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January 11, 2024 FortiClient 7.2 Jamf Deployment Guide 04-720-877822-20240111

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## Change log

Date	Change Description
2023-01-31	Initial release.
2023-02-08	Updated Configuration profiles on page 6.
2023-11-07	Added Provisioning ZTNA certificates to FortiClient (iOS) using Jamf on page 21.
2023-12-12	Updated Provisioning ZTNA certificates to FortiClient (iOS) using Jamf on page 21.
2024-01-11	Added Configuring Jamf integration to allow FortiClient (iOS) to connect to EMS on page 15.

## Deploying FortiClient (macOS) using Jamf

This document provides information about deploying FortiClient (macOS) using Jamf mobile device management.

## **User-initiated enrollment for computers**

This process assumes that a user already has a push certificate configured on the Jamf Pro instance. The administrator can allow users to enroll their own computer by having them log in to an enrollment portal where they follow the onscreen instructions to complete the enrollment process.

#### To configure user-initiated enrollment for computers:

- 1. In Jamf Pro, go to Settings > Global Management > User-Initiated Enrollment.
- 2. Click Edit.
- 3. Use the *General* pane to configure settings as needed for restricting reenrollment, skipping certificate installation or uploading a third party signing certificate to use during enrollment.



Jamf skips the certificate installation step by default.

- **4.** On the *Messaging* pane, do the following to customize the text displayed on devices during the enrollment experience or add languages. Do one of the following:
  - **a.** To add a language, click *Add*. Select the language from the *Language* popup menu.



English is the default language if the device does not have a preferred language set on it.

- b. To customize the text for a language already listed, click Edit next to the language.
- **5.** On the *Platform* tab, select macOS and enable user-initiated enrollment for computers and specify the username and password for the enrollment account.

## **Enrolling a macOS device in Jamf**

Enrollment is the process of adding computers and mobile devices to Jamf Pro. This establishes a connection between the computers and mobile devices and the Jamf Pro server. User-initiated enrollment allows users to initiate the enrollment process on their own by going to an enrollment URL. The following are examples:

Hosted in	Enrollment URL
Jamf Cloud	https://instancename.Jamfcloud.com/enroll
On-premise	https://jss.instancename.com:8443/enroll

Once you log in and enroll your end device, the enrollmentProfile.mobileconfig file downloads to your device. You can open that file with Profile helper, then mobile device management (MDM) profiles are added.

The user must follow the onscreen instructions to install the certificate authority (CA) certificate. After the CA certificate is installed, the user must return to their web browser to install the MDM profile and complete enrollment.

You can click *Enroll* without providing a username.



The Jamf built-in certificate is added to the keychain.

The device has been enrolled and Jamf Pro can manage it.



Clicking *Enroll* redirects to a webpage where you can assign the device to a user. For the enrollment to succeed, leave it blank. You can assign the enrolled device to a group on the Jamf side.

For effective functionality, use a physical machine for enrollment. Jamf does not fully support virtual machine enrollment, as they can be inconsistent and cause issues.

## **Configuration profiles**

When deploying FortiClient (macOS) without Jamf Pro configuration profiles, the endpoint displays the following prompts to the user:

- To grant full disk access to load the following FortiClient processes:
  - FortiClient
  - fmon2
  - fcaptmon
  - fctservctl2
- To grant FortiTray permissions to load and grant network access for following extensions:
  - · com.fortinet.forticlient.macos.webfilter
  - · com.fortinet.forticlient.macos.vpn.nwextension
  - com.fortinet.forticlient.macos.proxy
- To import and trust zero trust network access CA and DNS root CA certificates in system keychain access

Efficient and silent deployment of FortiClient (macOS) requires a Jamf Pro custom configuration profile that allows all the required prompts.

#### To configure profiles on Jamf Pro:

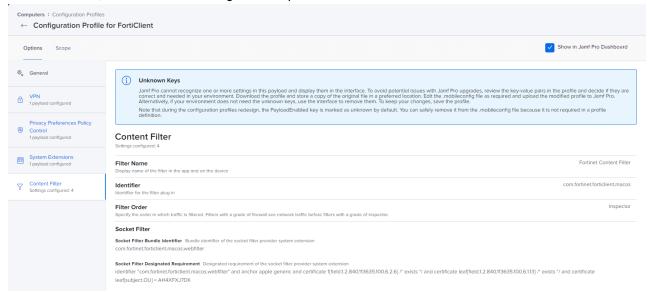
- 1. Log in to Jamf Pro. Go to Computers > Configuration Profiles.
- 2. Download the FortiClient <version.build> macosx.Jamf.mobileconfig sample configuration profile file:
  - a. Go to Fortinet Services & Support > Firmware Images.
  - **b.** From the Select Product dropdown list, select FortiClientMac.
  - c. On the Download tab, go to FortiClientMac > Mac > v7.00 > 7.2. Select the latest FortiClient version.
  - d. Download the FortiClient\_Configuration\_Profile.JAMF.mobileconfig sample configuration profile file.
- 3. Prepare the configuration profile with the EMS zero trust network access (ZTNA) root CA certificate. You can silence the ZTNA certificate prompt by adding the certificate content to the configuration profile between <data> and </data> or directly uploading the certificate as a trusted certificate in the Jamf configuration profile after changing the extension types. To add the certificate content to the configuration profile between <data> and </data>, do the following. To directly upload the certificate as a trusted certificate in the Jamf configuration profile after changing the extension types, proceed to step 4:
  - **a.** On a macOS endpoint where FortiClient is registered to EMS, go to /Library/Application Support/Fortinet/FortiClient/data/ca certs/ztna certs.
  - b. Copy the certificate content to an accessible location.
  - **c.** Open the configuration profile file in a text editor, remove <!-- Add your ZTNA root certificate here -->, and add the certificate content that you copied between <data> and </data>. The following shows an example of the CA certificate payload:

```
</data>
<dict>
<key>PayloadCertificateFileName</key>
<string>EMS ZTNA CA.cer</string>
<key>PayloadContent</key>
<data>
<!-- Add your ZTNA root certificate here -->
</data>
<key>PayloadDescription</key>
<string>Adds a CA root certificate</string>
<key>PayloadDisplayName</key>
<string>EMS ZTNA CA CERTIFICATE</string>
<key>PayloadIdentifier</key>
<string>com.apple.security.root.1255DA5E-C9F1-4FBF-9967-4000DDF1DFC5</string>
<key>PayloadType</key>
<string>com.apple.security.root</string>
<key>PayloadUUID</key>
<string>1255DA5E-C9F1-4FBF-9967-4000DDF1DFC5</string>
<key>PayloadVersion</key>
<integer>1</integer>
</dict>
```

- d. Save the modified mobileconfig profile.
- **4.** Click *Upload*, choose *File*, and upload a mobile configuration file available from the Fortinet support page.
- **5.** After uploading an XML mobile configuration file, you must complete some required fields such as team identifiers under system extensions. You must modify the file in the GUI under *System Extensions*. Click *Allow users to approve system extensions*.

Users cannot import system extensions using a mobile configuration file on Jamf Pro and must manually change settings as follows:

- · Systems extensions type to allowed system extensions
- Set team identifier to AH4XFXJ7DK
- Add following system extensions to allowed system extensions list and save them:
  - · com.fortinet.forticlient.macos.webfilter
  - com.fortinet.forticlient.macos.vpn.nwextension
  - · com.fortinet.forticlient.macos.proxy
- **6.** Go to Content Filter. Configure the required fields: Filter Name, Identifier, Filter Order (inspector), Socket Filter Bundle Identifier, and Socket Filter Designated Requirement.

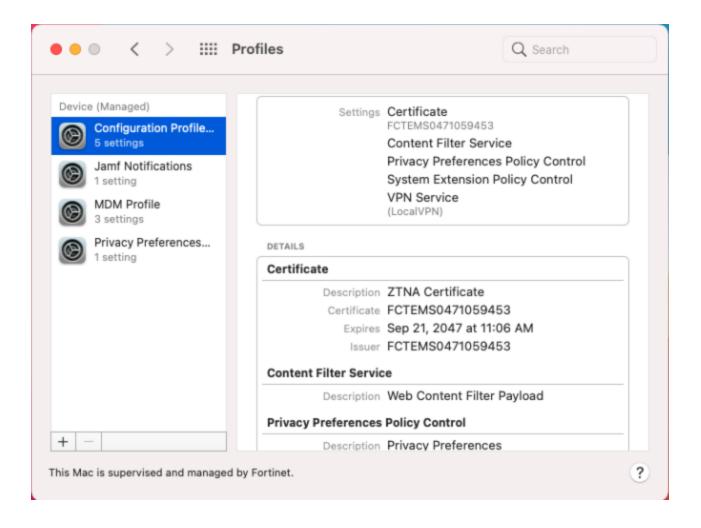


- 7. If you did not add the certificate content to the configuration profile in step 3, directly upload the certificate as a trusted certificate in the Jamf configuration profile after changing the extension types:
  - **a.** Right-click the certificate, then go to *Get Info > Name & Extension*. Change the certificate extension from .pem to .cer and close it.
  - **b.** Go to Options > Certificate.
  - c. Upload the ZTNA root CA certificate.
  - d. Enable Allow export from keychain.
  - e. Click Save.



You can follow either method to silence the certificate prompts during FortiClient deployment. Configuring the certificate using both methods does not affect the FortiClient deployment and only one ZTNA root CA certificate is present in the keychain.

- 8. On the Scope tab, select the target computers where you want to assign this configured profile.
- To verify if the endpoint gets proper profiles, go to System Preferences > Profiles. Ensure that all required extensions are allowed.



## Deploying FortiClient using a shell script

After adding a profile, you must create a policy to deploy FortiClient. With Jamf Pro, you can deploy FortiClient to macOS devices that have any user accounts (administrator and non-administrator user accounts) without requiring user interaction. You can deploy FortiClient in the following way.

For this procedure, all macOS devices should meet the following prerequisites:

- Running macOS Catalina (version 10.15) or a later version
- · Managed by Jamf Pro
- Shell scripts begin with #! and are in a valid location, such as #!/bin/sh or #!/usr/bin/env zsh.
- Command line interpreters for the applicable shells are installed.

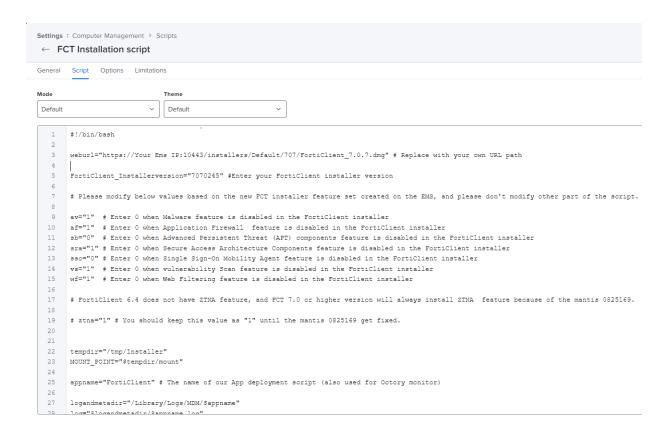
#### To modify the script file:

- 1. On a test macOS device, download the FortiClient deployment shell script .sh file:
  - a. From Fortinet Service & Support, go to Firmware Images.
  - **b.** From the Select Product dropdown list, select FortiClientMac.

- **c.** On the *Download* tab, go to Mac > v7.00 > 7.2.
- d. Select the latest shell scripts.
- 2. In a terminal, open the downloaded script file.
- 3. Do one of the following:
  - a. If using on-premise EMS, modify the weburl value to your FortiClient download link from EMS. For example, you would change the value from weburl=<"FortiClient download URL from EMS"> to weburl="https://your\_EMS\_FQDN:10443/installers/Default/FCT\_MAC\_7.2.0\_GA/FortiClient\_7.2.0.dmg", if the download link is https://your\_EMS\_FQDN:10443/installers/Default/FCT\_MAC\_7.2.0.dmg.
  - **b.** If using FortiClient Cloud, download the FortiClient installer from FortiClient Cloud. Extract the .zip file. Copy the .dmg file to a local web server that endpoints can reach and that you own. Modify the weburl value to your local web server URL.
- 4. Modify the FortiClient\_Installerversion value in the script file based on your FortiClient installer version. For example, change the value from FortiClient\_Installerversion=<Your FortiClient Installer version> to FortiClient\_Installerversion="7200655" if the FortiClient version is 7.2.0.0655. Enter the version number without periods.
- 5. Modify the values av, af, sb, sra, sso, vs, wf, and ztna values to 1 or 0 based on the enabled features in the FortiClient installer. For example, change the value from av=<Feature enabled or disabled> to av="1" to enable malware protection. Otherwise, set av="0" to disable malware protection on the FortiClient installer. By default, all values for av, af, sb, sra, sso, vs, wf, and ztna are set to "1" based on the default installer with all features enabled.
- 6. If desired, modify the script file based on your requirements. The shell script mainly performs the following tasks:
  - Uninstalling older FortiClient versions if present and installing a new version
  - Downloading the FortiClient deployment package from the EMS server. The managed macOS device must be able to access the download link to download the package.
  - · Installing FortiClient on a fresh macOS device
  - Skipping FortiClient uninstallation if trying to install same FortiClient version
  - Upgrading free VPN-only FortiClient to full FortiClient
  - Upgrading to same or different version of FortiClient with different security features enabled that are unavailable on existing FortiClient
- 7. Save the file.

#### To add the script to Jamf Pro using the script editor:

- **1.** In Jamf Pro, go to Settings > Computer Management > Scripts.
- 2. Click New.
- 3. In the *General* pane, configure the script's basic settings, including the display name and category.
- **4.** On the *Script* tab, enter the script contents in the editor. You can use the tab settings to configure syntax highlighting and theme colors in the script editor.
- **5.** On the *Options* tab, configure additional settings for the script, including the priority.
- 6. (Optional) On the Limitations tab, configure operating system requirements for the script.
- 7. Click Save.



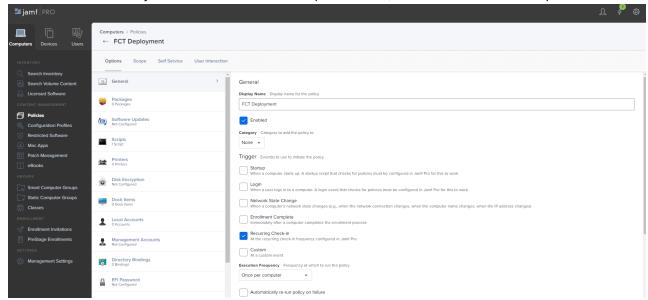
## **Policy**

Policies allow you to remotely automate common management tasks on managed computers. Using a policy, you can run scripts, manage accounts, and distribute software. When you create a policy, you specify the tasks that you want to automate, how often it runs (execution frequency), when the policy runs (trigger), and the users and computers for which it runs (scope). You can also make policies available in Self Service for users to run on their computers as needed.

#### To configure a policy:

- 1. In Jamf Pro, go to Computers > Policies.
- 2. Click New.
- 3. Under General, configure the policy's basic settings, including the trigger and execution frequency.
- 4. Configure the desired tasks.
- 5. Under Scripts, select configure, and add the script that you created for FortiClient installation.
- **6.** On the *Scope* tab, configure the policy scope.
- 7. (Optional) On the Self Service tab, make the policy available in Self Service.

8. Click Save. Jamf Pro may take some time to run the script on devices, based on the Jamf Pro computer ID.



The recurring checkin frequency is the interval at which the computer checks in with Jamf Pro for available policies. By default, the recurring checkin frequency is set to every 15 minutes. You can manually configure a different interval.

#### To manually configure recurring checkin:

- 1. Go to Settings.
- 2. Under Computer Management-Management Framework, click Check-In.
- 3. Click Edit.
- 4. Configure the recurring checkin frequency using the popup menu.
- **5.** Click Save. Each computer checks in at the specified interval, starting at the time that you apply the setting to the computer. Checkin times vary across computers.



You can monitor statuses related to policies in the Jamf Pro dashboard.

## **Debugging**

#### To check deployment status and logs on endpoints:

- 1. In the console application, go to log reports.
- 2. Look for the Jamf.log and Forticlient.log files. You can see logs related to FortiClient deployment and installation.

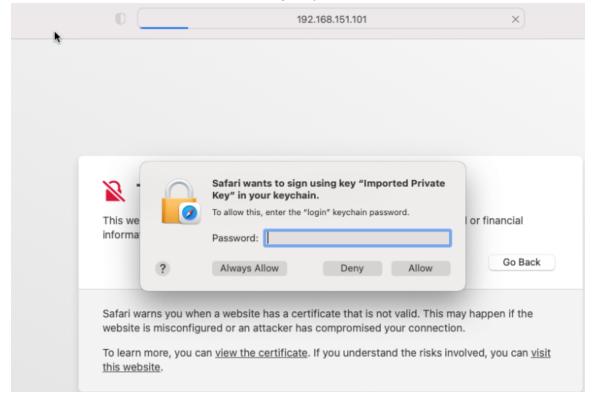
#### Note the following:

Manually uninstalling FortiClient using the FortiClientUninstaller tool removes the VPN virtual adapter and stored
zero trust network access (ZTNA) certificates on the endpoint. As a result, reinstalling FortiClient displays the
FortiTray VPN and system keychain modification prompts. In this case, push and distribute the MDM configuration
profile again before reinstalling FortiClient to fully silence the prompts.

• When connecting to VPN with client certificates, the system prompts the user for keychain access credentials to access and read the stored certificate. The user can decide to allow or deny access. Selecting *Always Allow* silences future prompts when FortiTray accesses the certificate.



• When FortiClient acts as a ZTNA client, the system is expected to display prompts to ask for user credentials to access the ZTNA client certificate stored in the login keychain.

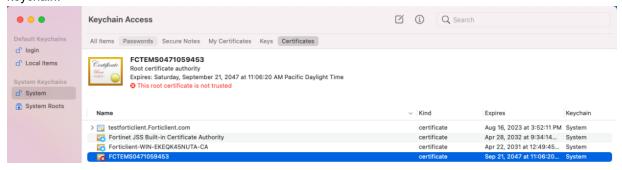


The ZTNA feature does not work if you click Allow. Select Always Allow.

 Revoking the endpoint client certificate from EMS results in the system prompting for administrator credentials to modify the system keychain.



• If you revoke the ZTNA root CA certificate, the system prompts for administrator credentials to modify the system keychain.



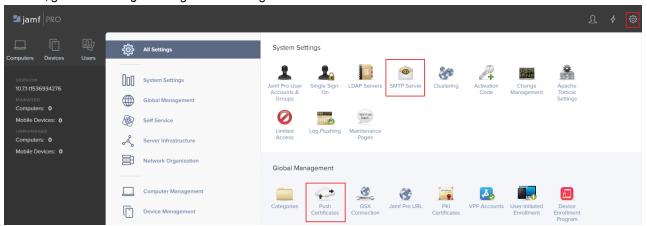
## iOS

This document provides information about deploying FortiClient (iOS) using Jamf mobile device management.

# Configuring Jamf integration to allow FortiClient (iOS) to connect to EMS

#### To configure integration between Jamf and FortiClient:

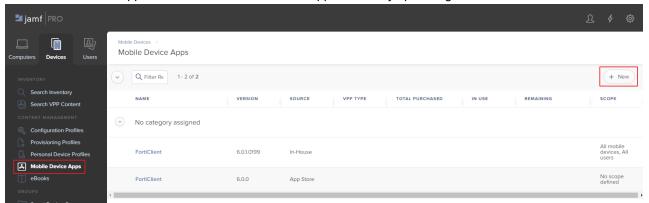
1. In Jamf, go to All Settings. Configure the settings in SMTP Server and Push Certificates.



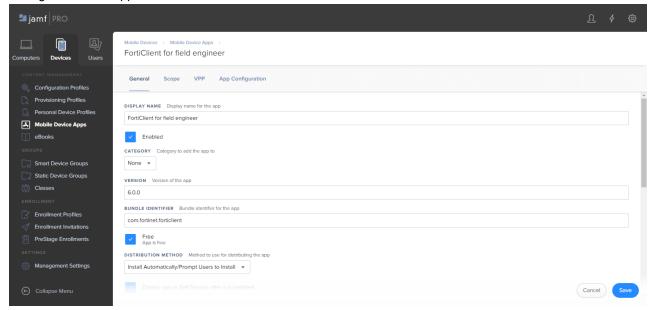
2. Go to Global Management, and enable User-Initiated Enrollment.



3. Go to Mobile Device Apps and add FortiClient from the App Store or by uploading it.



4. Configure how the app is installed.

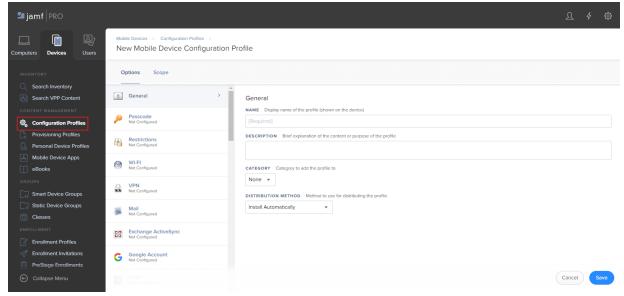


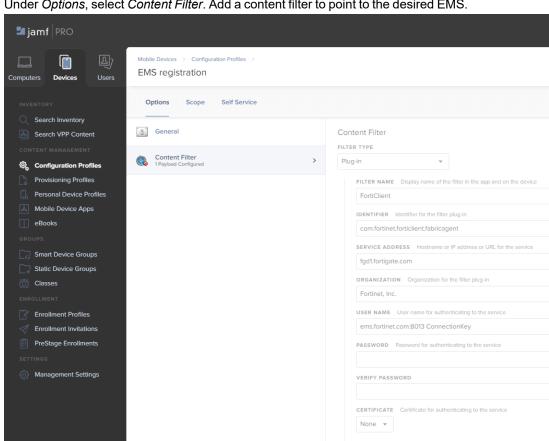
**5.** Add *App Configuration* for FortiClient. This enables FortiClient to read the MAC address and UDID from the iOS device. FortiClient sends this information to EMS. Supported keys include the following:

Key	Description
mac_address	iOS device MAC address.
udid	iOS device UDID.
group_tag	This value is used as a group tag for configuration in EMS. The example uses the string "field_engineer" as a group tag, which is used when FortiClient initially connects to EMS. EMS uses this value as an installer ID to assign the endpoint to a group. See Group assignment rule types.
cloud_invite_code	(missing or bad snippet)
invitation_code	Enter the FortiClient Cloud or on-premise EMS invitation code. FortiClient 7.2.3 and later versions support this key.



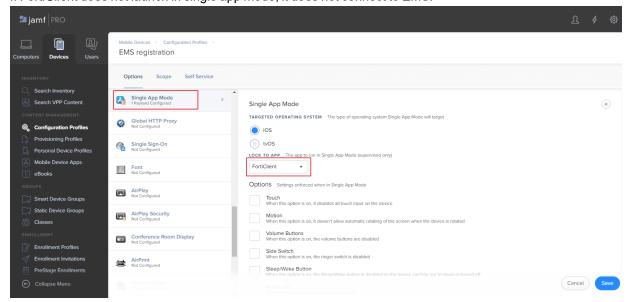
- **6.** Configure a configuration profile:
  - a. Go to Configuration Profiles and add a configuration profile.





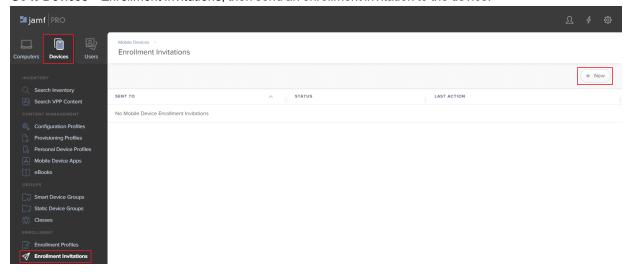
b. Under Options, select Content Filter. Add a content filter to point to the desired EMS.

c. Enable Single App Mode for FortiClient. Single app mode launches the FortiClient app and connects it to EMS. If FortiClient does not launch in single app mode, it does not connect to EMS.

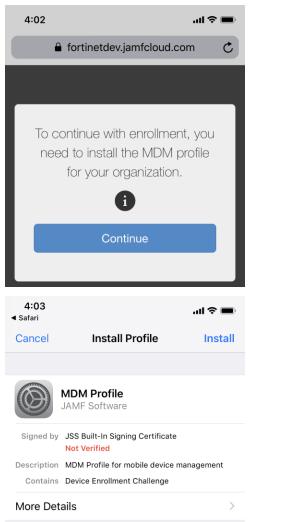


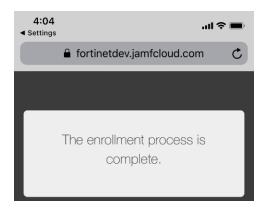
#### 7. Enroll the device:

a. Go to Devices > Enrollment Invitations, then send an enrollment invitation to the device.

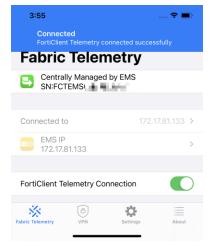


b. Enroll the device.

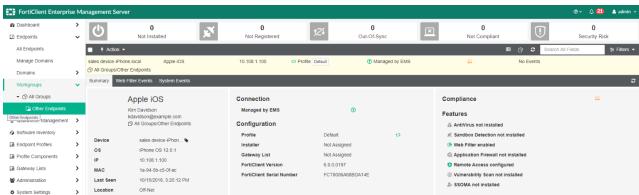




**8.** When the device is enrolled, FortiClient automatically connects to on-premise EMS or FortiClient Cloud, depending on the configuration. Once FortiClient is connected to EMS, disable single app mode for the device. Keep the EMS URL in the *Content Filter* section.



The following shows the on-premise EMS GUI after FortiClient connects Telemetry.



## Provisioning ZTNA certificates to FortiClient (iOS) using Jamf

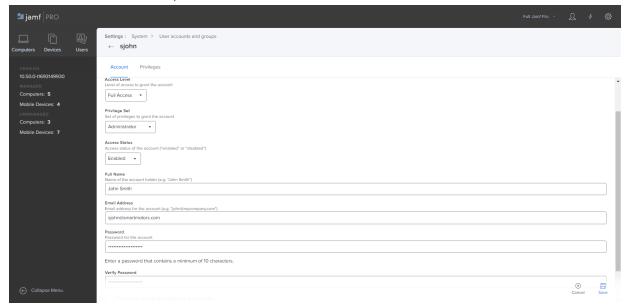
EMS supports integration with the Jamf mobile device management (MDM) platform. EMS can connect to Jamf for zero trust network access (ZTNA) certificate provisioning to iOS devices that will be used for client authentication with FortiOS.

FortiClient Cloud, EMS in high availability mode, and EMS with multitenancy enabled do not support this feature.

This feature requires EMS 7.2.2 and later versions.

#### To provision ZTNA certificates to FortiCient (iOS) using Jamf:

- 1. Configure an administrative account:
  - **a.** In Jamf, go to Settings > User accounts and groups.
  - b. Click New, then create a standard account.
  - **c.** From the *Access Level* dropdown list, do one of the following:
    - i. Select Full Access to allow access to all Jamf sites when integrating the default Jamf site with EMS.
    - ii. To integrate a custom Jamf site with EMS, select Site Access.
  - d. From the Privilege Set dropdown list, select Administrator.
  - e. Set the credentials as desired, then click Save.



- 2. Create an enrollment invitation:
  - a. Go to Devices > Enrollment Invitations.
  - b. Click New.
  - c. Under Enrollment Method, select User-Initiated Enrollment.
  - d. Configure other settings as desired, then click Next.
  - **e.** Continue with the configuration, adding recipient email addresses and message details as desired. Jamf sends an email or SMS message with enrollment details to the configured recipients.

- 3. Add a FortiClient application to install on iOS devices after they enroll:
  - a. Go to Devices > Mobile Device Apps.
  - b. Click New.
  - c. Select App Store app or apps purchased in volume and click Next.
  - d. Search for and add FortiClient as the application.
  - **e.** On the *General* tab, from the *Distribution Method* dropdown list, select *Install Automatically/Prompt Users to Install*.
  - f. On the Scope > Targets tab, select the desired devices and users for which to install the FortiClient application.
  - g. On the App Configuration tab, enter the following in the Preferences field:

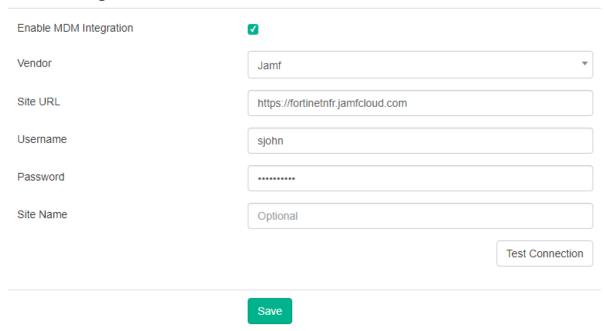
```
<dict>
<key>jamf_device_id</key>
<string>$JSSID</string>
<key>mac_address</key>
<string>$MACADDRESS</string>
<key>udid</key>
<string>$UDID</string>
<key>invitation_code</key>
<string>_VjE6MTkyLjE2OC4xLj...</string>
</dict>
```

FortiClient (iOS) 7.2.3 and later versions support invitation\_code, which supports entering a FortiClient Cloud or on-premise EMS invitation code to allow FortiClient to connect.

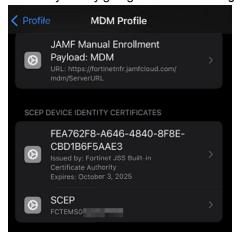
- h. Configure other fields as desired, then click Save.
- 4. In EMS, configure the Jamf integration:
  - a. Go to System Settings > MDM Integration.
  - b. Enable the MDM integration.
  - c. From the Vendor dropdown list, select Jamf.
  - d. In the Site URL field, enter your Jamf instance site URL.
  - e. In the Username and Password fields, enter the credentials that you configured in step 1.
  - f. If desired, configure the desired site. If this field is empty, EMS integrates with the default Jamf site.

g. Click Test Connection. Once successful, click Save.

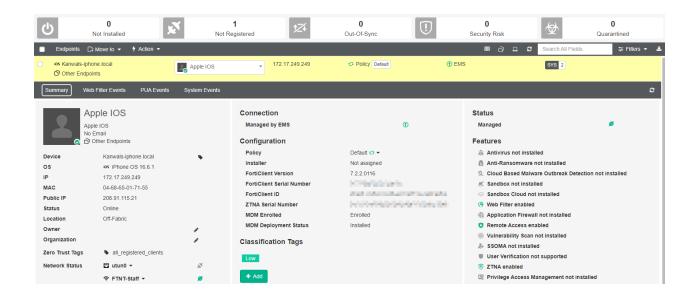
### **MDM** Integration



**5.** The user accesses the enrollment link on their iOS device and enters their details as prompted to complete the enrollment process. Once the device is enrolled, the user is prompted to install FortiClient. After installation, FortiClient registers to EMS. After connecting to EMS, the ZTNA certificate (SCEP) is installed on the endpoint. You can verify this by going to *General settings > VPN & Device Management > More Details*.



The following shows an endpoint that is enrolled with MDM and has an MDM profile installed on the EMS endpoint summary page:





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