](#)
- [Configure a Firewall Profile](#)
- [Configure a Firmware Password Profile](#)
- [Configure a Custom Attributes Profile](#)
- [Configure a Custom Settings Profile](#)
- [Configure a Kernel Extension Policy Profile](#)

Configure a Passcode Policy Profile

Device passcode profiles secure macOS devices and their content. Choose strict options for high-profile employees, and more flexible options for other devices or for those part of a BYOD program.

If multiple profiles enforce separate policies on a single device, the most restrictive policy is enforced. If your password policy is being managed by your directory for network users logging into the devices, Workspace ONE UEM does not recommend a passcode policy.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Passcode** payload.
- 4 Configure Passcode settings:

Setting	Description
Require passcode on device	Enable mandatory passcode protection.
Allow simple value	Allow the end user to apply a simple numeric passcode.
Require Alphanumeric Value	Restrict the end user from using spaces or non-alphanumeric characters in their passcode.
Minimum Passcode Length	Select the minimum number of characters required in the passcode.
Maximum Passcode Age (days)	Select the maximum number of days the passcode can be active.
Auto-lock (min)	Select the amount of time the device can be idle before the screen is locked automatically.
Passcode History	Enter the number of passwords to store in order to prevent end users from recycling passwords.
Maximum Number of Failed Attempts	Select the number of failed attempts allowed. If the end user enters an incorrect passcode for the set number of times, the device locks.
Delay after failed login attempts	Enter the length of the delay in minutes before allowing another chance to login again after the end user has reached the maximum number of failed passcode attempts.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

End users are only prompted to change their password if the Workspace ONE Intelligent Hub is installed and the **Enforce Passcode** check box is selected in the Workspace ONE Intelligent Hub settings in the UEM console. For more information about configuring the Workspace ONE Intelligent Hub, see [Chapter 7 Apps for macOS Devices](#).

Configure a Network Access Profile

A network profile allows devices connect to corporate networks, even if they are hidden, encrypted, or password protected.

This can be useful for end users who travel and use their own unique wireless network or to end users in an office setting where they need to automatically connect their devices to a wireless on-site.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether the profile applies to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Network** payload.
- 4 Choose to configure **Wi-Fi** or **Ethernet** settings.

Setting	Description
Network Interface	<p>Select to connect to network payload using Wi-Fi or Ethernet. If Ethernet is selected, you have multiple ethernet interface payload types available for connection from the drop-down list.</p> <p>Payloads with 'active' in their name apply to Ethernet interfaces that are working at the time of profile installation. If there is no active Ethernet interface working, the First Active Ethernet interface type gets configured with the highest service order priority.</p> <p>Payloads without 'active' in the name apply to Ethernet interfaces according to service order regardless of whether the interface is working or not.</p>
Service Set Identifier	Enter the name of the network to which the device connects.
Connectivity	<p>Select the type of connectivity.</p> <p>Hidden – Allows a connection to network that is not open or broadcasting.</p> <p>Auto-Join – Determines whether the device automatically connects to the network.</p>
Security Type	Select the method for connection encryption to the wireless network.
Use as login window configuration	Allows the user to authenticate to the network at login. This option appears when WiFi and Security Type is Enterprise . This option also appears when Ethernet is selected.
Protocols	<p>Select protocols for network access.</p> <ul style="list-style-type: none"> ■ This option appears when WiFi and Security Type is any of the Enterprise choices. This option also appears when Ethernet is selected.
Password	Enter the password required to join the Wi-Fi network.

- 5 Configure **Authentication** settings that vary by protocol including but not limited to:

Setting	Description
Use as Login Window Configuration	(For Device Profiles only) Select this if any enterprise protocols were selected for the network. Allow authentication with the target machine's directory credentials.
Username	Enter the username for the account.
User Per-Connection Password	Request the password during the connection and send with authentication.
Password	Enter the password for the connection.
Identity Certificate	Select the certificate for authentication.

Setting	Description
TLS Minimum Version	Select the minimum version 1.0, 1.1, and 1.2. If no value is selected, the minimum TLS version defaults to 1.0. Note Minimum and Maximum TLS versions can be configured only for TLS , TTLS, EAP-Fast, and PEAP protocol types.
TLS Maximum Version	Select the maximum TLS version 1.0, 1.1, and 1.2. If no value is selected, the maximum TLS version defaults to 1.2
Inner identity	Select the inner identification method.
Outer identity	Select the external authentication method.

- 6 Enter the name(s) of server certificates.
- 7 Select **Allow Trust Exceptions** to enable the end user to make trust decisions.
- 8 Configure **Proxy** settings for either **Manual** or **Auto** proxy types.
- 9 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a VPN Profile

Virtual private networks (VPNs) provide devices with a secure and encrypted tunnel to access internal resources. VPN profiles enable each device to function as if it were connected through the on-site network.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **VPN** payload.

4 Configure **Connection** settings.

The following settings vary depending on the type of connection selected.

Settings	Description
Connection Name	Enter the name of the connection name to be displayed on the device.
Connection Type	<p>Select one of the following network connection method from the drop-down menu. For detailed information on each of the connection methods, refer to the individual pages.</p> <ul style="list-style-type: none"> ■ L2TP (default connection) ■ PPTP ■ IPSec (Cisco) (applicable for VPN On Demand) ■ F5 SSL (applicable for VPN On Demand) ■ Custom SSL (applicable for VPN On Demand) ■ F5 Access (applicable for VPN On Demand) <p>Note VPN on demand is the process of automatically establishing a VPN connection for specific domains. For increased security and ease of use, VPN on demand uses certificates for authentication instead of simple passcodes.</p>
Identifier	Enter the identifier for the VPN connection.
Server	Enter the hostname or IP address of the server to be connected.
Account	Enter the user account name for authenticating the VPN connection.
Level	Select the level of encryption, either Automatic or Maximum Bit .
Send All Traffic	Select this check box to force all traffic through the specified network.
Per App VPN	For macOS v10.9 devices, use Per-App VPN to choose what apps should connect to what networks.
Connect Automatically	Select this check box to allow the VPN to connect automatically to chosen Safari Domains.
Enable Safari Domains	<p>Enable this setting to set specific domains or hosts that open the secure VPN connection in the Safari browser. Add domains as needed.</p> <p>If you configure a VMware Tunnel Per-App Tunnel network traffic rule for the Safari app for macOS, Workspace ONE UEM disables this setting. The network traffic rules override any configured Safari Domain rules.</p>
App Mapping	Enable this setting to allow specific applications to open a secure VPN connection. Add app bundle ID(s) for applications allowed to open a secure VPN connection.
Web	Select this checkbox to allow F5 Access application to render a browser-based login page instead of a dialog box for VPN authentication. This feature also gives the administrators the ability to configure fields required for the authentication.

5 Configure **Authentication** information including:

Setting	Description
User Authentication	Select the radio button to indicate how to authenticate end users through the VPN, through either password or RSA SecurID.
	Enter the password for the VPN account.
Authentication	Select the type of machine authentication to authorize end users for the VPN access.
Certificate	Enter the credentials to authorize end users for the VPN connection (if Certificate is selected as machine authentication).
Shared Secret	Enter the Shared Secret key to be provided to authorize end users for the VPN connection (if Shared Secret is selected as machine authentication).

6 Select either **Manual** or **Automatic** proxy and the appropriate settings.

7 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a VPN On Demand Profile

VPN on demand is the process of automatically establishing a VPN connection for specific domains. For increased security and ease of use, VPN on demand uses certificates for authentication instead of simple passcodes.

Procedure

- 1 Ensure your certificate authority and certificate templates in the Workspace ONE UEM are properly configured for certificate distribution.
- 2 Make your third-party VPN application of choice available to end users by pushing it to devices or recommending it in your enterprise App Catalog.
- 3 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 4 Configure the profile's **General** settings.
- 5 Select the **VPN** payload and configure settings as outlined above.
- 6 Specify the Connection Info for a connection type that supports certificate authentication: IPSec (Cisco), F5 SSL, SSL, or F5 Access.
 - a **Server** – Enter the hostname or IP address of the server for connection.
 - b **Account** – Enter the name of the VPN account.
- 7 **Authentication** – Select a certificate to authenticate the device.
- 8 **Identity Certificate** – Select the appropriate credentials.
- 9 **Include User PIN** – Select this check box to ask the end user to enter a device PIN.

10 Check the **Enable VPN On Demand** box. **Add** the **Domains**, and choose the **On-Demand Action**.

- a **Always Establish** – Initiates a VPN connection regardless of whether the page can be accessed directly or not.
- b **Never Establish** – Does not initiate a VPN connection for addresses that match the specified the domain. However, if the VPN is already active, it may be used.
- c **Establish if Needed** – Initiates a VPN connection only if the specified page cannot be reached directly.

For wildcard characters, do not use the asterisk (*) symbol. Instead, use a dot in front of the domain. For example, .air-watch.com.

11 Select **Save and Publish**. After the profile installs on a user's device, a VPN connection prompt will automatically display whenever the user navigates to a site that requires it, such as SharePoint.

Configure an Email Profile

Configure an email profile for macOS devices to configure email settings on the device.

Procedure

- 1** Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **User Profile**, since email settings can only apply to a single user.
- 2** Configure the profile's **General** settings.
- 3** Select the **Email** payload.
- 4** Configure **Email** settings, including:

Settings	Description
Account Description	Enter a brief description of the email account.
Account Type	Use the drop-down menu to select either IMAP or POP.
Path Prefix	Enter the name of the root folder for the email account (IMAP only).
User Display Name	Enter the name of the end user.
Email Address	Enter the address for the email account.
Host Name	Enter the name of the email server.
Port	Enter the number of the port assigned to incoming mail traffic.
Username	Enter the username for the email account.
Authentication Type	Use the drop-down menu to select how the email account holder is authenticated.
Password	Enter the password required to authenticate the end user.
Use SSL	Select this check box to enable Secure Socket Layer usage for incoming email traffic.

Settings	Description
Host Name	Enter the name of the email server.
Port	Enter the number of the port assigned to incoming mail traffic.
Username	Enter the username for the email account.
Authentication Type	Use the drop-down menu to select how the email account holder is authenticated.
Outgoing Password Same As Incoming	Select this to auto-populate the password field.
Password	Enter the password required to authenticate the end user. Select Show Characters if you want users to see characters as they type.
Use SSL	Select this check box to enable Secure Socket Layer usage for incoming email traffic.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure an Exchange Web Services Profile

An Exchange Web Services profile allows the end user to access corporate email infrastructures and Microsoft Outlook accounts from the device.

Note This payload is fully supported on macOS v.10.9 and higher, however, macOS will only configure Contacts when this is installed on v10.7 and v10.8.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **User Profile**, since email settings can only apply to a single user.
- 2 Configure the profile's **General** settings.
- 3 Select the **Exchange Web Services** payload.
- 4 Configure **Exchange Web Services** settings including:

Setting	Description
Email Client	Configure the native mail client or Microsoft Outlook on the device. Outlook requires Workspace ONE Intelligent Hub v.1.1.0+ to be installed on the device.
Account Name	Enter the name for the EWS account.
Exchange Host	Enter the name of the Exchange host. This option appears when Microsoft Outlook is selected.
Exchange Port	Enter the port number for the Exchange Host. This option appears when Microsoft Outlook is selected.
Use SSL	Select to enable Secure Socket Layer usage for communication. This option appears when Microsoft Outlook is selected.

Setting	Description
Delete all user data when profile is removed	Select to erase all user information, mail, settings, and all configured accounts in Outlook, whether the user is managed or unmanaged. This option appears when Microsoft Outlook is selected. Caution Do not make this selection if deploying to a personal computer. This forces Outlook to quit and deletes all information from the computer's Microsoft User Data folder.
Username	Enter the username for the email account.
Email Address	Enter the email address for the email account.
Full Name	Enter the first and last name associated with the account. This option appears when Microsoft Outlook is selected.
Password	Enter the password required to authenticate the end user.
Payload Certificate	Select the certificate upload for EAS use. This option appears when Native Mail Client is selected.
Domain	Enter the domain for the email account. This option appears when Microsoft Outlook is selected.

5 Configure more options for **Native Mail Client**:

Setting	Description
Internal Exchange Host	The name of the secure server for EAS use. This option and following appear when Native Mail Client is selected.
Port	Enter the number of the port assigned for communication with the internal Exchange host.
Internal Server Path	The location of the secure server for EAS use.
Use SSL For Internal Exchange Host	Select this check box to enable Secure Socket Layer (SSL) usage for communication with the Internal Exchange Host.
External Exchange Host	The name of the external server for EAS use.
Port	Enter the number of the port assigned for communication with the External Exchange Host.
External Server Path	The location of the external server for EAS use.
Use SSL For External Exchange Host	Select this check box to enable Secure Socket Layer (SSL) usage for communication with the External Exchange Host.

6 Configure **Directory Services** for **Microsoft Outlook**.

Settings	Description
Directory Server	Enter the location of the secure server.
Directory Server Port	Enter the port number of the secure server.
Search Base	Enter the search base of the secure server.
Directory Server Requires SSL	Select this check box if the directory server requires Secure Socket Layer (SSL).

- 7 Select **Save & Publish** when you are finished to push the profile to devices.

Configure an LDAP Profile

An LDAP profile allows end users to access and integrate with your corporate LDAPv3 directory information.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **User Profile**, since these settings can only apply to a single user.
- 2 Configure the profile's **General** settings.
- 3 Select the **LDAP** payload.
- 4 Configure **LDAP** settings:

Setting	Description
Account Description	Enter a brief description of the LDAP account.
Account Hostname	Enter/view the name of the server for Active Directory use.
Account Username	Enter the username for the Active Directory account.
Account Password	Enter the password for the Active Directory account.
Use SSL	Select this check box to enable Secure Socket Layer usage.
Search Settings	Select Add and enter settings for Active Directory searches executed from the device.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a CalDAV or CardDAV Profile

Configure a CalDAV or CardDAV profile to allow end users to sync corporate calendar items and contacts.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **User Profile**, since email settings can only apply to a single user.
- 2 Configure the profile's **General** settings.
- 3 Select the **CalDAV or CardDAV** payload.
- 4 Configure CalDAV or CardDAV settings, including:

Setting	Description
Account Description	Enter a brief description of the account.
Account Hostname	Enter/view the name of the server for CalDAV use.

Setting	Description
Port	Enter the number of the port assigned for communication with the CalDAV server.
Principal URL	Enter the web location of the CalDAV server.
Account Username	Enter the username for the Active Directory account.
Account Password	Enter the password for the Active Directory account.
Use SSL	Select this check box to enable Secure Socket Layer usage.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Web Clips Profile

Web Clips are web bookmarks that you can push to devices that display as icons and point to commonly used or recommended web resources.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select **Apple macOS**, and then select **User Profile**.
- 2 Configure the profile's **General** settings.
- 3 Select the **Web Clips** payload.
- 4 Configure Web Clip settings, including:

Setting	Description
Label	Enter the text displayed beneath the Web Clip icon on an end user's device. For example: "AirWatch Self-Service Portal."
URL	Enter the URL the Web Clip that will display. Below are some examples for Workspace ONE UEM pages: <ul style="list-style-type: none"> ■ For the SSP, use: https://<AirWatchEnvironment> /mydevice/. ■ For the app catalog, use: https://<Environment> /Catalog/ViewCatalog/{SecureDeviceUdid}/{DevicePlatform}. ■ For the book catalog, use: https://<Environment> /Catalog/BookCatalog?uid={DeviceUid}
Icon	Select this option to upload as the Web Clip icon. Upload a custom icon using a .gif, .jpg, or .png format, for the application. For best results, provide a square image no larger than 400 pixels on each side and less than 1 MB in size when uncompressed. The graphic is automatically scaled and cropped to fit, and converted to .png format if necessary. Web Clip icons are 104 x 104 pixels for devices with a Retina display or 57 x 57 pixels for all other devices.
Show in App Catalog	Select this option to list the application in your App Catalog.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a SCEP/Credentials Profile

Even if you protect your corporate email with Wi-Fi and VPN with strong passcodes and other restrictions, your infrastructure still remains vulnerable to brute force and dictionary attacks or employee error. For greater security, you can implement digital certificates to protect corporate assets.

Prerequisites

To do this, you must first define a certificate authority. Then configure a **Credentials** payload alongside your **Exchange Web Service**, **Wi-Fi**, or **VPN** payload. Each of these payloads has settings for associating the certificate authority defined in the Credentials payload.

To push certificates down to devices, you need to configure a **Credentials** or **SCEP** payload as part of the profiles you created for EAS, Wi-Fi and VPN settings. Use the following instructions to create a credentials payload:

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles > Add > Add Profile**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select either the **Exchange Web Services**, **Wi-Fi** or **VPN** payload to configure. Configure the payload you selected.
- 4 Select the **Credentials** (or **SCEP**) payload and **Upload** a certificate or select **Defined Certificate Authority** from the Credential Source drop-down and select the **Certificate Authority** and **Certificate Template** from their respective drop-downs.
- 5 Navigate back to the previous payload for Exchange Web Services, Wi-Fi or VPN. Specify the Identity Certificate in the payload:
 - a **Exchange Web Service** – Select the **Payload Certificate** under Login Information.
 - b **Wi-Fi** – Select a compatible **Security Type** (WEP Enterprise, WPA/WPA2 Enterprise or Any (Enterprise)) and select the **Identity Certificate** under Authentication.
 - c **VPN** – Select a compatible **Connection Type** (for example, CISCO AnyConnect, F5 SSL) and select **Certificate** from the machine/User Authentication drop-down. Select the **Identity Certificate**.

- 6 Return to the Credentials payload and choose the following allowances:
 - a **Allow access to all applications** – Select to allow or prevent applications to access the certificate in the Keychain. When this option is enabled, it is not required for the end users to explicitly select the 'allow access to all applications' to access the installed SCEP Certificate and enter credentials to grant access.
 - b **Allow export from the Keychain** – Select whether to allow or prevent users from exporting the private key from the installed certificate.
- 7 Select **Save and Publish**.

Configure a Privacy Preferences Control Profile

With the release of macOS Mojave 10.14, Apple has introduced the security enhancements around user data protection and privacy. With the enhancements, macOS prompts the user's consent for an application or process to access specific data. If users do not consent to the data access, the applications and processes might fail to function.

A new MDM configuration profile called the Privacy Preferences Control allows you to manage data access consent on behalf of the user on macOS 10.14 devices. Through the Privacy Preferences Control profile, you can allow or disallow the application's request to access various macOS services. For example, if an application requests access to user's Calendar data, you can allow or deny the request.

Note This profile can only be delivered to devices that are User Approved MDM Enrolled and macOS 10.14+ devices. The profile must not be installed to devices until after they upgrade, else the settings cannot apply. It is required to create a Smart Group for macOS 10.14 devices to assign the profile, so as to have the devices automatically pick up the profile on upgrade.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**.
- 2 Configure the profile's **General** settings.
- 3 Select the **Privacy Preferences** payload.
- 4 Select **Add App** to add application or process and configure the following settings.

Setting	Description
Identifier	Enter the bundle ID or installation path of the application or process.
Identifier Type	Select the Identifier type either as Bundle ID or Path. Application bundles are identified by bundle ID. Non-bundled applications are identified by installation path. Helper tools embedded within an application bundle automatically inherit the permissions of their enclosing application bundle.

Setting	Description
Code Requirement	<p>Enter the designation displayed by running the following command:</p> <pre>codesign --display -r - /path/to/app/binary</pre> <p>For example: If you execute the codesign command against VMware Fusion</p> <pre>codesign --display -r - /Applications/VMware\ Fusion.app/</pre> <p>You receive the following output. The code requirement is the code to the right of the arrow symbol (=>) as shown below:</p> <pre>Executable=/Applications/VMware Fusion.app/Contents/MacOS/VMware Fusion designated => identifier "com.vmware.fusion" and anchor apple generic and certificate 1[field.1.2.840.113635.100.6.2.6] / exists / and certificate leaf[field.1.2.840.113635.100.6.1.13] / exists / and certificate leaf[subject.OU] = EG7KH642X6</pre>
Static Code Validation	If enabled, the process or application statically validates the code requirement. Enable this feature only if the process invalidates its dynamic code signature.
Comment	Enter notes for your own use. This is not used by macOS.
Services	Following are the services offered by Apple to pre-configure in this profile. If there are conflicting configurations, the most restrictive settings (deny) are used.
Address Book	Allow or disallow the contact information managed by Contacts.app.
Calendar	Allow or disallow the calendar information managed by Calendar.app.
Reminders	Allow or disallow the reminders information managed by Reminders.app.
Photos	Allow or disallow the pictures managed by Photos.app -/Pictures/.photoslibrary
Camera	Access to the camera cannot be given in a profile, it can only be denied.
Microphone	Access to the microphone cannot be given in a profile, it can only be denied.
Accessibility	Allow or disallow to control the application through the Accessibility subsystem.
Post Event	Allow or disallow the application to send the CoreGraphics APIs to send CG Events to the system event stream.
System Policy All Files	Allow or disallow the application access to all protected files.
System Policy Sys Admin Files	Allow or disallow the application access to some files used in system administration.
Apple Events	Allow or disallow the application to send a restricted Apple event to another process. You can add multiple Apple events for an application.
Receiver Identifier	Enter the receiver identifier of the process or application receiving an Apple Event sent by the Identifier process. It is required only for the Apple Events service and is not valid for other services.

Setting	Description
Receiver Identifier Type	Enter the type of Apple Event Receiver Identifier value. Must be either bundleID or path. It is required only for the Apple Events service and is not valid for other services.
Receiver Code Requirement	Enter the Code requirement for the receiving application. It is required only for the Apple Events service and is not valid for other services. Note Receiver Code Requirement is found using the same method as the Code Requirement for the app or service you are defining in the profile.

- 5 Select **Save**.
- 6 Navigate back to the Privacy Preferences Control payload's default page to view the list of applications holding the payload policies.

Configure a Dock Profile

Configure a Dock profile to manage the look and feel of the dock and the applications that will display on it. Configuring Dock settings from the UEM console allows for additional control of the users' devices by determining whether or not the users can adjust their own settings later. For example, removing or adding an app from the Dock.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Dock** payload.
- 4 Configure **Size & Position** settings, including:

Setting	Description
Dock Size	Use the scale to determine the desired size for the Dock.
Allow user to adjust Dock Size	Allow or prevent users from modifying their own Dock Size settings on their devices.
Magnification	Use the scale to determine the desired magnification for the Dock.
Allow user to adjust Magnification	Allow or prevent users from modifying their own Magnification settings on their devices.
Position	Use the drop-down menu to select the position of the Dock on the screen.
Allow user to adjust Dock Position	Allow or prevent users from modifying their own Dock Position settings on their devices.

5 Configure **Items** settings, including:

Setting	Description
Dock Applications	Select Add to specify applications to appear on the Dock.
Dock Items	Select Add to specify files and folders to appear on the Dock.
Add Other Folders	Configure folder for My Applications, Documents, and Network Home in the Dock.
Allow user to adjust Dock Applications and Items	Allow or prevent users from modifying their own Dock Applications settings on their devices.

6 Configure **Options** settings, including:

Setting	Description
Minimize Using	Select either Genie or Scale animation for minimizing the Dock.
Allow user to adjust Minimize effect	Allow user to adjust Minimize effect.
Minimize Window Into Application Icon	Select this to create an icon to represent an open window in the Dock when the window is minimized.
Allow user to adjust Minimize into Application icon	Allow or prevent users from modifying their own Minimize windows settings on their devices.
Animate Opening Application	Enable animation when launching an application from the Dock.
Allow user to adjust Animate Opening Application	Allow or prevent users from modifying their own animation settings on their devices.

7 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Restrictions Profile

Use restrictions to secure the native functionality on macOS devices, protect the corporate information, and enforce the data-loss prevention. Restriction profiles limit how employees can use their macOS devices and provide the control needed for effective lock down of a device if necessary.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile applies to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Restrictions** payload.

4 Configure **Preferences** restrictions:

Setting	Description
Restrict System panes	Select to view and edit the system preference restrictions options (such as Accessibility, App store, Bluetooth, CDs and DVDs, Date & Time, Desktop & Screen Saver, Dictation & Speech, Displays, Dock, Energy Saver, Extensions, Fibre Channel, Flash Player, iCloud, Ink, Internet Accounts, Keyboard, Language & Region, Mission Control, MobileMe, Mouse, Network, Notifications, Parent Controls, Printers & Scanners, Profiles, Security & Privacy, Sharing, Software Update, Sound, Spotlight, Startup Disk, Time Machine, Trackpad, Users and Groups, and Xscan).
Enable selected items	Select to restrict functionality. Then, make restriction selections in the following sections.
Disable selected items	Select to allow the preferences. Then, make the selections in the following sections.

5 Configure **Application** restrictions:

Setting	Description
Game Center	To restrict or allow the use of Game Center, select the option.
Safari	To prevent autofilling web forms, storing login information, or iCloud Keychain details, restrict or allow the use of AutoFill when using Safari.
App Store	To install updates, restrict or allow the use of the App Store, app store adoption, and use of passwords. When the Restrict App Store to Software Updates is enabled, prevents third-party app updates from the App Store.
Apple Music	To permit users to stream music from Apple Music to their devices, select Allow Music Service
Launch Restrictions	Choose to restrict applications from launching. Use the Add buttons to specify allowed applications, allowed folders and disallowed folders.

6 Configure **Widgets** restrictions:

Setting	Description
Allow only configured widgets	Select to allow widgets. To specify allowed device widgets, click the Add button.

7 Configure **Media** restrictions:

Setting	Description
Network Access	Allow or restrict the network access for AirDrop.
Hard Disk Media Access	Determine what media formats are allowed, require authentication and read-only access for the end user. You can also force to auto-eject media at log out.

8 Configure **Sharing** restrictions:

Setting	Description
Restrict which sharing services are enabled	Select which Sharing services, such as AirDrop, Facebook, and Twitter, are enabled on the device. You can also select the Automatically enable new sharing services check box as a restriction.

9 Configure **Functionality** restrictions:

Setting	Description
Lock desktop picture	Select to prevent changing the desktop picture.
Desktop picture path	Enter the path for the desktop picture. Leaving the path blank locks the current desktop picture and prevents it from being changed.
Camera	Restrict or allow the use of the built-in camera. When restricted, all applications whether the native or the enterprise are unable to access the camera.
iCloud	Restrict or allow the use of the iCloud functions. <ul style="list-style-type: none"> ■ Allow iCloud documents and data ■ Allow use of iCloud password for local accounts ■ Allow backup to My macOS iCloud service ■ Allow Find My Mac iCloud service ■ Allow iCloud Bookmark sync ■ Allow iCloud Mail services ■ Allow iCloud Calendar services ■ Allow iCloud Reminder services ■ Allow iCloud Address Book services ■ Allow iCloud Notes services ■ Allow iCloud Keychain sync ■ Allow iCloud Desktop & Documents Services
Content Caching	Select to allow end users to enable Content Caching on their devices (macOS 10.13 and higher).
Spotlight	Restrict or allow the use of Spotlight suggestions when using Spotlight for searching.
AirPrint	Restrict or allow the use of the AirPrint functions: <ul style="list-style-type: none"> ■ Force AirPrint to use trusted certificates for the TLS printing communication (macOS 10.13 and higher). ■ Allow the iBeacon discovery of AirPrint printers. Enabling iBeacon discovery prevents spurious AirPrint Bluetooth beacons from phishing for the network traffic (macOS 10.13 and higher).
Passwords	Restrict auto filling of passwords on the devices and sharing of Wi-Fi passwords to the nearby devices.

- 10** To push the profile to the devices, select **Save & Publish**. The addition or removal of some **Restrictions** profile payloads may not take effect until the target application or utility is restarted on the device.

Configure a Software Update Server Profile

A software update server profile allows you to specify the update server that will be tied to the device for all versioning and update control.

Use this profile to connect to a macOS server with the Workspace ONE Intelligent Hub and configure schedules that actively check and perform updates much more frequently than the system does. If needed, connect to a corporate server to perform updates. Either way, this profile provides a simple solution for managing software updates, restart options and notification updates for end users.

Note Software update profile only updates minor software update patches and not major software updates.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Software Update** payload.
- 4 Configure Software Update settings:

Setting	Description
Update Source	Choose a server to configure communication with the client computers' .plist. If choosing Corporate SUS , enter the hostname of the server (for example, http://server.net:8088/index.sucatalog .)
Install macOS updates	Select how and when to check for and control updates. <ul style="list-style-type: none"> ■ Install Updates Automatically – Downloads and installs all updates; sends notifications to the end user. ■ Download Updates in Background – Downloads the updates; sends notifications; the end user installs updates when ready. ■ Check for updates only – Checks for updates and sends notifications to the end user; the user downloads and installs the updates. ■ Don't Automatically Check for Updates – Turns off the ability to update software; monitors .plist settings to match profile only.
Choose Updates	Choose updates to send to the computer. <ul style="list-style-type: none"> ■ Choose All – Sends all updates including Apple updates. ■ Recommended only – Sends only security updates.
Allow installation of macOS beta releases	Select this check box to allow beta releases on the server. This option may be best for testing environments only. This does not require the Workspace ONE Intelligent Hub.
Install app updates	Select to allow app updates.
Notify the user updates are installing	Send the end user notifications about receiving updates on the device.

Setting	Description
Schedule	<p>Schedule updates with the Workspace ONE Intelligent Hub,</p> <ul style="list-style-type: none"> ■ Configure Update Interval – Choose how often to check for updates in two-hour increments. ■ Update a Specific Time – Choose specific days and times to check for updates. Choose times to control updates when there are concerns about use during peak business hours or band-width utilization
Force Restart (if required)	<p>Automatically restart the computer if required to complete the software update.</p> <ul style="list-style-type: none"> ■ Grace Period – Choose to defer a reboot for a certain period of time. After this time expires, the computer automatically reboots. <p>Note Grace Period settings will also be translated to the screensaver settings.</p> <p>This setting will also be translated to the screensaver settings.</p> <ul style="list-style-type: none"> ■ Allow user to defer – Enable the user to choose to defer re-starting the computer for a certain period of time. <ul style="list-style-type: none"> ■ Defer time – Choose how often to prompt the user to re-start the computer after deferment. After each allowed deferment, a message appears prompting the user to re-start the computer. ■ Max number of defers – Choose how many times the user can defer from re-starting the computer before it is automatically re-started to complete the update process.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Parental Controls Profile

A parental control profile manages settings that limit profanity, blacklist or whitelist specific URLs, time allowances and curfews.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Parental Controls** payload.

4 Configure **Content Filter** settings , including:

Setting	Description
Enable use of Dictation	Select this check box to allow user access to Dictation feature.
Hide Profanity in Dictionary and Dictation	Select this check box to remove profane terminology.
Limit Access To Websites By	Select this check box to enable web restrictions. Then, select the applicable radio button for your desired restriction and add blacklisted and whitelisted URLs as needed.

5 Configure **Time Limits** settings:

Setting	Description
Enforce Limit	Select this check box to enable time limit restrictions.
Allowances	Select the applicable check boxes to set allowed device usage to either weekdays or weekends and use the drop-down menus to specify time limits for daily device usage.
Curfews	Select the applicable check boxes to prevent the end user from accessing the device during weekdays or weekends and use the drop-down menus to set specific time frames when device usage is not allowed.

6 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Directory Profile

By binding a device to the directory service, the device comply with any domain policies and password security settings. You may bind a single device to multiple directories by sending multiple directory service profiles.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Directory** payload. Then, choose the **Directory Type**, Open Directory or Active Directory.

If multiple profiles enforce separate policies on a single device, the most restrictive policy is enforced. If your password policy is being managed by your directory for network users logging into the devices, Workspace ONE UEM does not recommend a passcode policy.

4 Choose **Authentication** settings including:

Setting	Description
Directory Type	Choose Active Directory or Open Directory or LDAP from the drop-down menu.
Server Hostname	Enter the directory server name.
Username and Password	Enter the credentials of the administrator used to authenticate and bind the device to the server. Administrator credentials should not include the domain. Use "administrator" only, do not use "domain\administrator."
Client ID	Enter the identifier associated with the device in the directory. Enter the Client ID in a format that is allowed by the directory you're attempting to bind. Workspace ONE UEM recommends using {SerialNumber}. Other lookup values (device asset number, etc.) may not generate computer names that comply with Netbios Naming Conventions.

5 Choose **User Experience** settings for Active Directory Accounts:

Setting	Description
Configure a mobile account at login	Select this option to create a mobile account. When this option is selected, the users' data is stored locally and they are automatically logged into a mobile account.
Require confirmation	Send a confirmation message to the end user.
Use UNC path	Select to determine the UNC specified in the Active Directory when mounting the network home.
Mount	Choose either the AFP or SMB protocols.
Default user shell	Specify the default shell for the user after logging into the computer.

6 Select the **Mappings** tab to specify an attribute to be used for equivalent acronym (GID). By default these are derived from the domain server.

7 Select **Administrative** tab and configure settings including:

Setting	Description
Group Names	Specify groups to determine who has local administrative privileges on the computer.
Preferred domain server	Enter the name of the domain server.
Namespace	Select the primary account naming convention based on forest or domain .
Packet signing	Choose how to ensure data is secure.
Packet Encryption	Choose to encrypt data.
Password trust interval	Set to determine how often the computer trust is updated.
Restricts DDNS	Add interfaces to specify updates. Use the format: en0, en1, en2 etc.

8 Select **Save & Publish** to push the profile to the device.

Configure a Security and Privacy Settings Profile

The security and privacy settings profile lets you configure Apple's Gatekeeper functionality settings, which are used for secure application downloads. Gatekeeper also controls specific settings related to user passwords.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Security and Privacy** payload.
- 4 Choose locations from which apps may be downloaded.
- 5 Configure OS Updates settings to perform a force delay in updating OS especially from updates being visible to end user for a specified number of days.

Setting	Description
Delay Updates (Days)	Enable this option and specify the number of days to delay the software update. Number of days range from 1 to 90. (macOS 10.13.4+ devices). The number of days dictate the length of time after the release of the software update and not after the time of installation of the profile.

- 6 Configure **Gatekeeper** settings.

Setting	Description
Gatekeeper	Choose to restrict which types of applications may be downloaded. The available options are: <ul style="list-style-type: none"> ■ Mac App Store ■ Mac App Store and identified developers ■ Anywhere
Do not allow user to override Gatekeeper setting	Select to prevent the user from modifying settings to Gatekeeper.

- 7 Configure **Security** settings.

Setting	Description
Apple Watch to Unlock	Select to allow Apple Watch to unlock a paired macOS device (macOS 10.12 and higher).
Touch ID to Unlock	Select to allow Touch ID to unlock a macOS device (macOS 10.12.4 and higher).
Allow user to change Password	Select to allow end users to change their passwords (macOS 10.9+).

Setting	Description
Require password after sleep or screensaver begins	Select to require a password after sleep or screen saver begins. Set the grace period to determine when a password should be entered.
Allow user to set lock message	Select to allow end users to set a lock message on their devices (macOS 10.9+).

- 8 Configure **Privacy** settings to automatically send diagnostic and usage data to Apple.
- 9 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Full Disk Encryption Profile (macOS)

Configure encryption on macOS 10.8 with the Workspace ONE Intelligent Hub and this profile.

If you are using macOS 10.9 +, configure disk encryption by simply pushing this profile, whether or not the Workspace ONE Intelligent Hub is installed. Other Workspace ONE UEM enhancements with 10.9 + include role-based access for recovery keys and the ability to audit who views recovery keys and when.

Important If you have upgraded console to the latest version 9.3, you have to re-edit and re-publish the disk encryption profile to the device (10.13+) to utilize the recovery key management features of Workspace ONE UEM.

To configure a disk encryption profile:

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Disk Encryption** payload.
- 4 Configure Disk Encryption settings, including:

Setting	Description
OS Version	Select the appropriate OS version.
Enforce Disk Encryption	Select this check box to enable disk encryption on the device.
Recovery Key Type	Choose the type of recovery key required to decrypt the disk. The options are Personal, Corporate, Personal and Corporate.
File Vault Enterprise Certificate	If configuring Corporate or Personal and Corporate , choose a certificate for disk encryption that was uploaded through the Configure a SCEP/Credentials Profile payload. For detailed information on using certificates with the Disk Encryption profile, see Chapter 5 Full Disk Encryption with FileVault section.
Store Recovery Key in Workspace ONE UEM	Select this check box to retain the recovery key on the Workspace ONE UEM server. If not selected, choose a Recovery Key Redirection URL and Recovery Key Encryption Certificate to store the recovery key elsewhere. For more information on recovery keys, see the configuration profile reference guide in the Apple Developer portal.

Setting	Description
Require Reboot	Select this check box to force the device to reboot and finish disk encryption. (Hub only) Note If not selected on 10.8 computers, end users are still prompted, but not forced, to reboot the device to complete the encryption process. If not selected on 10.9 + computers, users are not prompted for disk encryption until they log out of the user account.
Require user to unlock the disk after hibernation	Select this to require a password to unlock the disk after hibernation and restore the state of the disk when it was last saved. Workspace ONE UEM recommends this for encryption.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Important Disk encryption will fail and error out if no CoreStorage logical volume groups are found. This can be determined by running command `diskutil cs list` on an unencrypted device without File Vault 2. If no CoreStorage Volumes are found, the drive needs to be re-formatted using File Vault 2.

Configure a Login Items Profile

A Login Items profile enables you to control the behavior of the users' devices when they launch.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Login Items** payload.
- 4 Configure Login Items settings, including:

Setting	Description
Applications	Specify which applications to launch at login. Enter the full path of the application, for example, <code>/Applications/Contacts.app</code> .
Files and Folders	Specify which files and folders to launch at login. Enter the full path of the file or folder.
Authenticated Network Mounts	Specify which network mounts to authenticate with the user's login name and password. Use Active Directory (AD) credentials for user login. Enter the full mount path and volume, including protocol, for example, <code>smb://server.example.com/volume</code> .
Network Mounts	Specify which volumes to mount at login. Use AD credentials for user login. Enter the full mount path and volume including protocol, for example, <code>smb://server.example.com/volume</code> .
Add network home SharePoint	Select this to enable network home SharePoint configuration on the device.
User may press shift to prevent items from opening	Select this to allow the user to hold shift upon login to prevent items from opening.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Login Window Profile

Configure the Login Window profile to control the look and feel of the login window, including options for logging in, and directory user access to the device.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Login Window** payload.
- 4 Configure **Login Window** settings using the tabs, including:

Tab	Description
Window	<ul style="list-style-type: none"> ■ Show additional information in the menu bar, including host name, macOS version, and IP address when the menu bar is selected. ■ Enter custom banner message. ■ Show local user, mobile accounts, network accounts, device admins and "other" information. ■ Show device power options, including Shut Down, Restart and Sleep.
Options	<ul style="list-style-type: none"> ■ Show password hint and set amount of retries before hint is shown, if available. ■ Enable automatic login, console access, Fast User Switching ■ Log out users, enable computer admin to refresh or disable management. ■ Set computer name to computer record name, enable external accounts, allow guest user. ■ Set screen saver to start and set actual screen saver.
Access	<ul style="list-style-type: none"> ■ Allow or deny specific user accounts from accessing device. ■ Allow local-only users to log-in; use available workgroup settings and nesting ■ Combine available work group settings and always show work group dialog during login <p>Note This only works with Directory Users, not local users on the device. The device must be bound to the same directory that Workspace ONE UEM is pulling users from.</p>
Scripts	<ul style="list-style-type: none"> ■ Set EnableMCXLoginScripts to TRUE. ■ Set MCXScriptTrust to match the binding settings used to connect the client computer to the directory domain.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure an Energy Saver Profile

An Energy Saver profile enforces the settings for when the computer should sleep and configure wake options.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Energy Saver** payload.
- 4 Configure Energy Saver settings, including:

Setting	Description
Desktop	<ul style="list-style-type: none"> ■ Sleep Options – Set the length of time for the computer or display to go to sleep. ■ Wake Options – Set when the computer will wake depending on Ethernet network administrator access, pressing the power button and automatically after a power failure.
Laptop	Laptop power options are identical to desktop power options. Configure specific configurations when the laptop is using battery power or when connected to a power adapter.
Schedule	Set the computer to start up or go to sleep at specific times. Also set unique schedules depending on weekday, specific day and any day.

- 5 Select **Save & Publish** when you are finished to push the profile to devices. If you push a laptop profile to a desktop device, or vice versa, the profile is ignored by the receiving device.

Configure a Time Machine Profile

By creating a Time machine profile you can specify a backup server location used to mount and backup the device.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Time machine** payload.

4 Configure **Time machine** settings, including:

Setting	Description
Backup all volumes	Secure all volumes associated with the device. By default, only the startup volume is backed up.
Backup system files and folders	Secure all system files and folders, which are skipped by default.
Enable automatic backup	Back up the system automatically at determined intervals.
Enable local snapshots (10.8+)	Configure local backup snapshots when device is not connected to the network.
Backup size limit	Set a maximum size allowed to backup the system. Enter 0 (zero) to set unlimited.
Paths to backup	Choose specific filepaths to backup, in addition to the default startup volume.
Paths to skip	Choose specific filepaths to skip during backup from the startup volume.

5 Select **Save & Publish** when you are finished to push the profile to devices.

Results

Once the profile is pushed to the device, the login user's network credentials are used to configure the system keychain for the backup volume defined in the profile. The backup volume will not mount using a local account because network credentials are required at login to authenticate the drive. After the system keychain is configured the first time, all backups from that computer will be associated with the original user's backup volume.

Configure a Finder Profile

A Finder profile controls general settings related to what end users can see on their devices and the actions they are allowed to perform.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Finder** payload.
- 4 Configure settings on the **Preferences**, including:

Setting	Description
Use Regular Finder/Use Simple Finder	Allow user to access either Regular Finder or Simple Finder as a default.
Hard Disk	Show the device's Hard Disk icon on the Desktop.
External Disk	Show any connected external disk icons on the Desktop.

Setting	Description
CDs, DVDs, and iPods	Show any inserted media icons on the Desktop.
Connected Server	Show any connected servers icons on the Desktop.
Show warning before emptying the Trash	Present user with prompt before emptying the Trash.

- 5 Configure settings on the **Commands**, including:

Setting	Description
Connect to server	Allow users to open a dialog box and find servers on a network.
Eject	Allow users to eject removable media and mountable volumes.
Burn Disc	Allow users to write permanent information to a CD or DVD.
Go to Folder	Allow users to open files or folders by typing the path name.
Restart	Allow users to access the restart command from the Apple Menu.
Shut Down	Allow users to access the shutdown command from the Apple Menu.

- 6 Select **Save & Publish** when you are finished to push the profile to devices.

Configure an Accessibility Profile

Configure accessibility options for end users by creating an Accessibility profile.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Accessibility** payload.
- 4 Configure options for **Seeing**, including:

Setting	Description
Zoom Options	Enable zoom function using scroll wheel and keyboard, set max/min zoom, smooth images and show preview rectangle when zoomed out.
Display Options	Invert colors, use grayscale, enhance contrast and set cursor size to normal, medium, large or extra large.
Voiceover Options	Enable voiceover for the device.

5 Configure options for **Hearing**, including:

Setting	Description
Flash the screen when an alert occurs	Enable flashing for alerts.
Play stereo audio as mono	Allow stereo to play as mono.

6 Configure options for **Interaction**, including:

Setting	Description
Sticky Keys	Enable Sticky Keys, beep when a modifier is set and display pressed keys on screen.
Slow Keys	Enable Slow Keys, use click key sounds and set key acceptance delay.
Mouse Keys	Enable Mouse Keys, set initial delay and max speed, and ignore device's built-in trackpad.

7 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Printer Configuration Profile

By creating a Printer configuration profile you can tell devices which default printer to use and set printer access and footer options.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Printing** payload.
- 4 Select **Add Printer**. An **Add Printer** window appears.
- 5 Configure the **Printer** settings including:

Setting	Description
Name	Enter the name of the printer to add.
Printer address	Enter the printer address.
Location	Specify the friendly location name.
Model/Driver	Choose the printer type. <ul style="list-style-type: none"> ■ Set model/driver to Custom if the printer does not support generic drivers for macOS devices. If using Custom Driver, the driver text must be the exact name, which can be found by locating the configured printer on the computer and copying the Kind listed under the printer description.

Setting	Description
Lock printer settings	Force the user to enter an Admin password to access the printer settings.
Advanced	Unlock the PPD file location and enter it.
Default Printer	Select a printer to be the default printer.
Allow user to modify printer list	Enable end users to modify printers on the device.
Allow printers to connect directly to the device	Enable printers to connect automatically. If checked, you can also require admin passcode.
Only show managed printers	Allow end users to view a list of managed printers available to the device.
Print page footer	Select this to auto-populate the footer with user information and time of print.
Include macOS Address	Add a macOS address to show the location of the pages that print and specify the font name and size of the footer.
Font Name	Specify the font name.
Font Size	Specify the size of the footer.

- 6 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Messages Profile

You can create a Messages profile to pre-configure end user laptops to use a Jabber or AOL Instant Messenger (AIM) account. Accounts can be authenticated through SSL certificates or Kerberos. The ability to use Messages applies to User Profiles only.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select (**User Profile**) to apply enrollment to the user's device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Messages** payload.
- 4 Configure **Messages** settings for Jabber , including:

Setting	Description
Account Type	Allow user to access either a Jabber or AIM account.
Account Description	Configure a brief description of the profile that indicates its purpose. This option appears if AIM is selected.
Account Name	Enter the name of the account.
User Name	Enter the user name for this account. Use lookup values (for example, {EnrollmentUser}) to pull data from the UEM console.
Password	Optionally enter the password required to authenticate the account. Leave it blank to prompt end users to enter their account password.
Host Name	Enter the name of the account server.

Setting	Description
Port	Enter the number of the port assigned to the account.
Use SSL	Select this check box to enable Secure Socket Layer (SSL) usage for authentication.
Use Kerberos v5	Select this check box to enable Kerberos v5 usage for authentication.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Proxy Profile

Direct traffic through a designated proxy server for Wi-Fi connections.

Choose from multiple proxy connections to properly route traffic depending on your organizations needs and add proxy exceptions as needed.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select whether this profile will apply only to the enrollment user on the device (**User Profile**), or to the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Proxies** payload from the list.

- 4 Choose **Network Proxies** for systems running macOS 10.11, or choose **Global HTTP Proxy** for legacy support on systems running macOS 10.9 and 10.10.

- a For **Network Proxy** settings, choose:

Setting	Description
Auto Proxy Configuration	Choose this and enter the Proxy PAC File URL to automatically configure the device to PAC file settings.
Web Proxy (HTTP)	Choose to enable this and enter the Host Name and optionally enter the Port used to communicate with the proxy. This tells the device to use this proxy for any HTTP traffic.
Secure Web Proxy (HTTPS)	Choose to enable this and enter the Host Name and optionally enter the Port used to communicate with the proxy. This tells the device to use this proxy for any HTTPS traffic.
FTP Proxy	Choose to enable this and enter the Host Name and optionally enter the Port used to communicate with the proxy. This tells the device to use this proxy for any FTP traffic.
SOCKS Proxy	Choose to enable this and enter the Host Name and optionally enter the Port used to communicate with the proxy. This proxy establishes a TCP traffic connection to a device.
Streaming Proxy	Choose to enable this and enter the Host Name and optionally enter the Port used to communicate with the proxy. This proxy is configured using a RTSP if needed for applications such as AirPlay.
Gopher Proxy	Choose to enable this and enter the Host Name and optionally enter the Port used to communicate with the proxy. Gopher proxy enables Gopher-based content.

- b For **Global HTTP Proxy** settings, choose:

Setting	Description
Proxy Type	Select the type of proxy. Select Manual for proxies that require authentication, or Auto to specify a Proxy PAC URL.
Proxy PAC File URL	Only required if the proxy type is Auto . This option appears when Auto is selected.
Proxy Server	Enter the URL of the Proxy Server. This is required if you selected Manual as the proxy type. This option appears when Manual is selected.
Proxy Server Port	Enter the port used to communicate with the proxy. This is required if you selected Manual as the proxy type. This option appears when Manual is selected.
Proxy Username/Password	If the proxy requires credentials, you can use look-up values to define the authentication method. This is required if you selected Manual as the proxy type. This option appears when Manual is selected.

- 5 Enter **Proxy Exceptions** as needed.
- 6 Enable or disable **Passive FTP Mode (PASV)**.
- 7 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Mobility Profile

Mobility profiles allow configuration of portable home directories for network accounts, so users can log into the network even when they are not connected to the network.

With a mobility profile, you can also set home and preference sync settings to optionally sync the home folder with a central server.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select **Apple macOS**, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Mobility** payload.
- 4 Using the **Account Creation** tab, set up the mobile account profile. When this account is set up, a local copy of the user's network home folder is created for use when they are not connected to the network.

Setting	Description
Configure Mobile account	Select to configure the account for the user to log into the network.
Require Confirmation	Select to send a confirmation message to the end user.
Show "Don't ask me again"	Select to allow end users to skip the confirmation message after the initial prompt to create the mobile account.
Configure Home Using	Choose settings to either Network home and default sync settings or Local home template from the drop-down navigation menu.
Home folder location	Choose either the on startup volume folder , at path and enter the path location on the user's computer where the home folder will reside, or set the location that the user chooses .
Encrypt Contents with FileVault	<p>Select to encrypt contents with FileVault. If you choose to enable Encryption, select the following settings:</p> <ul style="list-style-type: none"> ■ Select the Require computer master password check box to require a master password. ■ Select Restrict Size to restrict the size of the network home quota. Determine a Fixed Size with megabytes or a Percentage of the home network quota and the Size of the percentage.
Delete mobile accounts	<p>Select to determine how and when to delete the account.</p> <ul style="list-style-type: none"> ■ Select the Delete mobile accounts check box to configure options for deleting the account. ■ Choose After and select how many hours, days or weeks to delete the account after it expires. Setting the value to 0 causes the account to be deleted as soon as the computer is able to delete it. ■ Select Delete only after successful sync to delete the device after it syncs with the central server.

- 5 Choose the **Rules** tab to configure sync options:

Setting	Description
Preference Sync	<p>Enable syncing for user preferences. Choose when, what folders to sync and items that do not need to be synced.</p> <ul style="list-style-type: none"> ■ Select Merge with User Settings check box to add or append the user's sync settings. If this is not selected, the user's settings will be wiped when the new settings are applied.
Home Sync	<p>Enable syncing for desktop preferences. Choose when, what folders to sync and items that do not need to be synced and may be skipped.</p> <ul style="list-style-type: none"> ■ Select Merge with User Settings check box to add or append the user's sync settings. If this is not selected, the user's settings will be wiped when the new settings are applied.
Options	Determine how to sync, how often, and allow syncing status to show in Apple Menu bar.

- 6 Select **Save & Publish** to push the profile to the device.

Configure a Managed Domains Profile

Managed domains are another way Workspace ONE UEM enhances Apple's "open in" security feature on macOS computers. Use the "open in" feature and manage email domains to protect corporate data by helping end users verify which emails are sent to corporate accounts.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles > Add > Add Profile**. Select **Apple macOS**, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Managed Domains** payload from the list.
- 4 Enter **Managed Emails Domains** to specify which email addresses are corporate domains. For example: **mdm.company.com**. Emails sent to other domains are highlighted in the email application to indicate that the address is not part of the corporate domain.
- 5 Select **Save & Publish**.

Configure a VMware Fusion Profile

Integrating VMware Fusion with Workspace ONE UEM's MDM capabilities allows businesses to add flexibility to corporate device management with Bring Your Own Laptop (BYOL) solutions.

Prerequisites

Push the VMware Fusion profile from the UEM console to allow for management of both the host device and corporate applications. After the VMware Fusion application is installed, these profile settings allow you to manage the application, including applying volume licenses, configuring UI defaults, and other advanced deployment settings. As needed, administrators can quickly remove the VM application when the laptop is unenrolled.

Important The application cannot be installed until the profile settings are pushed to the device. Even if the VMware Fusion app is available in the app catalog, the VM Fusion profile must be configured to complete integration.

Procedure

- 1 Administrators must upload the VMware Fusion application to the UEM console. For more information about application management, see **Mobile Application Management** guide available on [Workspace ONE UEM Resources](#).
- 2 Navigate to **Devices > Profiles & Resources > Profiles > Add > Add Profile > Apple macOS > Device Profile**.
- 3 Configure the profile's **General** settings.
- 4 Select the **VMware Fusion** payload.
- 5 Configure the VMware Fusion settings.

Setting	Description
Volume License	Enter the volume license key for the VMware Fusion software.
Prompt EULA	Select this check box to ask end users to agree to the terms of an End User License Agreement at installation.
Prompt Antivirus Check	Select this check box to ask end users to perform an anti-virus check at installation.
Prompt Registration	Select this check box to ask end users to register the software at installation.
Prompt Data Collection	Select this check box to ask end users to agree to data collection at installation.
Show License Key Views	Select this check box to view the license key applied to the application.
Software Update	Choose how the application will be updated from the drop-down menu.
App Directory	Choose to change the default location of the VMware Fusion application.
VM Directory	Choose to change the default location of the virtual machine.
Support URL	Enter the company URL that directs end users to a website for help. By default this will point to standard Fusion help.
Update	Enter the company server name that will send Fusion updates. By default this will point to standard VMware's software server.

- 6 Configure **Advanced** settings if needed. The only reason to have an explicit entry in this section is to change the name or location of any specific application or virtual machine by entering its name as it is the (including its **.app** extension) as a key and the absolute path to the destination app as its value.
- 7 Select **Save & Publish** to push this profile to devices.

Configure a Web Content Filter Profile

This payload allows you to configure settings and authentication with third-party web content filters.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles > Add > Add Profile**. Select **Apple macOS**, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **Content Filter** payload.
- 4 In the **Filter Type**, see that **Plug-in** is enabled.
- 5 Complete the required **Content Filter** information including:

Setting	Description
Filter Name	Enter the name of the filter that displays in the app and on the device.
Identifier	Enter the bundle ID of the identifier of the plug-in that provides filtering service.
Service Address	Enter the hostname, IP address or URL for service.
Organization	Choose the organization string that is passed to the 3rd party plug-in.
Filter WebKit Traffic	Select this check box to choose whether to filter WebKit traffic.
Filter Socket Traffic	Select this check box to choose whether to filter Socket traffic.
Note Either WebKit or Socket traffic needs to be enabled in order for the payload to work.	

- 6 Configure the **Authentication** information including:

Setting	Description
User Name	Use look-up values to pull directly from the user account record. Ensure your Workspace ONE UEM user accounts have an email address and email username defined.
Password	Enter the password for this account.
Payload Certificate	Choose the authentication certificate.

- 7 Add **Custom Data** which includes keys required by the third-party filtering service. This information goes into the vendor config dictionary.
- 8 Select **Save & Publish**.

Configure an AirPlay Whitelist Profile

Configuring the AirPlay payload allows you whitelist a specific set of devices to receive broadcast privileges according to a device ID.

Additionally, if the display access to a device is password-protected, you can pre-enter the password to create a successful connection without revealing the PIN to unauthorized parties.

Note AirPlay whitelisting currently only pertains to macOS Yosemite devices.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles > Add > Add Profile**. Select **Apple macOS**, and then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).
- 2 Configure the profile's **General** settings.
- 3 Select the **AirPlay Mirroring** payload tab.
- 4 Select **Add** under Whitelisted AirPlay Destinations.
- 5 Enter the destinations and device information, including:

Setting	Description
Destination Name	This is the name of the destination display. The name must match the device name and is case-sensitive. The device name can be found on the device.
Allowed Destination Device ID	This is the device ID for the destination display. Device IDs include the BonjourID.
Password	This is the password that shows on the user's device when attempting to mirror to the destination. This password is only required if a password is required to mirror to the device.

- 6 Click **Save & Publish** when you are done configuring AirPlay settings.

Configure an AirPrint Profile

Configure an AirPrint payload for an Apple device to enable computers to automatically detect an AirPrint printer even if the device is on a different subnet than the AirPrint printer.

Procedure

- 1 Navigate to **Devices > Profiles > List View > Add** and then **Add** the appropriate platform. If you select Apple macOS, then select whether this profile will apply to only the enrollment user on the device (**User Profile**), or the entire device (**Device Profile**).

- 2 Configure the profile's **General** settings.
- 3 Select the **AirPrint** payload tab.

Setting	Description
IP address	Enter the IP address (XXX.XXX.XXX.XXX).
Resource Path	Enter the Resource Path associated with the AirPrint printer (ipp/printer or printers/Canon_MG5300_series). To find the Resource Path and IP address information of a printer, see the Retrieve AirPrint Printer Information section.

- 4 Select **Save & Publish**.

Configure an Xsan Storage Profile

Apple's Xsan, or storage access network allows macOS with Thunderbolt to Fibre Channel capabilities to quickly access the shared block storage. Configure a payload to manage Xsan directly from the UEM console.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **(User Profile)** to apply the enrollment to the user's device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Xsan** payload.
- 4 Configure **Connection Info** for Xsan including:

Setting	Description
XSAN name	Enter the name of the storage system.
Authentication Secret	Enter the authentication key for the server.
File System Name Servers	Enter the Hostname or IP address of the file system name servers. Use the + button to add additional file system servers as needed.

- 5 Select **Save & Publish** when you are finished to push the profile to devices.

Configure a Firewall Profile

Push a firewall profile with the Workspace ONE Intelligent Hub v2.2+ for macOS to filter unauthorized connections to your enterprise network.

Using the native firewall combined with the Workspace ONE Intelligent Hub, you can monitor firewall settings and revert settings if unauthorized changes occur. Also, use the firewall to control incoming connections and protect computers against probing requests.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.
- 3 Select the **Firewall** payload.
- 4 Select **Enable** to allow firewall protection.
- 5 Configure the following firewall settings:

Description	Setting
Block all incoming connections	Select this to block all incoming connections from sharing services, except for connections required for basic Internet services.
Automatically allow signed software to receive incoming connections	Select this to automatically allow only software signed by a developer and approved by Apple to provide services accessed from their network.
Enable stealth mode	Select this to prevent the computer from responding to or acknowledging requests made from test applications.

- 6 Select **Save & Publish** to push the profile to the device. All Workspace ONE Intelligent Hub functionality continues including Push Notifications even if **Block incoming connections** is selected.

Configure a Firmware Password Profile

Enforce a firmware password to increase security at the hardware level when allowing macOS v10.10+ to start up using an external drive, partition, or using Recovery Mode.

Prerequisites

The Workspace ONE Intelligent Hub v2.2+ for macOS is required with this profile that provides enhanced security and allows you to determine when end users need to enter firmware passwords.

Important If a firmware password is already set on the computer, then profile installation will fail.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Configure the profile's **General** settings.

3 Configure the **Firmware Password**:

Setting	Description
Firmware Password	Enter the password for the device.
Mode	<p>Select the Mode when end users are required to enter the password:</p> <ul style="list-style-type: none"> ■ Command Mode – Require the password when attempting to boot to another drive or partition. After the end user enters the password, the computer begins using Command Mode. Then, the macOS Hub prompts the end user to re-start the computer. ■ Full Mode – Require the password every time the computer starts up. After the end user enters the password, the macOS Hub prompts the end user to re-start the computer. When the computer re-starts, it begins using Full Mode. <p>Once the profile is configured, it cannot be removed remotely.</p>

4 Select **Save & Publish** to push the profile to the device.

Configure a Custom Attributes Profile

Write a command or script and report it as a custom attribute using the Workspace ONE Intelligent Hub for macOS v.2.3 and higher. Choose when to execute the command or script on hourly intervals or during an event.

Custom Attributes can also be used in Assignment Rules for Products. For more information about Products, see [Product Provisioning for macOS](#).

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add** then **Add Profile**. Select Apple macOS, and then select **Device Profile**, since this profile is only applicable to the entire device.
- 2 Scroll down the menu bar on the left and select **Custom Attributes** followed by **Configure**.
- 3 Enter the **Attribute Name**.
- 4 Enter the **Script/Command** to run. Expand the text box as needed.
- 5 Choose an **Execution Interval** to allow for scheduling to report either in hours or as an event occurs.
- 6 Use the **+** and **-** buttons at the bottom of the payload to create multiple scripts.
- 7 Select **Save & Publish** when you are finished to push the profile to devices.

Note Custom Attribute values cannot return the following special characters: `/ \ " * : ; < > ? |`. If a script returns a value which contains these characters, the value is not reported on the console. Trim these characters from the script's output.

Configure a Custom Settings Profile

The **Custom Settings** payload can be used when Apple releases new functionality or features that Workspace ONE UEM does not currently support through its native payloads.

If you do not want to wait for the newest release of Workspace ONE UEM to be able to control these settings, you can use the **Custom Settings** payload and XML code to manually enable or disable certain settings.

You can create a "test" organization group to avoid affecting users before you are ready to save and publish the new settings. Also, any device not upgraded to the latest macOS version ignores the enhancements you create. Since the code is now customized, test the profile devices with older macOS versions to verify expected behavior.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles > Add > Add Profile**. Select **Apple macOS > macOS**.
- 2 Configure the profile's **General** settings.
- 3 Configure the appropriate payload (for example, Restrictions or Passcode).
- 4 Select Save.
- 5 Navigate back to the Profiles page and select a profile using the radio button next to the profile name. Menu options appear above the list.
- 6 Select View XML from the actions menu for the row of the profile you want to customize.
- 7 Find and copy the section of text starting with `<dict>...</dict>` that you configured previously, for example, Restrictions or Passcode. This text contains a configuration type identifying its purpose, for example, restrictions.

For more examples and information on the XML code, refer to the KB article: <https://support.workspaceone.com/articles/115005038288>. There are many such examples available on the [Knowledge Base](#) portal.

- 8 If you see encrypted text between dict tags in the XML window, you can generate the decrypted text by modifying the settings in the profiles page. To do this:
 - a Navigate to **Groups & Settings > All Settings > Devices > Users > Apple > Profiles**.
 - b Override the custom settings option.
 - c Disable Encrypt Profiles option and then Save.
- 9 Navigate back to **Custom Settings** profile and paste the XML you copied in the text box. The XML code you paste should contain the complete block of code, from `<dict>` to `</dict>`.
- 10 Remove the original payload you configured by selecting the base payload section, for example, Restrictions, Passcode and selecting the minus [-] button. You can now enhance the profile by adding custom XML code for the new functionality.
- 11 Select Save and Publish.

Configure a Kernel Extension Policy Profile

Use a Kernel Extension Policy profile to explicitly allow applications and installers that use kernel extensions to load on your end users' devices.

This profile controls restrictions and settings for User Approved Kernel Extension Loading on macOS v10.13.2 and later.

Procedure

- 1 Navigate to **Devices > Profiles & Resources > Profiles** and select **Add**. Select Apple macOS, and then select **Device Profile**.

This profile is not enabled for the User level.

- 2 Configure the profile **General** settings.
- 3 Select the **Kernel Extension Policy** payload.
- 4 Select the **Allow User Overrides** check box to approve additional kernel extensions not explicitly allowed by configuration profiles.

This option allows any application to install on the end users' devices without approval for a kernel extension. If you select this option, the extension policy settings below provide no additional functionality.

- 5 If you choose not to allow users to override kernel extensions, configure the extension policy settings.

Setting	Description
Whitelist Team Identifiers	Team identifiers for which all validly signed kernel extensions will be allowed to load. Use the Add button to add additional identifiers.
Whitelist Kernel Extensions	Signed kernel extensions that will always be allowed to load on the machine. Enter a Team Identifier and a Bundle ID for each app. For unsigned legacy kernel extensions, use an empty key for the team identifier. Use the Add button to add additional extensions.

Full Disk Encryption with FileVault

5

Enforce an encryption policy on macOS computers to protect data on the hard drive and escrowing recovery keys stored in Workspace ONE UEM so the keys can be recovered at later time.

With FileVault2, Workspace ONE UEM builds on native capabilities to encrypt the drive and provides functionality within the Workspace ONE Intelligent Hub to force the user to complete the encryption process.

Once the decision is made to encrypt your managed devices, you have options that allow you to choose the best recovery model for your deployment. These include recovery keys for Personal use, Corporate use, or a combination of both.

This chapter includes the following topics:

- [Corporate and Personal Recovery for macOS Devices](#)
- [Corporate Recovery for macOS Devices](#)
- [Personal Recovery for macOS Devices](#)

Corporate and Personal Recovery for macOS Devices

Corporate and Personal recovery is useful if the user will benefit from viewing and keeping a Personal Recovery Key, but the company will need a quick way to decrypt the device using a Corporate (Institutional) Recovery Key when necessary.

Procedure

- 1 Configure a new **Disk Encryption** profile.
- 2 Choose **Personal & Corporate** as the recovery type and configure the recovery key settings as needed.
- 3 Configure a FileVault Master Keychain. For more information on creating a FileVault Master Keychain, please refer to the section below.
 - a Upload the FileVaultMaster.cer to the Disk Encryption profile to encrypt the assigned computers with your Corporate Recovery Key.

Results

Once FileVault is enabled on the device, the Personal Recovery Key will be reported to the server.

Corporate Recovery for macOS Devices

Corporate recovery is beneficial because the network administrator can decrypt any device using a single Corporate Recovery Key, saving time by not needing to enter a unique Personal Recovery Key for each computer.

Generally, corporate recovery is reserved for Corporate Owned, Line-of-Business devices where the user does not have the ability to decrypt the device if they forget the login password.

Procedure

- 1 Configure a new **Disk Encryption** profile
- 2 Choose **Corporate** as the recovery type and configure the recovery key settings as needed.
- 3 Configure a FileVault Master Keychain. For more information on creating a FileVault Master Keychain, please refer to the section below.
- 4 Upload the FileVaultMaster.cer to the Disk Encryption profile to encrypt the assigned computers with your Corporate Recovery Key.

Results

Once FileVault is enabled on the device, the Corporate Recovery Key will be reported to the server.

Configure a FileVault Corporate (Institutional) Recovery Key for macOS Devices

A corporate recovery key is a pre-made recovery key that can be installed on a system prior to the encryption process. Corporate recovery keys are not automatically generated and must be manually created before they can be used.

This section explains how to create an Corporate Recovery Key for macOS High Sierra (10.13) and above. However, the steps to create an Corporate Recovery Key for macOS Sierra (10.12) and below can be found at <https://support.apple.com/en-us/HT202385>.

To distribute the corporate recovery key through AirWatch, first create the FileVault Corporate Recovery Key and then upload it to the configuration profile on AirWatch Console by following the steps:

Procedure

- 1 [Create FileVault Keychain](#)
- 2 [Copy FileVaultMaster Keychain to Documents](#)
- 3 [Unlock FileVaultMaster Keychain](#)

- 4 [Add FileVaultMaster Keychain to Keychain Access Utility](#)
- 5 [Validate FileVaultMaster Keychain Unlock](#)
- 6 [Delete and Confirm Private Key Deletion](#)
- 7 [Export FileVault Recovery Key Certificate](#)
- 8 Some of the additional steps to perform after exporting FileVaultMaster Recovery Key certificate are to:
 - a Re-Lock the FileVaultMaster Keychain.
 - b Delete keychain from keychain access – To remove references to the FileVaultMaster keychain in Keychain Access.
 - c Store the keychain and password – Store both the keychain (containing the certificate and private key) and the Keychain Password in multiple, secure locations. Without both you will be unable to decrypt any FileVault 2 drives encrypted with this Institutional Recovery Key.

Create FileVault Keychain

You can use commands to create a FileVaultMaster keychain in macOS. The keychain contains both private and public keys required for recovering FileVault 2 encrypted devices.

Procedure

- 1 On a macOS computer (10.13+), select the **Launchpad** icon and then select **Others > Terminal**.
- 2 In the Terminal window, type the following command to create a FileVaultMaster keychain. Follow the prompts to apply password to the created keychain.


```
sudo security create-filevaultmaster-keychain /Library/Keychains/FileVaultMaster.keychain
```
- 3 Once the command is complete, launch the **Finder**.
- 4 Press **Shift+command+G** and enter /Library/keychains as the folder name.
- 5 Select **Go** to access the folder and to fetch the created keychain.

Ensure you make copies and securely store both the keychain file and the password used to create the keychain. This keychain contains the certificate and private key to decrypt any FileVault 2 encrypted devices.

Copy FileVaultMaster Keychain to Documents

Before you start using the created FileVaultMaster keychain, make a copy of it and save in a secure location. Because, you need the modified keychain to encrypt a device and unmodified keychain to recover encrypted devices.

In Terminal, type the following to copy the keychain file. When prompted, enter your admin account password to elevate your rights.

```
cp /Library/Keychains/FileVaultMaster.keychain ~/Documents/FileVaultMaster.keychain
```

```
sudo cp /Library/Keychains/FileVaultMaster.keychain /Library/Keychains/FileVaultMaster2.keychain
```

Unlock FileVaultMaster Keychain

You can unlock the FileVaultMaster keychain using command followed by providing password.

Unlock the FileVaultMaster keychain by entering the following command and enter the password you used when the keychain was created.

```
security unlock-keychain /Library/Keychains/FileVaultMaster.keychain
```

If you get an unexpected result during this step, the unlock idle time might have elapsed. You need to re-issue the unlock command in the Terminal window.

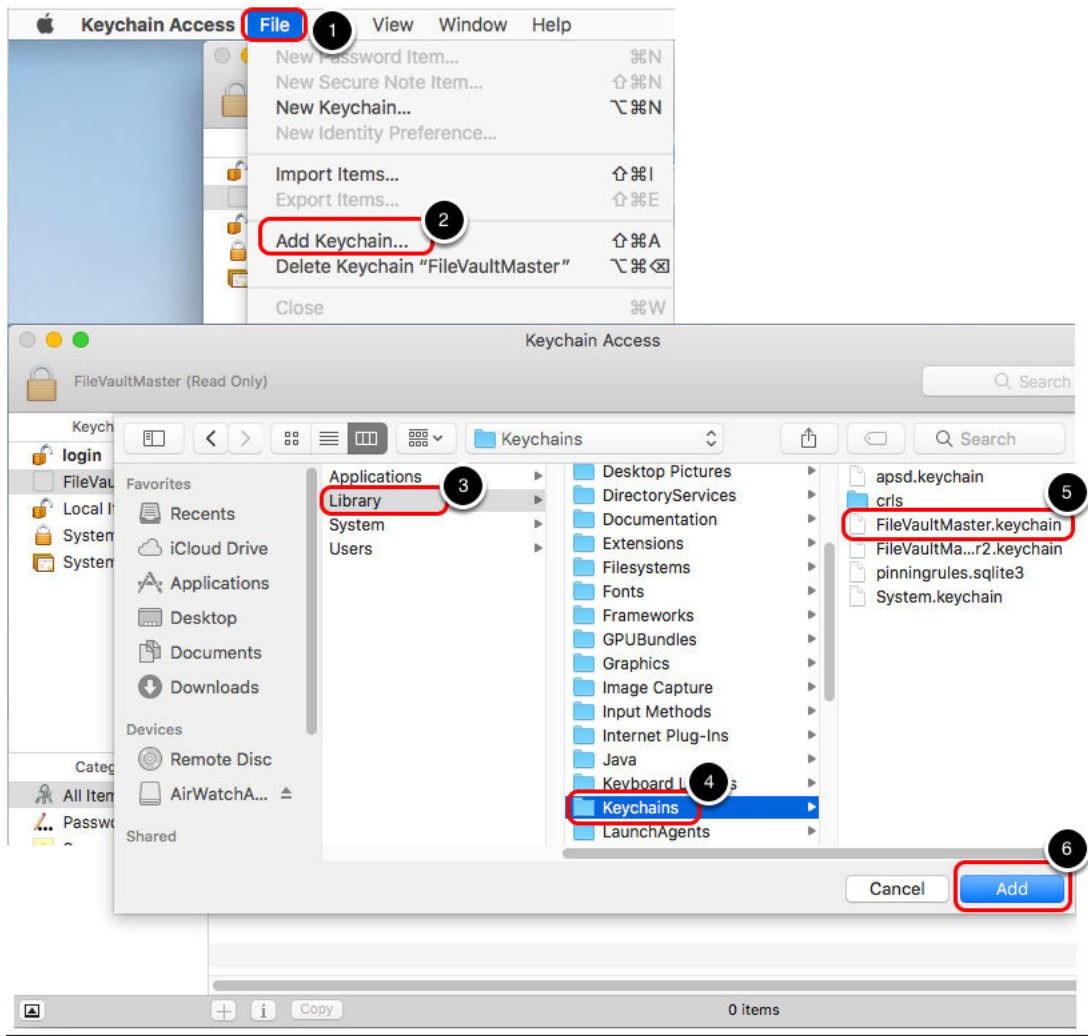
Add FileVaultMaster Keychain to Keychain Access Utility

Add the FileVaultMaster keychain to the Access Utility using the keychain access application.

Prerequisites

Before you add the FileVaultMaster keychain to the Keychain Access Utility, open the Keychain Access application through Terminal window using the following command.

```
open /Applications/Utilities/Keychain\ Access.app/
```



Procedure

- 1 Select **File**.
- 2 Select **Add Keychain....**
- 3 Browse to the **Library** folder.
- 4 Select **Keychains**.
- 5 Select **FileVaultMaster.keychain**.
- 6 Select **Add**.

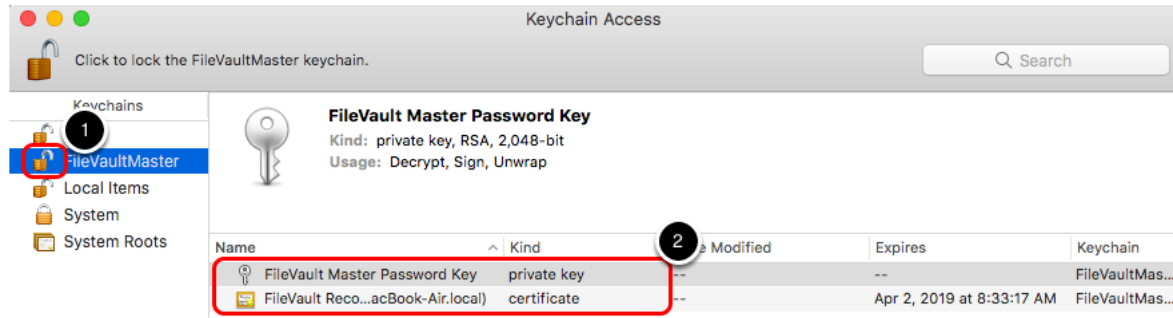
Results

If you unlocked the keychain correctly, the keychain should show the unlocked icon in Keychain Access Utility. If it does not, you need to re-issue the unlock and re-add the keychain.

Validate FileVaultMaster Keychain Unlock

Validate the FileVaultMaster keychain to ensure it is unlocked.

After adding the FileVaultMaster keychain file, validate if it is unlocked by performing the following steps.



Procedure

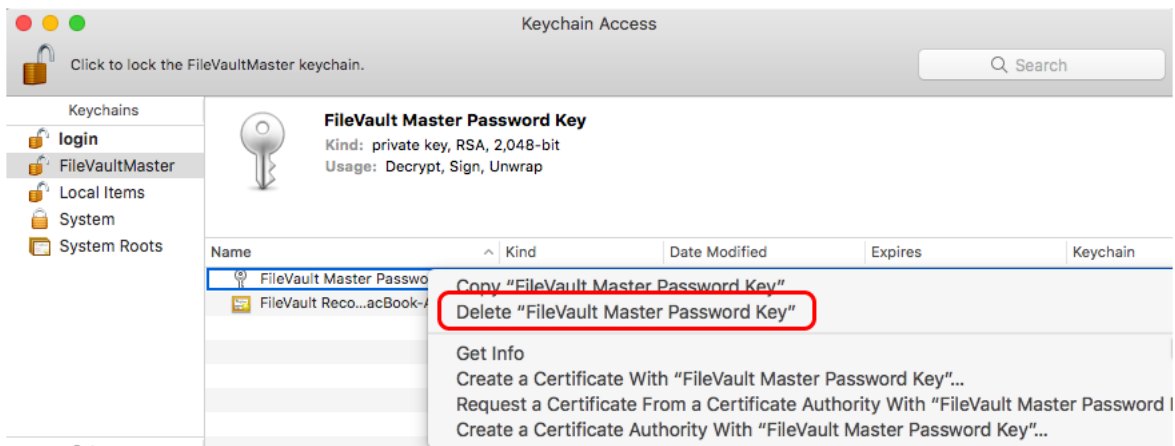
- 1 Ensure that the FileVaultMaster keychain shows unlocked icon.
- 2 Ensure that you can view the private key and certificate in the keychain.

Delete and Confirm Private Key Deletion

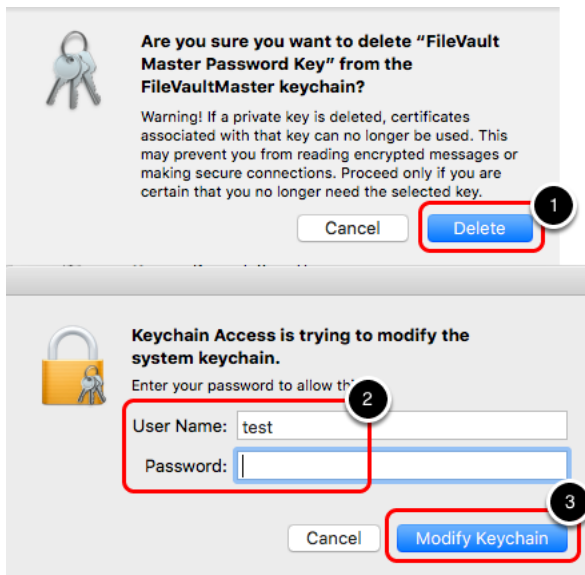
Once the validation of FileVaultMaster keychain file is complete, ensure you delete the FileVaultMaster Password Key (private key).

Procedure

- 1 Navigate to **FileVault Master Password Key** > **Delete "FileVault Master Password Key"** and select **Delete** to confirm deletion of the private key.



2 Enter your administrative **User Name** and **Password**.



3 Select **Modify Keychain**.

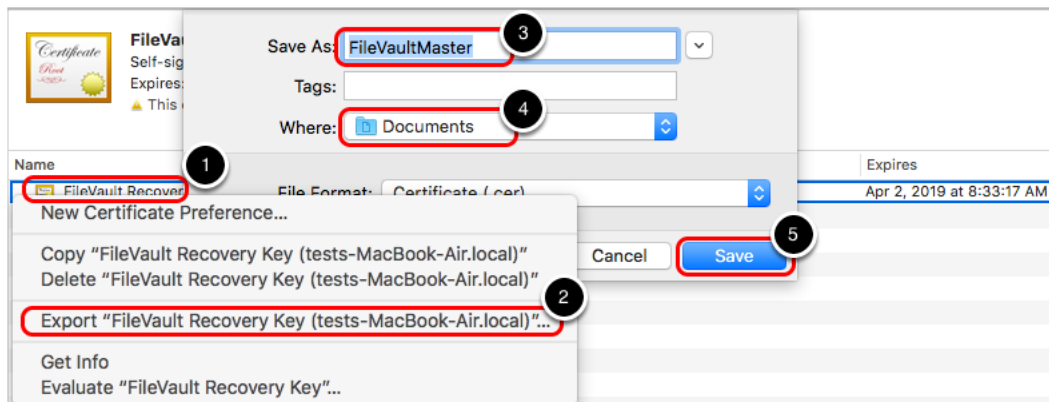
By the end of this step, you have a FileVaultMaster.keychain file which does not contain the private key. This Keychain can be placed in \Library\Keychains in order to manually enable FileVault2 encryption with an Corporate Recovery Key.

Export FileVault Recovery Key Certificate

The configuration profile which configures the Institutional recovery key on the Workspace ONE UEM console requires only the certificate and not the keychain file.

Procedure

- 1 Select the **FileVault Recovery Key certificate** in the FileVaultMaster keychain.
- 2 Select **Export FileVault Recovery Key (...)**...



- 3 Provide the certificate name as **FileVaultMaster** (in keeping the name consistent with the keychain file that it was created from).

- 4 Choose the location to save the certificate where you can access the key from your browser. (In this example, ~/Documents/)
- 5 Select **Save**.

By the end of this step, you now have a certificate file which DOES NOT contain the private key.

Personal Recovery for macOS Devices

Enabling **Personal** as the recovery type will allow the user of the device to use a recovery key to decrypt their device. Additionally, that key can be reported to the UEM console to allow administrators to use the key to decrypt the device if necessary.

Use Personal keys rather than Enterprise keys because Workspace ONE UEM can audit access to these keys, since they are escrowed in the UEM console. Also, Personal keys are beneficial because they are unique to each device. This means that the compromise of one key on one device does not compromise the security of other devices.

Once this profile is deployed to the device, the user will see a prompt from the Workspace ONE Intelligent Hub taking them through the process of encrypting the disk. If configured, users may also be shown the recovery key to give them the option of saving it for later use. After a reboot, the device will begin the encryption process in the background and the user can continue their daily tasks normally without fear of interruption.

Enable Personal Recovery Encryption for a macOS Device

Personal recovery encryption is useful if the user wants the benefit of viewing and keeping a Personal Recovery Key from decrypt.

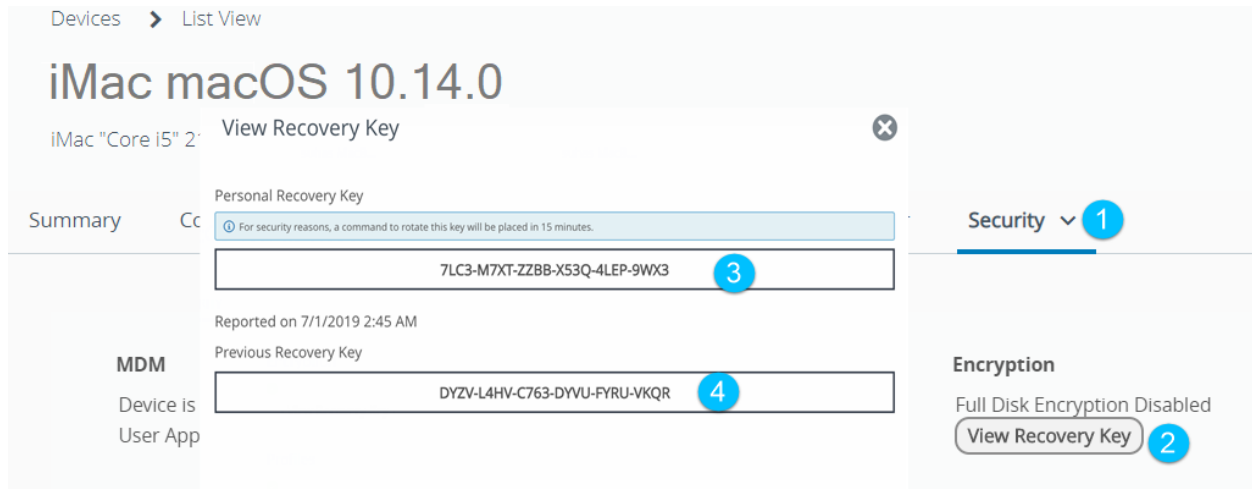
Procedure

- 1 Configure a new **Disk Encryption** profile.
- 2 Choose **Personal** as the recovery type and configure the recovery key settings as needed.

Once FileVault is enabled on the device, the Personal Recovery Key will be reported to a Workspace ONE UEM server or another designated server.

View Escrowed Personal Recovery Key on the UEM Console

The personal recovery key is generated when FileVault 2 encryption is enabled and remains valid until the personal recovery key is changed or the disk is decrypted using that key.



To view an escrowed recovery key, perform the following within the **Device Details** page on the UEM console.

Procedure

- 1 Select the **Security** tab.
- 2 Select **View Recovery Key**.
- 3 Note the Personal Recovery Key that is escrowed.
- 4 If required, note the Previous Recovery Key. The Previous Recovery Key field is loaded with the old key only if the Personal Recovery Key had been rotated at least once.
- 5 **Close** when finished viewing the key.

If an encrypted macOS volume is decrypted and then re-encrypted, then the previous personal recovery key would become invalid and a new one is created as part of the re-encryption process.

Recover an Encrypted Disk Using a Personal Recovery Key

If you forget your personal password for FileVault, you can use a Recovery Key to regain access.

Procedure

- 1 Start into recovery-mode (**CMD+R** at start), a different partition or connect the disk to another macOS.
- 2 Access the terminal and run the following command. The command fetches a list of the Logical CoreStorage Volumes.`diskutil cs list`

- Find the Logical Volume (last on the list) and copy the UUID – it is in the format of XXXXXXXX-XXXX-XXXX-XXXXXXXXXXXX. Logical Volume is used to specify which volume must be unlocked and decrypted.

```

QATests-MacBook-Air:~ qatest$ diskutil cs list
CoreStorage logical volume groups (1 found)
|
+-- Logical Volume Group 03BC85D9-7D74-45B6-94E2-46DA3904FB34
=====
Name:          Mavericks
Status:        Online
Size:          30741458944 B (30.7 GB)
Free Space:    16777216 B (16.8 MB)
|
+--< Physical Volume 8F112942-D482-4281-90DD-830DF58B3B4C
=====
Index:         0
Disk:          disk0s2
Status:        Online
Size:          30741458944 B (30.7 GB)
|
+--> Logical Volume Family 1367E530-42CC-49D7-95A3-2F9ABBF9FAD
=====
Encryption Status:    Locked
Encryption Type:       AES-XTS
Conversion Status:     Complete
Conversion Direction:  -none-
Has Encrypted Extents:  Yes
Fully Secure:          Yes
Passphrase Required:   Yes
|
+--> Logical Volume 345C7754-77E5-4094-AB48-3FA48B050C89
=====
Disk:                -none-
Status:              Locked
Size (Total):        30405910528 B (30.4 GB)
Size (Converted):    -none-
Revertible:          Yes (unlock and decryption required)
LV Name:             Mavericks
Content Hint:        Apple_HFS
QATests-MacBook-Air:~ qatest$

```

- Ensure that you have the Personal Recovery Key available and run the command below. Replace "UUID" with the UUID retrieved in step 3. You are prompted to enter the Passphrase and the Personal Recovery Key.

```
diskutil cs unlockVolume UUID
```

You can now see a response showing that the volume is unlocked and mounted. Now, you can recover any necessary files.

- 5 Now that the volume is unlocked, you can begin the decryption process by using the following command and replacing "UUID" with the UUID retrieved in step 3. You are prompted to enter the Passphrase and the Personal Recovery Key.

To monitor the decryption status, use the following command. The status is located in the Logical Volume Family information.

```
diskutil cs list
```

```

QATests-MacBook-Air:~ qatest$ diskutil cs list
CoreStorage logical volume groups (1 found)
|
+-- Logical Volume Group 038C85D9-7D74-45B6-94E2-46DA3904FB34
=====
Name:          Mavericks
Status:        Online
Size:          30741458944 B (30.7 GB)
Free Space:    16777216 B (16.8 MB)
|
+-- Physical Volume 8F112942-D482-4281-90DD-830DF58B3B4C
-----
Index:         0
Disk:          disk0s2
Status:        Online
Size:          30741458944 B (30.7 GB)
|
+-- Logical Volume Family 1367E530-42CC-49D7-95A3-2F9ABBFA9FAD
-----
Encryption Status:      Unlocked
Encryption Type:         AES-XTS
Conversion Status:       Converting
Conversion Direction:    backward
Has Encrypted Extents:   Yes
Fully Secure:            No
Passphrase Required:     No
|
+-- Logical Volume 345C7754-77E5-4094-AB48-3FA48B050C89
-----
Disk:          disk1
Status:        Online
Size (Total):  30405910528 B (30.4 GB)
Size (Converted): 2810183680 B (2.8 GB)
Revertible:    Yes (unlock and decryption required)
LV Name:       Mavericks
Volume Name:   Mavericks
Content Hint:  Apple_HFS
QATests-MacBook-Air:~ qatest$

```

Compliance Policies

6

The compliance engine is an automated tool by Workspace ONE UEM that ensures all devices abide by your policies. These policies can include basic security settings such as requiring a passcode and having a minimum device lock period.

For certain platforms, you can also decide to set and enforce certain precautions. These precautions include setting password strength, blacklisting certain apps, and requiring device check-in intervals to ensure that devices are safe and in-contact with Workspace ONE UEM. Once devices are determined to be out of compliance, the compliance engine warns users to address compliance errors to prevent disciplinary action on the device. For example, the compliance engine can trigger a message to notify the user that their device is out of compliance.

In addition, devices not in compliance cannot have device profiles assigned to it and cannot have apps installed on the device. If corrections are not made in the amount of time specified, the device loses access to certain content and functions that you define. The available compliance policies and actions vary by platform.

For more information about compliance policies, including which policies and actions are supported for a particular platform, refer to the **VMware AirWatch Mobile Device Management Guide**, available on docs.vmware.com.

Apps for macOS Devices

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This section provides you more information on the supported managed applications on macOS devices.

VMware Workspace ONE Intelligent Hub

Once installed on a macOS device, the Workspace ONE Intelligent Hub provides quick access to MDM settings and features you can use to manage your devices.

With the Workspace ONE Intelligent Hub, you can perform key device actions:

- Sync Now - Sync the device with the UEM console
- View Enrollment, Connection, and Sync status
- View Preferences
- Uninstall the Workspace ONE Intelligent Hub
- View information about the Workspace ONE Intelligent Hub

The top line of the menu bar animates when actions are executed, including when products are executed, when the **Sync Now** option is initiated, when data is transmitting, when the disk is encrypting or decrypting, and when the Passcode policy needs updating.

The Workspace ONE Intelligent Hub Preferences includes settings and information broken out into four tabs:

- **Status** – Snapshot of device and Workspace ONE UEM information.
 - **Enrollment Overview** – Current enrollment status, Server URL and option to verify enrollment.
 - **Device Information** – Computer name, model, version, serial number, encryption status, processor, memory, graphics and UUID.
 - **Connectivity Status** – Internet connection status, network information and option to test connectivity.
 - **Diagnostics** – Send data to the MDM server, sync with the MDM server, view Hub logs, and send logs to Workspace ONE UEM Administrator.

- **Settings** – View MDM-related restrictions. Select the lock icon to make any changes. Changes to restrictions and check-in intervals require the Admin passcode to unlock the settings. Upgrade notifications can be changed even if the Settings are locked.
- **Messages** – View and edit notifications and messages in the Message Center.
- **Activity** – Select **View Log File** to view real-time Activity logs, and **Send Log** to Workspace ONE UEM Administrator.

This chapter includes the following topics:

- [Configure Settings for the macOS Workspace ONE Intelligent Hub](#)
- [Content Locker Sync](#)
- [AirWatch Catalog for macOS Devices](#)
- [Native VMware Workspace ONE for macOS Devices](#)

Configure Settings for the macOS Workspace ONE Intelligent Hub

You can configure settings specific to the macOS Workspace ONE Intelligent Hub and its impact on the installed device through the UEM console.

Procedure

- 1 From the UEM console, navigate to **Devices > Device & Users > Apple > Apple macOS > Intelligent Hub Settings**.
- 2 Click the **Override** radio button to enable setting modification, if necessary.
- 3 Configure the Hub settings:

Setting	Description
General	
Download Latest Version	Download the latest version of the VMware Workspace ONE Intelligent Hub.
Install Hub after Enrollment	Enable or disable the option to automatically install the Hub on devices after enrollment through Apple Business Manager's DEP or Web enrollment.
Check-in Interval	Enter the frequency for the Hub to check in with the server to receive new commands.
Data Sample Interval	Enter the frequency for the Hub to scan devices to collect data such as product provisioning status, disk encryption status, custom attributes, GPS location, and other basic system information.
Data Transmit Interval	Enter the frequency for the Hub to send data samples to the Hub UEM server.
Uninstall Privileges	Enable or disable the option to provide end users the ability to uninstall the Hub application from their devices.
Security	

Setting	Description
Enforce Password	Enable the option to prompt end users to create a new password that meets MDM profile requirements. If disabled, the end users are only prompted when logging out and logging back in.
Privacy	
Request to collect Location Data	Enable or disable the option to prompt end users to allow the collection of GPS location data.
AirWatch Cloud Messaging	
Use AWCM	Enable the option for the AirWatch Cloud Messaging (AWCM) service to allow the real-time communication between the server and the Hub. If disabled, the Hub will not receive any commands and samples until the next scheduled interval check-in.
Intelligent Hub Updates	
Automatic Updates	Enable the option for the Hub to automatically check to see if updates are available. If disabled, the end users must manually check for updates within the Hub.
Upgrade Silently	Enable the option for the upgrades to automatically install in the background without prompting the end users. If disabled, the end users are prompted to upgrade when new updates are available.
Remote Management	
Request Permission	<p>Enable the option to prompt end users asking for permission to establish remote management connections with their devices. When you enable this setting, following options appear.</p> <ul style="list-style-type: none"> ■ Enter a Seek Permission Message that the end user can see when a remote request is sent. ■ Enter the Yes Caption message for the accept button that the end user can see on the Seek Permission request. ■ Enter the No Caption message for the decline button that the end user can see on the Seek Permission request.
Remote Management Port	Enter the port number used by the device remote management application to listen to the remote management connections.
Max Sessions	Enter the maximum number of concurrent remote management sessions that can be opened on the devices.
Number of Retries	Enter the maximum number of times the devices try to establish connections with the Tunnel server.
Retry Frequency (seconds)	Enter the interval between retries to establish connections with the Tunnel server.
Heartbeat Interval (seconds)	Enter the interval to send heartbeat samples from the Tunnel server to the devices.
Connection Lost Retry Frequency (seconds)	Enter the interval to check for the network connectivity availability.

4 Click **Save**.

Content Locker Sync

VMware Content Locker Sync is an application that lets your end users sync personal content between VMware Workspace ONE Content on their devices, their Self-Service Portal (SSP), and their PC or macOS computers.

End users download the application from the SSP and install it on their PC or macOS. From there, they can add files to a folder they designate on their computer, which is then synced with their SSP for viewing on other computers and their VMware Content Locker application on mobile devices.

For more information on enabling, using, and managing content with VMware Content Locker Sync, please refer to the **VMware Workspace ONE UEM Mobile Content Management Guide**.

AirWatch Catalog for macOS Devices

Deploy an app catalog to your end users so that they can access all your enterprise applications that you manage in the UEM console.

Your end users can find and access applications based on the settings you establish in the UEM console. For more information about providing self-service capability for App and Web App installations and the added ability to manage enterprise applications for macOS, including installation and removal, see the **VMware Workspace ONE UEM Mobile Application Management Guide**.

Native VMware Workspace ONE for macOS Devices

Native VMware Workspace ONE is a unified app catalog that you can access numerous types of applications. Take advantage of Workspace ONE experience by integrating Workspace ONE UEM and VMware Identity Manager (VIDM).

As an admin, you can deploy Workspace ONE as an internal application. After devices enroll through the Workspace ONE Intelligent Hub for mac, the end users can authenticate into the Workspace ONE application using their active directory credentials (such as the VIDM server and user name and password). When Workspace ONE authenticates, the software distribution and management principles are applied to the Workspace ONE application catalog through Workspace ONE Intelligent Hub.

For more information on how to set device management policies to grant the permission to access the web, remote, and native applications, see the **VMware Workspace ONE UEM Mobile Application Management Guide**.

Additional macOS Configurations

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Learn more about the available macOS Configurations.

Kiosks for macOS Devices

Workspace ONE UEM offers the ability to utilize devices in your mobile fleet as kiosks. Kiosks limit your users to a single website browsing and to specific applications. For example, a retail establishment can deploy devices in device kiosk mode for use in store, utilizing corporate applications for in-store functionality like querying inventory and checking product pricing as well as custom branding to enhance the kiosk functionality.

A kiosk is configured from individual profiles. To build a kiosk, create profiles in the UEM console, and then let the device handle the configuration of a kiosk profile. Use device kiosks to remotely configure allowed applications, desktop wallpapers, allow widgets, specify websites and create other restrictions.

This chapter includes the following topics:

- [Build a Device Kiosk for a macOS Device](#)
- [Additional macOS Profiles for Kiosk Mode](#)
- [Mirror Screens with Apple AirPlay on macOS Devices](#)
- [Custom Fonts for macOS Devices](#)
- [Product Provisioning for macOS Devices](#)

Build a Device Kiosk for a macOS Device

Finder and Dock profile configuration is required in order to lock the file system and manage system commands. Configure these profiles in the UEM console.

Configure the **Dock** profile

- Allow specific applications and items to show on the Dock. By default, user adjustments are disabled, but you can enable these adjustments as needed. Do not select any check boxes that would allow the user to make changes to the settings. Also, do not allow these settings to merge with the user dock. If you choose to override the Dock, it will not be reverted to its original state when the profile is removed or upon an enterprise wipe.

Configure the **Finder** profile.

- Restrict access to the file system and commands using the Simple Finder and then choose commands to limit on the computer such as **Shut Down**. De-select the commands to make them unavailable to the user.

Additional macOS Profiles for Kiosk Mode

To use Kiosk mode effectively, enable additional profiles in the UEM console.

Safari browsing

Configure profiles to control web browsing. Create a content filter within the **Parental Controls** profile and a list of allowed websites. These sites show up as Bookmarks in the Safari browser.

Optionally, use the **Global HTTP Proxy** profile to limit network access.

Restrictions

Customize a **Restrictions** profile to match your control Preferences, widgets and more.

Apply Media restrictions to prevent mounting of external drives. This prohibits USB or external storage devices from connecting and transferring files. Additionally, disable AirDrop functionality.

Apply Desktop restrictions to lock wallpaper on the desktop and allow for the configuration of default wallpaper

Time Limits and Schedules

Create a device curfew in the **Parental Controls** profile to limit use to operating hours.

Accessibility

Accommodate all users by configuring settings for enhanced vision, hearing, and keyboard and mouse interactions to further improve the usability of the kiosk.

Mirror Screens with Apple AirPlay on macOS Devices

Apple AirPlay allows administrators to mirror screens from a macOS computer or tvOS on the same subnet. If an end user needs assistance, simply send an AirPlay request to share your screen with an end user's computer running macOS Yosemite or higher.

Procedure

- 1 Navigate to **Devices > List View** and select the device. The device summary screen appears.
- 2 Select **More > Support > Start AirPlay** in the administrative menu bar. An **AirPlay** window appears.
- 3 Select **Add a Destination** to start adding destinations to view. An **Add New AirPlay Destination** window appears.

- 4 Configure the destination information including:
 - a **Destination Name** – Friendly name for the device.
 - b **Destination Address** – macOS address of the device to view.
 - c **Password** – Password for the destination.
 - d **Scan Time** – Length of time that the device may search for the destination. The default value is 30 seconds.
 - e Select the **Set as Default** check box to make the current destination the default destination. The next time AirPlay is used, the default destination appears as the **Destination Name**. It does not have to be entered again.
- 5 Select **Save and Start** to send the AirPlay request to the device.
 - a This destination is saved for the next request in the **Destination Name** drop-down menu.
- 6 To **Stop AirPlay** on devices, navigate back to the UEM console. Go to **Devices > List View > Select the Device > Support > More > Stop AirPlay**.
- 7 To edit an AirPlay destination:
 - a Navigate to **Devices > List View > Select Device > Support > More > AirPlay**. An **AirPlay** window appears.
 - b Choose the **Device Destination** to edit from the drop-down menu.
 - c Select **Edit** to start editing the destination settings. An **Edit AirPlay Destination** window appears.
 - d Select **Save and Start** to send the AirPlay request to the device.

Custom Fonts for macOS Devices

Available to macOS Yosemite and devices running iOS 7 and higher, the UEM console provides a means to upload fonts and install them onto devices.



Installing specific fonts allows users to view and read text that is not supported by standard means. Compatible font file types include .ttf or .otf. There is no limit to the number of fonts you can install on devices and you can remove a font at any time.

Manage Fonts on macOS Devices

Manage fonts by installing, deploying, and deleting them through the UEM console at any time.

Procedure

- 1 Navigate to **Devices > Device Settings > Apple > Install Fonts**.
- 2 Drag and drop a supported font file type (.ttf or .otf) onto the screen.
- 3 Locate the font file and select **Save** to send the font to all the devices enrolled in the current organization group.

- 4 Click the  button to delete a font.
- 5 Click the  button to view and export the XML file.

Product Provisioning for macOS Devices

Product provisioning enables you to create, through Workspace ONE™ UEM, products containing profiles, applications, files/actions, and event actions (depending on the platform you use).

These products follow a set of rules, schedules, and dependencies as guidelines for ensuring your devices remain up-to-date with the content they need.

Product provisioning also encompasses the use of relay servers. These servers are FTP(S) servers designed to work as a go-between for devices and the UEM console. Create these servers for each store or warehouse to store product content for distribution to your devices.

For more information on using product provisioning with macOS devices, see the **Product Provisioning for macOS Guide**.

macOS Device Management

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After your devices are enrolled and configured, manage the devices using the Workspace ONE™ UEM console. The management tools and functions enable you to keep an eye on your devices and remotely perform administrative functions.

You can manage all your devices from the UEM console. The Dashboard is a searchable, customizable view that you can use to filter and find specific devices. This feature makes it easier to perform administrative functions on a particular set of devices. The Device List View displays all the devices currently enrolled in your Workspace ONE UEM environment and their status. The **Device Details** page provides device-specific information such as profiles, apps, Workspace ONE Intelligent Hub version and which version of any applicable OEM service currently installed on the device. You can also perform remote actions on the device from the Device Details page that are platform-specific.

This chapter includes the following topics:

- [Device List View](#)
- [Device Details Page for macOS Devices](#)
- [Device Actions](#)
- [Configure and Deploy a Custom Command to a Managed Device](#)
- [AppleCare GSX](#)

Device List View

Use the UEM console's Device List View to see a full listing of all devices in the currently selected organization group.

The **Last Seen** column displays an indicator showing the number of minutes elapsed since the device has checked-in. The indicator is red or green, depending on the number of minutes defined in **Device Inactivity Timeout (min)**. This indicator can be set by navigating to **Groups & Settings > All Settings > Devices & Users > General > Advanced**.

Select a device in the **General Info** column at any time to open the details page for that device.

Sort by columns and configure information filters to review device activity based on specific information. For example, sort by the **Compliance Status** column to view only devices that are currently out-of-compliance and target only those devices. Search all devices for a friendly name or user name to isolate one device or user.

Customize Device List View Layout

Display the full listing of visible columns in the **Device List** view by selecting the **Layout** button and select the **Custom** option. This view enables you to display or hide Device List columns per your preferences.

There is also an option to apply your customized column view to all administrators. For instance, you can hide 'Asset Number' from the **Device List** views of the current OG and of all the OGs underneath.

Once all your customizations are complete, select the **Accept** button to save your column preferences and apply this new column view. You can return to the **Layout** button settings at any time to tweak your column display preferences.

Search in Device List View

You can search for a single device for quick access to its information and take remote action on the device.



To run a search, navigate to **Devices > List View**, select the **Search List** bar and enter a user name, device friendly name, or other device-identifying element. This action initiates a search across all devices, using your search parameter, within the current organization group and all child groups.

Device Details Page for macOS Devices

Use the Device Details page to track detailed device information and quickly access user and device management actions.

You can access the Device Details page by either selecting a device's Friendly Name from the Device Search page, from one of the available Dashboards or by using any of the available search tools with the UEM console.

Use the Device Details menu tabs to access specific device information.

Tab	Description
Summary	View general statistics on: platform/model/OS, compliance, Workspace ONE UEM Cloud Messaging, enrollment, last seen, firewall, firmware, time machine, contact information, groups, serial number, UDID, asset number, power status, storage capacity, physical memory and virtual memory, and warranty information. If Apple's Global Service Exchange information is accessible, select the warranty link to see when the status was last updated.
Compliance	<p>Display the status, policy name, date of the previous and forthcoming compliance check and the actions already taken on the device. The Compliance tab includes advanced troubleshooting and convenience features.</p> <ul style="list-style-type: none"> Non-Compliant devices, and devices in pending compliance status, have troubleshooting functions available. You may reevaluate compliance on a per-device basis () or get detailed information about the compliance status on the device (). Users with Read-Only privileges can view the specific compliance policy directly from the Compliance tab while Administrators can make edits to the compliance policy.
Profiles	View all MDM profiles currently installed on a device.
Apps	View all apps currently installed or pending installation on the device.
Location	View current location or location history of a device.
User	Access details about the user of a device as well as the status of the other devices enrolled to this user.

Additional menu tabs are available by selecting **More** from the main Device Details tab.

Tab	Description
Network	View current network status (Cellular, Wi-Fi, Bluetooth) of a device.
Security	View current security status of a device based on security settings.
Restrictions	View all restrictions currently applied to a device. This tab also shows specific restrictions by Device, Apps, Ratings, and Passcode.
Notes	View and add notes regarding the device. For example, note the shipping status or if the device is in repair and out of commission.
Certificates	Identify device certificates by name and issuer. This tab also provides information about certificate expiration.
Products	View complete history and status of all packages provisioned to the device and any provisioning errors.
Custom Attributes	View the Custom Attributes associated with the device.
Files/Actions	View the files and other actions associated with the device.
Shared Device Log	View the history of the shared device including past check-ins and check-outs and status.

Tab	Description
Trouble Shooting	<p>View Event Log and Commands logging information. This page features export and search functions, enabling you to perform targets searches and analysis.</p> <ul style="list-style-type: none"> ■ Event Log – View detailed debug information and server check-ins, including a Filter by Event Group Type, Date Range, Severity, Module, and Category. In the Event Log listing, the Event Data column may display hypertext links that open a separate screen with even more detail surrounding the specific event. This information enables you to perform advanced troubleshooting such as determining why a profile fails to install. ■ Commands – View detailed listing of pending, queued, and completed commands sent to the device. Includes a Filter enabling you to filter commands by Category, Status, and specific Command.
Status History	View history of device in relation to enrollment status.
Targeted Logging	View the logs for the Console, Catalog, Device Services, Device Management, and Self Service Portal. You must enable Targeted Logging in settings and a link is provided for this purpose. You must then select the Create New Log button and select a length of time the log is collected
Attachments	Use this storage space on the server for screenshots, documents, and links for troubleshooting and other purposes without taking up space on the device itself
Terms of Use	View a list of End User License Agreements (EULAs) which have been accepted during device enrollment.

Device Actions

Perform common device actions with the action button cluster including Query, Send, Lock, and other actions accessed through the **More Actions** button.

Device Details Action Button Cluster



Note Available Device Actions vary by device model, enrollment status and type, and the specific configuration of your Workspace ONE UEM console. For more information on full listing of remote actions that you can invoke using the Console, refer **VMware Workspace ONE UEM Mobile Device Management Guide**.

Run commands remotely to individual (or bulk) devices in your fleet. Each of the following device actions and definitions represents remote commands that you can invoke from the UEM console.

- **Reboot Device** – Send an MDM command to restart macOS 10.13+ devices remotely. This action reproduces the effect of powering the device off and on again.
- **Install macOS Workspace ONE Intelligent Hub** – Send an MDM command to the device to install the latest seeded macOS Workspace ONE Intelligent Hub.
- **Managed settings** – Managed settings lets you enable or Bluetooth through an MDM command. Requires macOS 10.13.4 or greater.
- **Shut** – Send an MDM command to shut down macOS 10.13+ devices remotely.

Configure and Deploy a Custom Command to a Managed Device

Workspace ONE UEM enables administrators to deploy a custom XML command to managed Apple devices. Custom commands allow more granular control over your devices.

Use custom commands to support device actions that the UEM console does not currently support. Do not use custom commands to send commands that exist in the UEM console as Device Actions. Samples of XML code you can deploy as custom commands are available in the Workspace ONE UEM Knowledge Base at <https://support.air-watch.com/kb>.

Important Improperly formed or unsupported commands can impact the usability and performance of managed devices. Test the command on a single device before issuing custom commands in bulk.

To create and deploy a custom command:

- 1 In the UEM console, navigate to **Devices > List View**.
- 2 Select one or more macOS devices using the check boxes in the left column.
- 3 Select the **More Actions** drop-down and select **Custom Commands**. The Custom Commands dialogue box opens.
- 4 Enter the XML code for the action you want to deploy and select **Send** to deploy the command to devices.

Browse XML code for Custom Commands on the Workspace ONE UEM Knowledge Base at <https://support.air-watch.com/kb>.

If the Custom Command does not run successfully, delete the command by navigating to **Devices > List View**. Select the device to which you assigned the custom command. In the Device **Details View**, select **More > Troubleshooting > Commands**. Select the Command you want to remove, and then select **Delete**. The Delete option is only available for Custom Commands with a Pending status.

AppleCare GSX

Apple Global Service Exchange (GSX) allows administrators to look up device details related to the display model name, the device purchase and warranty status directly from the UEM console.

If any devices in an organization group are missing a display model name, then a time scheduler runs periodically to search and update these names using the GSX information that was configured for the devices at that organization group level.

Only authorized Apple employees or organizations that have registered with Apple's Self-Servicing Account Program can access GSX information.

Create a GSX Account

Before you can integrate your deployment, you must create an Apple GSX account. To apply for a GSX account, you must have a service contract with Apple. Contact your Apple Account Executive to learn more about GSX.

To apply for a GSX account, visit <http://www.apple.com/support/programs/ssa/>.

Obtain an Apple Certificate to Integrate AppleCare GSX

To integrate AppleCare GSX with your Workspace ONE UEM deployment, you must first obtain an Apple certificates and convert them to .p12 format.

For more information, see [Obtain an Apple Certificate to Integrate AppleCare GSX](#).

Configure AppleCare in the UEM console

Once you have obtained and configured an Apple Certificate, you must upload the certificate to the UEM console and configure your AppleCare instance.

For more information, see [Configure AppleCare GSX in the UEM Console](#).

Obtain an Apple Certificate to Integrate AppleCare GSX

To integrate AppleCare GSX with your Workspace ONE UEM deployment, you must first obtain an Apple certificates and convert them to .p12 format.

To integrate, perform the following:

- 1 Generate a certificate signing request (CSR) using OpenSSL or Java Keytool.
- 2 Send the CSR and the following GSX account information to Apple to receive Apple certificates (.pem files).
 - a GSX Sold-To account number
 - b Primary IT contact name
 - c Primary IT contact email
 - d Primary IT contact phone number
 - e Outgoing static IP address of the server that sends requests to GSX Production

If your environment is hosted on the AW SaaS, refer to <https://support.air-watch.com/articles/115001662168> for the IP address. If the IP range for your environment is not listed, please open a support ticket to have our Network Operations team facilitate it.

Apple generates the Apple certificate (.pem) and returns a signed certificate and a chain certificate. For ease of use, rename the files “cert.pem” and “chain.pem” for use in subsequent steps.

You may also receive a file labeled “issuer” that is not needed for this process.

3 Convert the Apple certificates to .p12 format.

- a Create a .p12 file using the private key and Apple certificates by executing the following command:

```
sudo openssl pkcs12 -export -inkey privatekey.pem -in cert.pem -certfile chain.pem -out  
GSX_Cert.p12
```

- b The certificate saves as a .p12 file in the location you specified.

If you do not specify a path before the file name when running the conversion command, the file saves to your working directory.

Configure AppleCare GSX in the UEM Console

Once you have obtained and configured an Apple Certificate, you must upload the certificate to the UEM console and configure your AppleCare instance.

- 1 Navigate to **Groups & Settings > All Settings > Devices & Users > Apple > AppleCare**.

To configure a GSX connection with the UEM console, you must have a GSX account with manager-level access, access to web services, and access to coverage and warranty information.

- 2 Enter **GSX settings** including:

Setting	Action
GSX User ID	Enter the account user ID.
GSX Password	Enter the account password.
Sold-to Account Number	Enter the 10-digit service account number. This account number can be found in the GSX portal at the bottom of the web page.
Time Zone	Use the drop-down menu to select the appropriate time zone.
Language	Use the drop-down menu to choose a language.

- 3 Select **Save** to complete the integration with AppleCare.
- 4 Navigate to the **List View**, select a device, and use the **More** menu to find **AppleCare** information in the UEM console.

Shared Devices

10

Shared Device/Multi-User Device functionality ensures that security and authentication are in place for every unique end user. And if applicable, shared devices allow only specific end users to access sensitive information.

Issuing a device to every employee in certain organizations can be expensive. Workspace ONE UEM lets you share a mobile device among end users in two ways: using a single fixed configuration for all end users, or using a unique configuration setting for individual end users.

When administering shared devices, you must first provision the devices with applicable settings and restrictions before deploying them to end users. Once deployed, Workspace ONE UEM uses a simple login or log-out process for shared devices in which end users simply enter their directory services or dedicated credentials to log in. The end-user role determines their level of access to corporate resources such as content, features, and applications. This role ensures the automatic configuration of features and resources that are available after the user logs in.

The login or log-out functions are self-contained within the Workspace ONE Intelligent Hub. Self-containment ensures that the enrollment status is never affected, and that the device is managed whether it is in use or not.

Shared Devices Capabilities

There are basic capabilities surrounding the functionality and security of devices that are shared across multiple users. These capabilities offer compelling reasons to consider shared devices as a cost-effective solution to making the most of enterprise mobility.

Functionality

- Personalize each end-user experience without losing corporate settings.
- Logging in a device configures it with corporate access and specific settings, applications, and content based on the end-user role and organization group (OG).
- Allow for a log in/log out process that is self-contained in the Workspace ONE Intelligent Hub.
- After the end user logs out of the device, the configuration settings of that session are wiped. The device is then ready for login by another end user.

Security

- Provision devices with the shared device settings before providing devices to end users.
- Log in and log out devices without affecting an enrollment in Workspace ONE UEM.

- Authenticate end users during a login with directory services or dedicated Workspace ONE UEM credentials.
- Manage devices even when a device is not logged in.

Platforms that Support Shared Devices

The following devices support shared device/multi-user device functionality.

- Android 4.3+,
- iOS devices with Workspace ONE Intelligent Hub v4.2+,
- MacOS devices with Workspace ONE Intelligent Hub v2.1+.

This chapter includes the following topics:

- [Define the Shared Device Hierarchy](#)
- [Log In and log out of Shared macOS Devices](#)

Define the Shared Device Hierarchy

Create the hierarchy of subgroups under a single organization group based on your company needs.

When you first log in to Workspace ONE UEM, you see a single organization group (OG) that has been created for you using the name of your organization. This group serves as your top-level OG. Below this top-level group you can create subgroups to build out your company hierarchical structure.

- 1 Navigate to **Groups & Settings > Groups > Organization Groups > Organization Group Details**. Here, you can see an OG representing your company.
- 2 Ensure the **Organization Group Details** displayed are accurate, and then use the available settings to make modifications, if necessary. If you make changes, select **Save**.
- 3 Select **Add Child Organization Group**.
- 4 Enter the following information for the first OG underneath the top-level OG.

Setting	Description
Name	Enter a name for the child organization group (OG) to be displayed. Use alphanumeric characters only. Do not use odd characters.
Group ID	Enter an identifier for the OG for the end users to use during the device login. Group IDs are used during the enrollment of group devices to the appropriate OG. Ensure that users sharing devices receive the Group ID as it might be required for the device to log in depending on your Shared Device configuration.
Type	Select the preconfigured OG type that reflects the category for the child OG.
Country	Select the country where the OG is based.

Setting	Description
Locale	Select the language classification for the selected country.
Customer Industry	This setting is only available when Type is Customer. Select from the list of Customer Industries.

5 Select **Save**.

Log In and log out of Shared macOS Devices

Multiple users can log in to and out of a macOS shared device, activating the automatic push of device profiles.

Log In to a macOS Device - Using assigned Network credentials, log in to a macOS device that has been staged and you receive the profiles assigned to your account in Workspace ONE UEM.

Log out of a macOS Device - The standard macOS log-out procedure also logs the device out of your assigned Workspace ONE UEM user profile.