MobileIron Event Notification Service and Common Platform Services API Guide

for MobileIron Cloud 72 and MobileIron Core 10.8.0.0

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For complete product documentation, see:
Common Platform Services Product Documentation.

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Contents

Introduction **1**

What's new **1**

Resolved issues **2**

Known issues **3**

Limitations **3**

Getting Started **6**

Prerequisites **6**

Common prerequisites 6

Event Notification Service prerequisites 6

CPS API prerequisites 6

Authentication 6

Basic authentication 6

Certificate-based authentication 7

Certificate-based authentication workflows 7

Workflow: Obtaining a certificate 7

Workflow: Using certificates in messaging 8

Workflow: Using certificates for API calls 9

Certificate-based authentication security 9

Certificate Validation 9

Security of Certificate Procurement Process 10

Assigning the CPS role to a user **10**

Assigning the CPS role to a MobileIron Cloud user 10

Assigning the CPS role to a MobileIron Core user 11

Enabling messaging **13**

Enabling messaging on MobileIron Cloud 13

Enabling messaging on MobileIron Core 13

Validating Event Notification Service and CPS API functionality **15**

Using the Event Notification Service **16**
Overview **16**
Suggested messaging integration workflow 17
Endpoint information **17**
Getting event subscription metadata **17**
HTTP Method 17
Request URI 18
Example response 18
MobileIron Cloud 18
MobileIron Core 18
Messages **19**
Example Device Event messages 19
App install 19
Device retire 19
Sample client snippet for message subscriber **20**
API characteristics **23**
Endpoint information **23**
Example MobileIron Cloud certificate-based authentication cURL command 24
Aggregate API rate limits per cluster **24**
Batch ID recommendation **25**
Pulling data **25**
Common items **25**
List of identifiers 25
List of devices format 25
Example list of devices 25
Number result 26
Example number result 26
Update attributes 26
Update attributes request format 26

Enums **27**

Object models **27**

App Catalog 27

Application 28

Certificate 28

Device 28

Device event 30

Profile 31

Rules 32

User 32

Handling Paged Responses **33**

Inventory APIs **34**

Get application inventory **34**

HTTP Method 34

Request URI 34

Request parameters 34

Response fields 35

Example request 35

Example response 35

Get certificate inventory (iOS only) **36**

HTTP Method 36

Request URI 36

Request parameters 36

Response fields 37

Example response 37

Get profile inventory (iOS only) **38**

HTTP Method 38

Request URI 38

Request parameters 38

Response fields 39
Example response 39
Device APIs 41
Get device attributes metadata 41
HTTP Method 41
Request URI 41
Example response 41
Get devices by UEM or deviceGuid identifiers 42
HTTP Method 43
Request URI 43
Request parameters 43
Response fields 44
Example request 44
Example response 45
Get devices by mac addresses 45
HTTP Method 45
Request URI 45
Request parameters 46
Response fields 46
Search devices by status 46
HTTP Method 46
Request URI 46
Request parameters 47
Response fields 47
Example response 47
Search devices by device group identifier 47
HTTP Method 47
Request URI 48
Request parameters 48

Response fields 48
Example response 48
Get device location details 49
HTTP Method 49
Request URI 49
Request parameters 49
Example response 50
Count devices by status 50
HTTP Method 50
Request URI 51
Request parameters 51
Response fields 51
Count devices by device group identifier 51
HTTP Method 51
Request URI 51
Request parameters 51
Response fields 52
Example response 52
Update device attributes by device UEM identifiers 52
HTTP Method 52
Request URI 52
Request parameters 52
Response fields 53
Manage device settings - iOS only 53
HTTP Method 53
Request URI 53
Request parameters 54
Response fields 55
Example requests 55

Example response 56
Get device settings - iOS only **56**
HTTP Method 56
Request URI 56
Request parameters 57
Response fields 57
Example request 57
Example response 58
Force checkin **58**
HTTP Method 59
Request URI 59
Request parameters 59
Response fields 59
Check-in for Threat Response Matrix update **59**
HTTP Method 59
Request URI 59
Request parameters 60
Response fields 60
Example request payload 61
Example response 61
Device Group APIs **62**
Get all Device Groups **62**
HTTP Method 62
Request URI 62
Request parameters 62
Response fields 63
Example response 63
Get device groups associated with device list **63**
HTTP Method 63

Request URI 63
Request parameters 64
Response fields 64
Example request 64
Example response 64
Search device groups by device group name 65
HTTP Method 65
Request URI 66
Request parameters 66
Response fields 66
Example response 66
Get device group by device group identifier 67
HTTP Method 67
Request URI 67
Request parameters 67
Response fields 67
Example response 67
Example device groups API scenario 68
Example 68
Message APIs 70
Send email to device owners 70
HTTP Method 70
Request URI 70
Request parameters 70
Response fields 71
Send push notification to devices 71
HTTP Method 71
Request URI 71
Request parameters 71

Response fields 72
User APIs **73**
Get user attributes metadata **73**
HTTP Method 73
Request URI 73
Example response 73
Search users by GUID **75**
HTTP Method 75
Request URI 75
Request parameters 75
Response fields 75
Example responses 76
Local accountSource 76
LDAP accountSource with fields="ldapStandardAttributes" parameter included in the call 76
Search users by user id **77**
HTTP Method 77
Request URI 77
Request parameters 77
Response fields 78
Example responses 78
Local accountSource 78
LDAP accountSource with fields="ldapStandardAttributes" parameter included in the call 79
Count users by user id **80**
HTTP Method 80
Request URI 80
Request parameters 80
Response fields 80
Update user attributes **81**
HTTP Method 81

Request URI 81
Request parameters 81
Response fields 81
App Catalog APIs **82**
Get application inventory **82**
HTTP Method 82
Request URI 82
Request parameters 82
Response fields 83
Example request 83
Example responses 83
In-house app response 84
Metadata APIs **85**
Get current minor version of the API **85**
HTTP Method 85
Request URI 85
Response fields 85
Example response 85
Get device registration URI **86**
HTTP Method 86
Request URI 86
Example responses 86
MobileIron Cloud 86
MobileIron Core 86
Get device app metadata **86**
HTTP method 86
Request URI 86
Example response 87
Get device certificate metadata **87**

HTTP method 87
Request URI 87
Example response 87
Enabling Windows 10 app inventory reporting on MobileIron Core 89

Introduction

The MobileIron Event Notification Service and Common Platform Services (CPS) API provide automated clients with a messaging push and an RPC pull interface for integration with third-party solutions, namely:

- MobileIron Event Notification Service: an MQTT endpoint for notifications of activities within MobileIron Cloud and MobileIron Core. See Using the Event Notification Service on page 16.
- CPS API: an RPC (HTTP/JSON) API to retrieve detailed information of interest to integrators. The API is an RPC API using JSON over HTTP. See the API-related chapters, starting with API characteristics.

The MobileIron Event Notification Service and CPS API comprise an integration platform between MobileIron's integration partners and the MobileIron customer base. Before this integration platform, integration partners had to write and maintain two separate integrations between MobileIron Core and MobileIron Cloud, and constantly poll the API for device state changes, increasing processing complexity and computational load.

The MobileIron Event Notification Service notifies integration partners of events within a few seconds of event occurrence, and the CPS API provides standard responses across MobileIron Core and Cloud, serving as the ideal integration platform between integration partners and the MobileIron Core and MobileIron Cloud customer base.

What's new

Date	Description
October 28, 2020	Added the **managed** field to the return of Get application inventory.
August 31, 2020	The following calls are now supported in MobileIron Core 10.8.0.0, and were already supported in MobileIron Cloud: • Get device groups associated with device list • Search users by GUID
August 3, 2020	Clarified that the direction is inbound for the port (8883) on which the messaging service listens.
July 21, 2020	Added the call, Get device groups associated with device list.
June 11, 2020	• Add documentation for the call, Search users by GUID. • Updated documentation for the call Get devices by UEM or deviceGuid identifiers to describe that the call can also take the deviceGUID as a

	search identifier.
April 2, 2020	• Updated Device object model to include deviceGuid. • Updated Example Device Event messages to include deviceGuid.
July 31, 2019	• Clarified MQTT and API endpoints. • Updated Authentication methods supported for Core and Cloud to include basic auth and certificate-based authentication.
July 17, 2019	• Added ldapStandardAttributes parameter to the Search users by user id call. • Added LDAP standard attributes information to the Get user attributes metadata call. • Changed identifier_type parameter to identifierType for the Get profile inventory (iOS only) and Check-in for Threat Response Matrix update, and Get application inventory calls.
June 3, 2019	• Updated the API Endpoint information to reflect the new format for certificate-based authenticated calls. • Updated the messaging Endpoint information. • Updated the Resolved issues and Limitations sections for the Cloud 62 and Core 10.3.0.0 version of the guide.
April 24, 2019	Added identifier_type parameter to the Get profile inventory (iOS only) and Check-in for Threat Response Matrix update, and Get application inventory calls.
April 22, 2019	Added documentation for these calls: • Get device app metadata • Get device certificate metadata
April 10, 2019	Added documentation for the Check-in for Threat Response Matrix update call.
January 2, 2018	• Added documentation for these new calls: - Manage device settings - iOS only - Get device settings - iOS only - Get device location details • The device.report_initialized event is now supported on MobileIron Core for iOS and Android devices. Previously, it was only supported on MobileIron Cloud. See Device event.

Resolved issues

For resolved issues identified in previous releases, see the *MobileIron Event Notification Service and Common Platform Services API Guide* for the desired releases in MobileIron Common Platform Services Product

Documentation.

This release includes the following resolved issues:

- **AW-32833:** Previously, the GET /msa/v1/cps/appcatalog/apps API returned multiple versions of the same app, whereas the App Catalog user interface showed only the latest of the two uploaded versions in the app catalog listing. This issue has been fixed.
- **AW-32746:** The WINDOWS parameter of the GET /msa/v1/cps/appcatalog/apps API now returns expected results.

Known issues

For known issues identified in previous releases, see the *MobileIron Event Notification Service and Common Platform Services API Guide* for the desired releases in MobileIron Common Platform Services Product Documentation.

This release does not include new known issues.

Limitations

For third-party limitations identified in previous releases, see the *MobileIron Event Notification Service and Common Platform Services API Guide* for the desired releases in MobileIron Common Platform Services Product Documentation.

This release includes the following limitation:

- **AW-23186:** The GET /msa/v1/cps/user API call yields differing result formats on Cloud and Core for the following items:

Item	Cloud	Core

LDAP custom attribute keys	Lower case
	
	`objectguid`
	`userprincipalname`
	
	See the highlighted example in Cloud response below.
		Camel Case
		
		`objectGUID`
		`userPrincipalName`
		
		See the highlighted example in Core response below.

objectguid field	Hexadecimal: `\ \3f\\21\\d9\\5b\\1c\\ab\\cf\\49\\81\\11\\7a\\fa\\b7\\d2\\ab\\6a` See the highlighted example in Cloud response below.	Unencoded string: `9a34fe08e8041c47991c5a387efff6bb` See the highlighted example in Core response below.

Cloud response

```
{
    "searchResults": [
        {
            "enabled": true,
            "createdAt": 1520419288985,
            "accountSource": "LDAP",
            "displayName": "cloud user",
            "emailAddress": "cloud.user@exchce.com",
            "firstName": "cloud",
            "lastName": "user",
            "userId": "cloud.user12@exchce.com",
            "userUuid": "a27c1b0e-96f6-4acc-af79-b3af881db1cd",
            "ldapCustomAttributes": {
                "objectguid":
"\\3f\\21\\d9\\5b\\1c\\ab\\cf\\49\\81\\11\\7a\\fa\\b7\\d2\\ab\\6a",
                "userprincipalname": "cloud.user12@exchce.com"
            }
        }
    ],
    "results": 1,
    "offset": 0,
    "limit": 50
}
```

Core response

```
{
    "searchResults": [
        {
            "enabled": true,
            "createdAt": 1520553600000,
```

```
            "accountSource": "LDAP",
            "displayName": "testuser6771",
            "emailAddress": "testuser6771@auto8.mobileiron.com",
            "firstName": "testuser6771",
            "userId": "testuser6771",
            "userUuid": "bff6bf12-72ff-4524-97a0-064cc137f955",
            "ldapCustomAttributes": {
                "objectGUID": "9a34fe08e8041c47991c5a387efff6bb",
                "userPrincipalName": "testuser6771@auto8.mobileiron.com"
            }
        }
    ],
    "results": 1,
    "offset": 0,
    "limit": 50
}
```

Getting Started

Prerequisites

These sections describe the prerequisites for using the MobileIron Event Notification Service and Common Platform Services API.

Common prerequisites

You need to have a working MobileIron Core or MobileIron Cloud environment with registered devices. See the MobileIron Cloud Administrator Guide and the MobileIron Core documentation set for information about configuring your environment to work with this integration platform.

Event Notification Service prerequisites

- Event notification requires Certificate based Authentication for each connection using client (identity) certificates issued by DigiCert, Inc. See Authentication, Certificate-based authentication workflows,and Example MobileIron Cloud certificate-based authentication cURL command.
- Integrators can only subscribe to events if admin user associated with the certificate has been granted the CPS role. See Assigning the CPS role to a user on page 10.

CPS API prerequisites

Authentication

MobileIron supports the following authentication methods for CPS on Core and Cloud over an encrypted link between client and server using Transport Layer Security (TLS) v1.2:

- Basic authentication
- Certificate-based authentication

Basic authentication

The credentials you use for basic authentication must correspond to a user with the required CPS role. See Assigning the CPS role to a user for how to assign the CPS role to users.

Certificate-based authentication

The MobileIron Common Platform Services API requires authentication for each API call, and supports certificate-based authentication using client (identity) certificates issued by DigiCert, Inc. When using certificate-based authentication, you must include the identity certificate in every API call and when establishing a connection to MQTT. See Example MobileIron Cloud certificate-based authentication cURL command for how to include the certificate. MobileIron Cloud or Core compares the username and email address (RFC 822) in the certificate SAN field against the registered username and email address. If these do not match, the system refuses the MQTT connection and API calls. See Certificate-based authentication workflows for how to set up certificate-based authentication, and Certificate-based authentication security for a discussion of how MobileIron enforces certificate security.

NOTE: The system does not renew certificates. Please keep track of your certificate expiration date and renew the certificate before expiration.

See Certificate-based authentication workflows and Example MobileIron Cloud certificate-based authentication cURL command for more details.

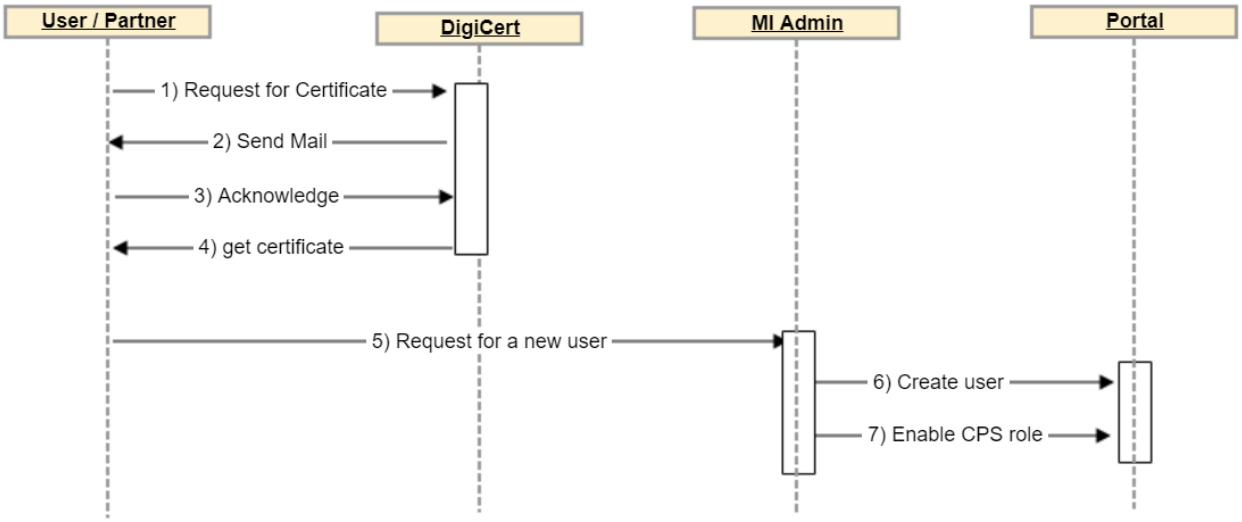
Certificate-based authentication workflows

Thus section describes the following workflows:

- Obtaining a certificate
- Using certificates in messaging
- Using certificate for API calls

Workflow: Obtaining a certificate

Follow this workflow to set up certificate-based authentication:



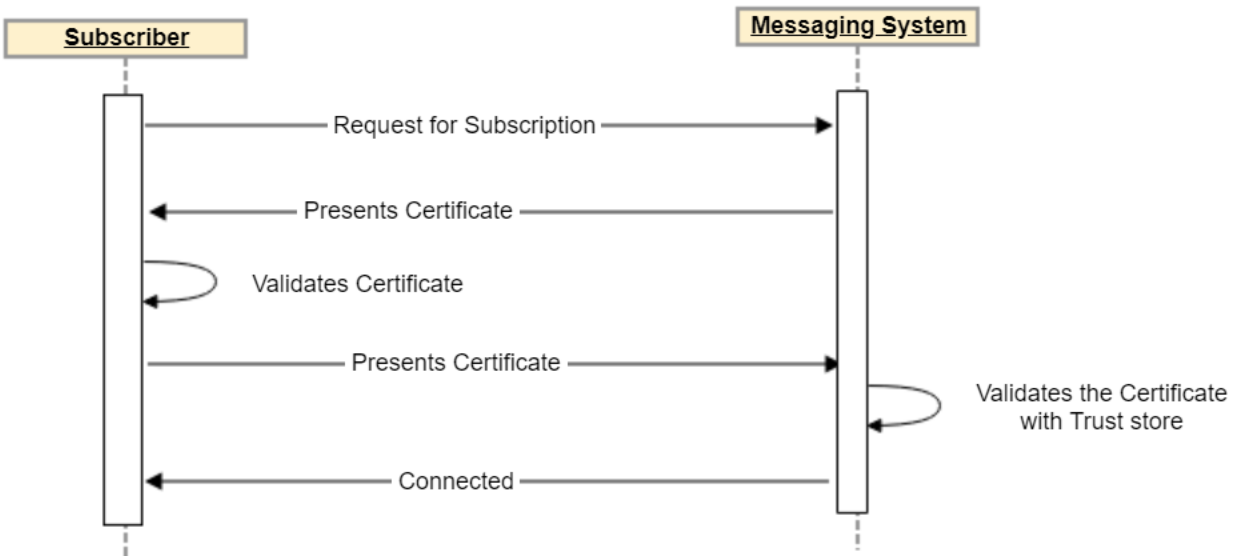
1. Request Certificate

- User or partner requests a premium certificate from the DigiCert CA, https://www.digicert.com/secure/order.
- The certificate issuer should be "DigiCert SHA2 Assured ID CA"
- Signature Hash must be SHA2.
- Common Name must be the MobileIron Cloud or Core email of a user with the CPS role. See Assigning the CPS role to a user on page 10 for how to assign the CPS role to users.
- Recipient Email must be a working email address of a username that is also registered with same email id in MobileIron Cloud or Core.

2. Send Mail
   - DigiCert sends an email to the Recipient Email containing an URL at which to generate the certificate for the Common Name, in this case, the MobileIron Cloud or Core email id associated with the CPS role.
3. Get Certificate
   - DigiCert sends a certificate in P12 format.
   - Ensure that certificate is created with the "RFC 822 Name" header.
   - The "RFC 822 Name" should be the email id of the user who will have the required CPS role. See Assigning the CPS role to a user on page 10 for how to assign the CPS role to users.
4. Acknowledge
   - User clicks the URL to generate the certificate.
5. Request a new user
   - User or partner requests the MobileIron admin to create a user.
6. Create user
   - The MobileIron admin creates a single user for the given email id. The email id must be the same as to which the certificate refers. See "Adding a User" in the MobileIron Cloud Administrator Guide and "Managing Users" in the Getting Started with MobileIron Core guide for information about creating users.
7. Enable CPS role
   - The MobileIron admin enables the CPS role for the email id. See Assigning the CPS role to a user on page 10 for how to assign the CPS role to users.

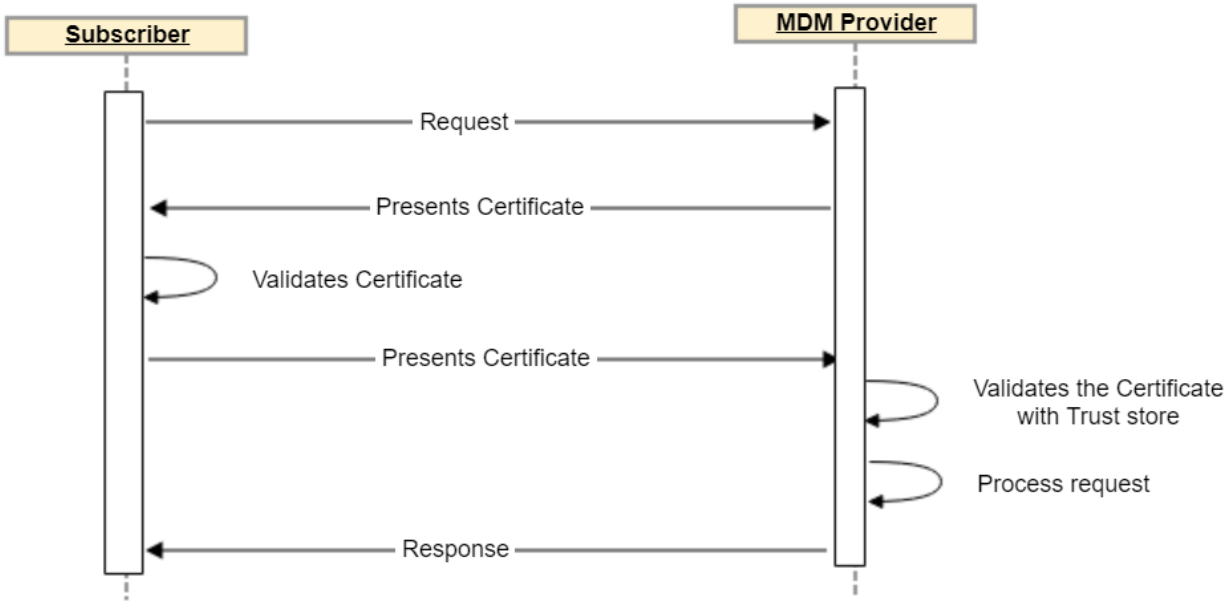
Workflow: Using certificates in messaging

Follow this workflow to use certificates in messaging:



Workflow: Using certificates for API calls

Follow this workflow to use certificates for API calls:



Certificate-based authentication security

CPS supports Certificate-based Mutual Authentication. Mutual Authentication requires that both the server and client present a certificate to prove their identity. This allows CPS to prevent unauthorized clients without valid certificates from connecting to CPS APIs and event notification service.

Certificate Validation

To be considered a valid certificate, a certificate must:

1. Chain to a Certificate Authority (CA) trusted by MobileIron Cloud and MobileIron Core. Currently, this is DigiCert only.
2. Be otherwise valid, for example, marked as usable for client authentication, and not expired.
3. After validating a certificate as valid, MobileIron extracts the email identity of a certificate using the SubjectAltName RFC822Name value. MobileIron enforces that only one RFC822Name value may exist in a given certificate, and rejects a certificate if there are multiple values.

   X509v3 Subject Alternative Name format: email: <name>@<domain>.com

4. After extracting the email identity from the certificate, MobileIron performs a lookup for the user and ensures user has the CPS role for the MobileIron Cloud or MobileIron Core tenant.

Security of Certificate Procurement Process

The security of this system depends upon preventing unauthorized users from obtaining certificates that are valid for authorized users. To that end, DigiCert has the following processes and protections in place:

1. When a certificate for an email address is requested, an email is sent to that email address requesting confirmation of the certificate request. Note: it is not required that the requester has access to the email address. This allows admins to request (and pay for) certificates on behalf of users.
2. The certificate is only generated when the email recipient clicks the confirmation link. Prior to this, the certificate requester is prevented from seeing the certificate.
3. The certificate and private key are sent to the email address to which the certificate belongs. If the certificate is requested by person A who does not have access to mailbox B, then A will not be able to obtain the private key.

4. The certificate (public) is visible to the certificate requester on Digicert's website, but the private key is not. Certificate-based Mutual Authentication works by proving that each side has possession of their respective private key. Thus, by providing the private key only to the intended recipient and not the requester, the system prevents attackers from gaining unauthorized access to the APIs.

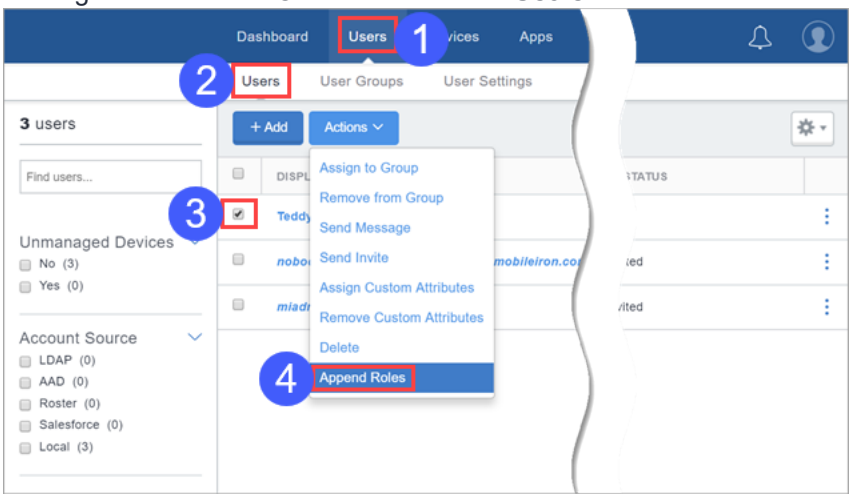
Assigning the CPS role to a user

The process differs between MobileIron Cloud and MobileIron Core.

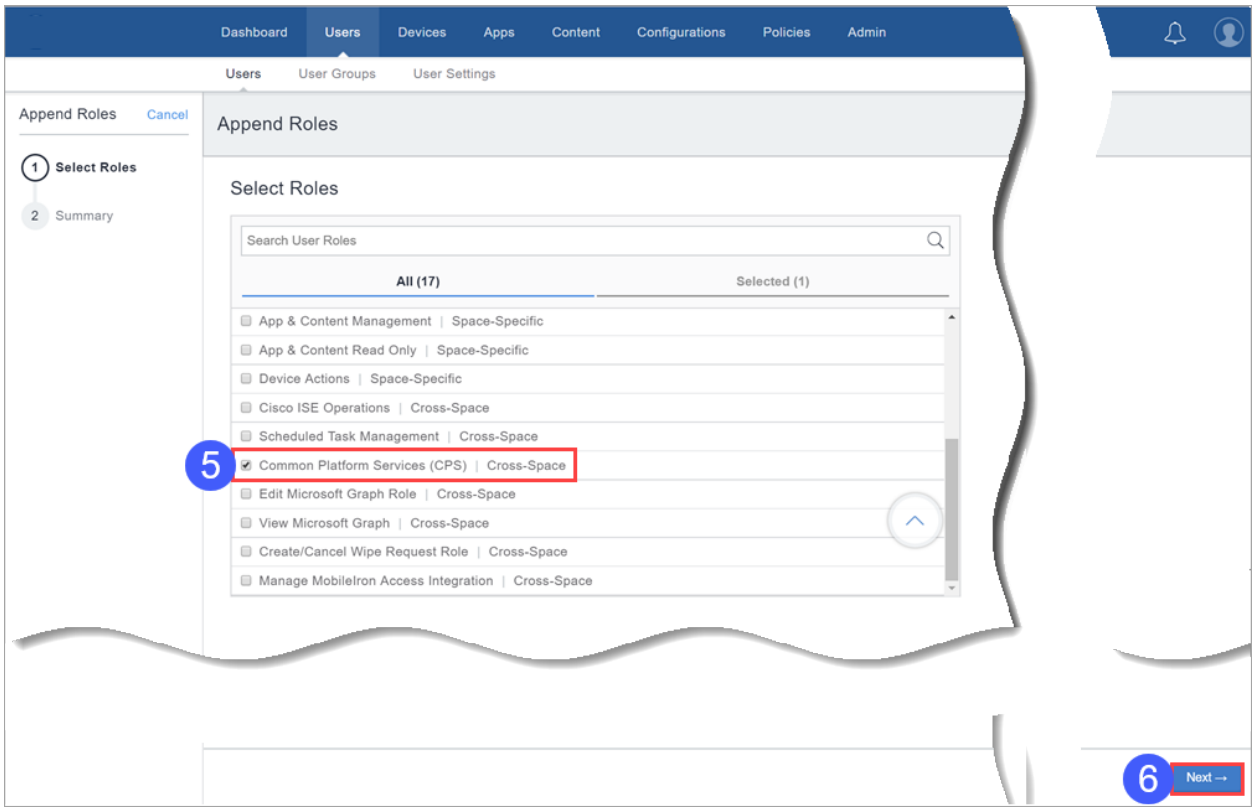
Assigning the CPS role to a MobileIron Cloud user

To assign the CPS role to a user:

1. Log in to MobileIron Cloud and then click **Users**.



2. Select **Users**.
3. Select a user.
4. Select **Append Roles**.

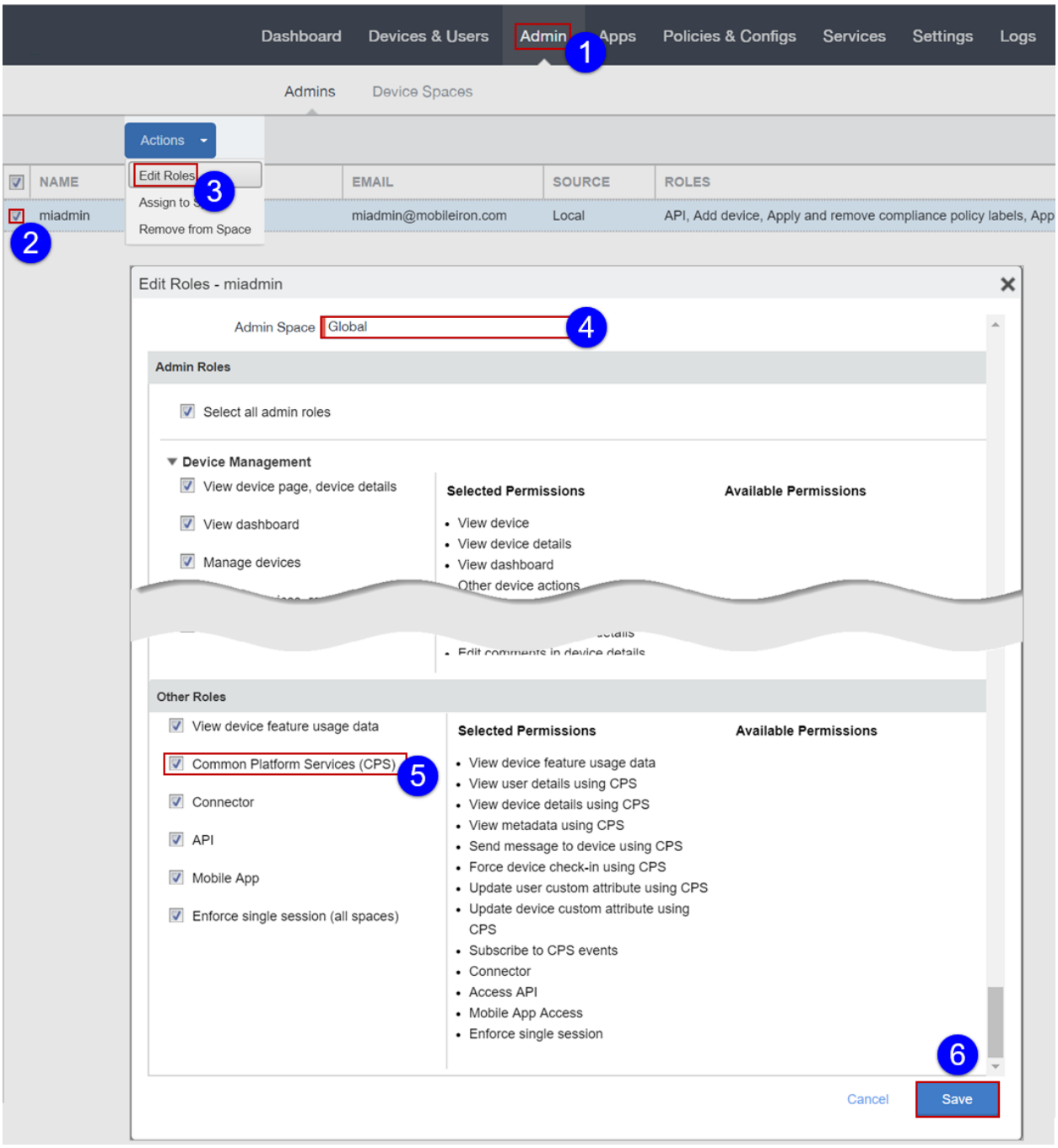


5. Select the **Common Platform Services (CPS)** role.
6. Click **Next**.
7. Click **Done**.

Assigning the CPS role to a MobileIron Core user

To assign the CPS role to a user:

1. Log in to MobileIron Core and then click **Admin**.



2. Select a user.
3. Select **Edit Roles**.
4. Assign the admin user to the global space.

NOTE: The user will be unable to access Common Platform Services functionality if assigned to a device space other than global.

5. Select the **Common Platform Services (CPS)** role.
6. Click **Save**.

Enabling messaging

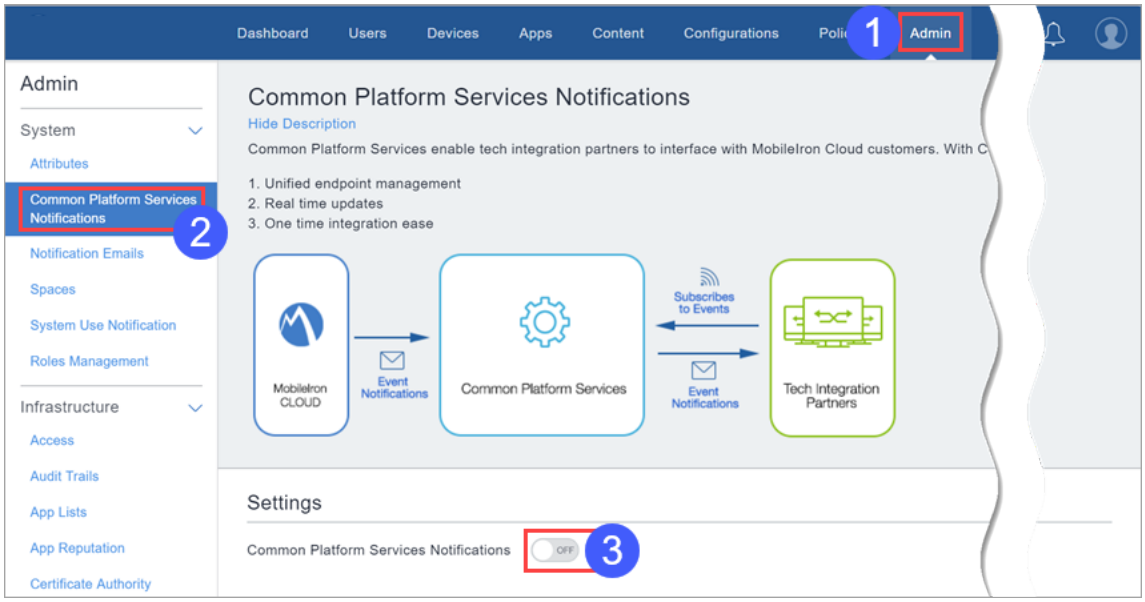
The process for enabling messaging differs between MobileIron Cloud and MobileIron Core. See the following sections for details.

Enabling messaging on MobileIron Cloud

You can enable messaging using the MobileIron Cloud admin portal.

To enable messaging:

1. Login to MobileIron Cloud, and then select **Admin**.



2. Select **Common Platform Services Notifications**.
3. Toggle the CPS notifications switch to enable or disable the service.

Enabling messaging on MobileIron Core

You run the MobileIron Core CLI program to enable messaging. This procedure invokes a message broker, enables the Event Notification Service event notification feature, restarts the MobileIron server, and restarts Apache Tomcat (on MobileIron Core) to reload configurations.

Considerations:

- The Messaging server listens to subscribing client requests over port 8883, and this port must be open inbound for the service to function.
- If MobileIron Core is running in a High Availability configuration, please enable messaging on both primary and secondary nodes.

To enable or disable messaging, run the MobileIron Core CLI program as shown below:

```
host:~ host$ ssh miadmin@hostname

miadmin@hostname's password:

Last login: Thu May 4 13:43:48 2017 from 10.101.10.191

************************************************************

* MobileIron CORE CLI *

* *

* *

************************************************************

Welcome miadmin it is Thu May 4 13:49:39 UTC 2017

CORE(9.4.0.0-2388)@hostname> enable

Password:

CORE(9.4.0.0-2388)@hostname#configure terminal

Enter configuration commands, one per line.

CORE(9.4.0.0-2388)@hostname/config#activemq

Warning:Maintenance mode command.

Portal service will be stopped during this operation. Proceed? (y/n)y

Updating chkconfig...

Updating portal...

Starting ActiveMQ...

INFO: Loading '/mobileiron.com/programs/org.apache.activemq/bin/env'

INFO: Using java '/mobileiron.com/programs/com.mobileiron.platform.jre8/bin/java'

INFO: Starting - inspect logfiles specified in logging.properties and log4j.properties to
get details

INFO: pidfile created : '/mobileiron.com/programs/org.apache.activemq/data/activemq.pid'
(pid '22954')

Capturing tomcat metrics: [ OK ]

Stopping tomcat: [ OK ]

Starting tomcat: Using TOMCAT_ALLOCATION_MB=2048

Using JAVA_OPTS=-Xms128m -Xmx2048m -XX:PermSize=512m -XX:MaxPermSize=512m -
XX:+OptimizeStringConcat -server -Dvsp.branding=mobileiron -Dmi.hostname=hostname -
Dfile.encoding=utf-8 -Djavax.net.ssl.keyStore=/usr/java/default/jre/lib/security/cacerts -
Djava.security.auth.login.config=/mi/files/ldap/gsseg_jaas.conf -
Djava.security.krb5.conf=/mi/files/ldap/krb5.conf -Dspring.auth.method=form -
Dsun.net.inetaddr.ttl=60 -Dmi.tcp.port.system.manager.portal=8443 -
Djsse.enableSNIExtension=false -Dmi.version=9.4.0.0-2388 -Xms1024m -Xmx2048m -XX:-
HeapDumpOnOutOfMemoryError -XX:HeapDumpPath=/mi/files -verbose:gc -XX:+PrintGCDateStamps -
XX:+PrintGCTimeStamps -XX:+PrintGCDetails -Xloggc:/mi/tomcat/logs/gc.log -
XX:+UseConcMarkSweepGC -XX:+UseParNewGC -XX:MaxNewSize=480M -XX:NewRatio=7 -
XX:TargetSurvivorRatio=90 -XX:CMSInitiatingOccupancyFraction=60
```

```
[ OK ]

Successfully enabled activemq

CORE(9.4.0.0-2388)@hostname/config#no activemq

Warning:Maintenance mode command.

Portal service will be stopped during this operation. Proceed? (y/n)y

Updating chkconfig...

Updating portal...

Stopping ActiveMQ...

INFO: Loading '/mobileiron.com/programs/org.apache.activemq/bin/env'

INFO: Using java '/mobileiron.com/programs/com.mobileiron.platform.jre8/bin/java'

ERROR: No or outdated process id in
'/mobileiron.com/programs/org.apache.activemq/data/activemq.pid'

INFO: Removing /mobileiron.com/programs/org.apache.activemq/data/activemq.pid

Capturing tomcat metrics: [ OK ]

Stopping tomcat: [ OK ]

Starting tomcat: Using TOMCAT_ALLOCATION_MB=2048

Using JAVA_OPTS=-Xms128m -Xmx2048m -XX:PermSize=512m -XX:MaxPermSize=512m -
XX:+OptimizeStringConcat -server -Dvsp.branding=mobileiron -Dmi.hostname=hostname -
Dfile.encoding=utf-8 -Djavax.net.ssl.keyStore=/usr/java/default/jre/lib/security/cacerts -
Djava.security.auth.login.config=/mi/files/ldap/gsseg_jaas.conf -
Djava.security.krb5.conf=/mi/files/ldap/krb5.conf -Dspring.auth.method=form -
Dsun.net.inetaddr.ttl=60 -Dmi.tcp.port.system.manager.portal=8443 -
Djsse.enableSNIExtension=false -Dmi.version=9.4.0.0-2388 -Xms1024m -Xmx2048m -XX:-
HeapDumpOnOutOfMemoryError -XX:HeapDumpPath=/mi/files -verbose:gc -XX:+PrintGCDateStamps -
XX:+PrintGCTimeStamps -XX:+PrintGCDetails -Xloggc:/mi/tomcat/logs/gc.log -
XX:+UseConcMarkSweepGC -XX:+UseParNewGC -XX:MaxNewSize=480M -XX:NewRatio=7 -
XX:TargetSurvivorRatio=90 -XX:CMSInitiatingOccupancyFraction=60

[ OK ]

Successfully disabled activemq

CORE(9.4.0.0-2388)@hostname/config#
```

Validating Event Notification Service and CPS API functionality

To validate Event Notification Service functionality, see the section, Sample client snippet for message subscriber on page 20 for how to write a script that verifies that you can subscribe to events.

To validate that you can use the CPS API, run the call described in the section, Getting event subscription metadata on page 17.

Using the Event Notification Service

Overview

The Event Notification Service provides automated clients with an MQTT endpoint for notifications of activities within MobileIron Cloud and MobileIron Core.

Messages indicate:

- Device activity, such as registration, check-in, and retirement
- Device state activity, for example, transitions between compliant and non-compliant, and back
- Administrative changes

A variety of out-of-the-box MQTT implementations are available and this manual provides sample client code in the section, Sample client snippet for message subscriber on page 20. Messages are JSON objects, and any of the widely-available JSON implementations can de-serialize them. For more information about MQTT, visit http://mqtt.org/documentation.

TLS (Transport Layer Security) is the standard security technology for establishing an encrypted link between a server and a client. This link ensures that all data passed between the web server and browsers remain private and integral. Partner connection and communication with a message broker as a subscriber is TLS secured and encrypted.

Notes:

- MQTT protocol enabled by Core for CPS events only supports TLS 1.2.
- MobileIron recommends a maximum of **fifteen** connections per tenant. The best practice is to use a single connection to connect and subscribe to all the required topics from a tenant or Core.
- Every connection should have a unique MQTT client ID.
- Subscribers (MQTT/TLS clients) need to connect to broker over TLS encrypted port 8883. See Endpoint information for the broker URL to use for your environment.
- For MobileIron Core, during backup and restore on a secondary node, any cipher suite and protocol configuration changes for incoming TLS connections from MobileIron System Manager (MICS) has to be manually replicated on the secondary node because MICS configurations are not synced .
- All MQTT clients maintaining an active subscription when MQTT sends the message receive the message. The system purges the message after delivery, even if the message is consumed by only one active client that acknowledges receipt with a PUBACK command. MQTT delivers messages with QoS level 1, which means the sender can deliver the message more than once until the sender receives a PUBACK command from a receiving client.
- If no active consumers are available at the instant message is published to the messaging server, the message would be retained in the system for a maximum duration of 3 hours before it either gets consumed by a re-connecting durable subscriber or gets evacuated out of the system

Suggested messaging integration workflow

1. Obtain endpoint URLs and a login email address to make a connection. These are provided separately by your MobileIron account representative. You also need a client (identity) certificate. See Authentication and Certificate-based authentication workflows.
2. Use the Getting event subscription metadata call to get list of available events and topics to which to subscribe.
3. Edit your login information into the sample client snippet for message subscriber, then execute one of the sample clients. This connects to the messaging system, registers for events, and begins printing message activity to the standard output. See Sample client snippet for message subscriber on page 20.
4. Register a device to generate events that will enable you to test your integration.
5. Verify that device registration and check-in actions are showing up on your console from your client.

Endpoint information

The endpoints differ between MobileIron Cloud and MobileIron Core.

The following table summarizes the endpoints:

MobileIron Cloud	MobileIron Core

`ssl://queue-<clustername>.mobileiron.com:8883`
For example, given the cluster NA1, then the endpoint address would be:
`ssl://queue-na1.mobileiron.com:8883`
	`ssl://<fully-qualified-hostname>:8883`
	For example, given the fully qualified hostname, acme.mobileiron.com, then the endpoint address would be:
	`ssl://acme.mobileiron.com:8883`

Getting event subscription metadata

This call returns available event types to which you can subscribe and the retention time for Event Notification Service events.

HTTP Method

GET

Request URI

/msa/v1/cps/event/$metadata

Example response

MobileIron Cloud


```
{
    "topics": {
        "device_profile_inventory_update": "18ccc64c-66e4-4e27-8bd6-9ac-
c9c8d0224/device/profile_inventory",
        "device_cert_inventory_update": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/cert_
inventory",
        "device_compliant": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/compliant",
        "device_check_in": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/check_in",
        "device_app_inventory_update": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/app_
inventory",
        "device_wiped": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/wiped",
        "device_not_compliant": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/not_compliant",
        "device_enrolled": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/enrolled",
        "device_retired": "18ccc64c-66e4-4e27-8bd6-9acc9c8d0224/device/retired"
    },
    "retentionPeriodMinutes": 180
}
```


MobileIron Core


```
{
    "topics": {
        "device_not_compliant": "device/not_compliant",
        "device_compliant": "device/compliant",
        "device_retired": "device/retired",
        "device_enrolled": "device/enrolled",
        "device_app_inventory_update": "device/app_inventory",
        "device_profile_inventory_update": "device/profile_inventory",
        "device_cert_inventory_update": "device/cert_inventory",
        "device_wiped": "device/wiped",
        "device_check_in": "device/check_in"
    },
    "retentionPeriodMinutes": 180
}
```


The key in the “topics” JSON defines the event types available and the corresponding values indicate the destination topic to which the partner should subscribe to get respective event notifications. The system retains messages for three hours and then purges them if they are not consumed and acknowledged with a PUBACK command.

Messages

There is currently one message format defined. See Device on page 28, and see the example messages below.

Example Device Event messages

App install


```
{
    "timestamp": 1582796173229,
    "eventType": "device.app_inventory",
    "devices": [
        {
            "compliant": true,
            "quarantined": false,
            "blocked": false,
            "compromised": false,
            "status": "ACTIVE",
            "lastCheckInTime": 1582796171062,
            "registrationTime": 1582608427870,
            "identifier": "f2e01873c6d96d87f1a34ff72e0e4143e42ee089",
            "macAddress": "74:81:14:d6:f5:b7",
            "manufacturer": "Apple Inc.",
            "model": "iPad5,3",
            "os": "IOS",
            "osVersion": "12.2",
            "serialNumber": "DMPPK6YVG5VT",
            "userId": "rc@mi.com",
            "userUuid": "5159964d-95a7-466f-9677-1b90877f045f",
            "iosUdid": "f2e01873c6d96d87f1a34ff72e0e4143e42ee089",
            "deviceGuid": "1d71e131-0487-4d1d-9a0d-89f2bd1a888d"
        }
    ]
}
```


Device retire


```
{
    "timestamp": 1582796293479,
    "eventType": "device.retired",
    "devices": [
        {
            "compliant": true,
            "quarantined": false,
            "compromised": false,
            "status": "RETIRED",
            "lastCheckInTime": 1582796291883,
            "registrationTime": 1582608427870,
            "identifier": "f2e01873c6d96d87f1a34ff72e0e4143e42ee089",
            "macAddress": "74:81:14:d6:f5:b7",
```

```
            "manufacturer": "Apple Inc.",
            "model": "iPad5,3",
            "os": "IOS",
            "osVersion": "12.2",
            "serialNumber": "DMPPK6YVG5VT",
            "userId": "rc@mi.com",
            "userUuid": "5159964d-95a7-466f-9677-1b90877f045f",
            "iosUdid": "f2e01873c6d96d87f1a34ff72e0e4143e42ee089",
            "deviceGuid": "1d71e131-0487-4d1d-9a0d-89f2bd1a888d"
        }
    ]
}
```

Sample client snippet for message subscriber

This example code snippet is for the Paho client. For more information, see https://eclipse.org/paho/clients/java/.

```
import java.io.BufferedInputStream;
import java.io.FileInputStream;
import java.security.KeyStore;
import java.security.Security;
import java.security.cert.CertificateFactory;
import java.security.cert.X509Certificate;

import javax.net.ssl.KeyManagerFactory;
import javax.net.ssl.SSLContext;
import javax.net.ssl.TrustManagerFactory;

import org.bouncycastle.jce.provider.BouncyCastleProvider;
import org.eclipse.paho.client.mqttv3.IMqttDeliveryToken;
import org.eclipse.paho.client.mqttv3.MqttCallback;
import org.eclipse.paho.client.mqttv3.MqttClient;
import org.eclipse.paho.client.mqttv3.MqttConnectOptions;
import org.eclipse.paho.client.mqttv3.MqttMessage;
import org.eclipse.paho.client.mqttv3.persist.MemoryPersistence;

public class SampleMQTTCBA implements MqttCallback {
    public static final int KEEP_ALIVE_INTERVAL = 30;

    public static void main(String[] args) {
        String topic = "45a10ad4-ada7-4698-bc2b-d8ce1e1eb5c6/device/profile_inventory";
        try {
            MqttClient client = new MqttClient("ssl://<hostname>:8883",
                    "clientId",
                    new MemoryPersistence());

            MqttConnectOptions options = getMqttConnectOptions();
            client.setCallback(new SampleMQTTCBA());

            client.connect(options);
```

```
            client.subscribe(topic, 0);

            if (client.isConnected()) {
                System.out.println("Client connected");
            }
            client.unsubscribe(topic);
            client.disconnect();
            client.close();
        } catch (Exception exception) {
            exception.printStackTrace();
        }
    }

    private static MqttConnectOptions getMqttConnectOptions() throws Exception {
        MqttConnectOptions options = new MqttConnectOptions();
        options.setKeepAliveInterval(KEEP_ALIVE_INTERVAL);
        options.setCleanSession(false);

        String caFile = "<ca-cert.pem file path>";
        String p12File = "<End user's P12 file path>";
        String p12Password = "<P12 password>";

        final SSLContext sslContext = getSslContext(caFile, p12File, p12Password);
        options.setSocketFactory(sslContext.getSocketFactory());
        return options;
    }


    private static SSLContext getSslContext(final String caCrtFile, final String p12File,
final String password) {
        Security.addProvider(new BouncyCastleProvider());
        try {
            KeyManagerFactory kmf = getKeyManagerFactory(p12File, password);
            TrustManagerFactory tmf = getTrustManagerFactory(caCrtFile);

            SSLContext context = SSLContext.getInstance("TLSv1.2");
            context.init(kmf.getKeyManagers(), tmf.getTrustManagers(), null);
            return context;
        } catch (Exception e) {
            e.printStackTrace();
            System.err.println("Could not create SSL context");
            throw new IllegalArgumentException();
        }
    }

    private static KeyManagerFactory getKeyManagerFactory(String p12File, String password)
throws Exception {
        KeyStore clientStore = KeyStore.getInstance("PKCS12");
        clientStore.load(new FileInputStream(p12File), password.toCharArray());

        KeyManagerFactory kmf = KeyManagerFactory.getInstance(KeyMan-
agerFactory.getDefaultAlgorithm());
```

```
        kmf.init(clientStore, password.toCharArray());
        return kmf;
    }

    private static TrustManagerFactory getTrustManagerFactory(String caCrtFile) throws Excep-
tion {
        // load CA certificate
        X509Certificate caCert = null;

        FileInputStream fis = new FileInputStream(caCrtFile);
        BufferedInputStream bis = new BufferedInputStream(fis);
        CertificateFactory cf = CertificateFactory.getInstance("X.509");

        while (bis.available() > 0) {
            caCert = (X509Certificate)cf.generateCertificate(bis);
        }

        // CA certificate is used to authenticate server
        KeyStore caKs = KeyStore.getInstance(KeyStore.getDefaultType());
        caKs.load(null, null);
        caKs.setCertificateEntry("ca-certificate", caCert);
        TrustManagerFactory tmf = TrustManagerFactory.getInstance("X509");
        tmf.init(caKs);
        return tmf;
    }

    public void connectionLost(Throwable cause) {
        System.out.println("Demo.connectionLost()");
        cause.printStackTrace();
    }

    public void messageArrived(String topic, MqttMessage message) throws Exception {
        System.out.println("Demo.messageArrived()" + topic + "    " + message);
    }

    public void deliveryComplete(IMqttDeliveryToken token) {
        System.out.println("message id" + token.getMessageId());
    }
}
```

API characteristics

Endpoint information

The endpoints differ between MobileIron Cloud and MobileIron Core for certificate-based authentication, and between basic authentication and certificate authentication for MobileIron Cloud.

NOTE: The CPS API is unsupported on MobileIron Connected Cloud

The following table summarizes the endpoints:

Authentication	MobileIron Cloud	MobileIron Core

Basic	`https://<fully-qualified-hostname>/msa/v1/cps`
	
	For example, given the fully qualified hostname, na1.mobileiron.com, the endpoint address would be:
	`https://na1.mobileiron.com/msa/v1/cps`
		For both basic and certificate-based authentication:
		`https://<fully-qualified-hostname>/msa/v1/cps`
		
		For example, given the fully qualified hostname, acme.mobileiron.com, then the endpoint address would be:
		`https://acme.mobileiron.com/msa/v1/cps`

Certificate	`https://cps-<clustername>.mobileiron.com/msa/v1/cps`
	
	For example, given the cluster name NA1, the endpoint address would be:
	`https://cps-na1.mobileiron.com/msa/v1/cps`
	
	When using certificate-based authentication, you must include the identity certificate in every API call and when establishing a connection to MQTT. See Example MobileIron Cloud certificate-based authentication cURL command for how to include the certificate. See Certificate-based authentication workflows for how to set up certificate-based authentication.	

NOTE: These endpoints listen on port 443.

Example MobileIron Cloud certificate-based authentication cURL command

```
curl -X GET 'https://cps-na1.mobileiron.com/msa/v1/cps/version'
--cert <End user's P12 file path>/<End user's P12 filename>.p12:<End user's P12 file pass-
word>
--cert-type p12
--cacert <ca-cert.pem file path>
```

P12 in the snippet above refers to p12 authentication certificates. See Certificate-based authentication workflows for how to set up certificate-based authentication.

Aggregate API rate limits per cluster

MobileIron recommends integrators manage and control the call rate of CPS APIs so as to not exceed the following maximum values of calls per minute. Aggregate API call rates per cluster that exceed the following limits may result in rate-limiting being invoked:

	Cluster					
Tenants	**NA1**	**NA2**	**NA3**	**EU1**	**AP1**	**AP2**
msa/v1/cps/device/application	300*	400	300	300	300	100
msa/v1/cps/device/mac	100	200	100	100	100	100
/msa/v1/cps/device?status=<DeviceStatus> &offset=<Integer>&limit=<Integer>&ruleId=<rule>	200	200	200	200	200	100
/msa/v1/cps/user?uid=<user-id>&offset=<offset>&limit=<limit>	100	100	100	100	100	100
/msa/v1/cps/device/forceCheckin	100	100	100	200	100	100
/msa/v1/cps/device/notification	200	200	100	200	200	200
/msa/v1/cps/device/email	200	400	200	400	200	200
Remaining APIs	400	600	600	600	200	200

* Values are calls/minute.

Batch ID recommendation

MobileIron recommends limiting to 100 the number of IDs sent with a single API call. The maximum number of IDs supported with any single API call is 200. API performance may degrade if more than 100 IDs are sent in any single API call and rate limiting may be invoked on MI Cloud.

Pulling data

- API calls only return properties that have a value and where the parameter is supported in the data model. For the complete list of properties, see Object models on page 27.
- The API calls return all date fields as a long: number of milliseconds since the epoch - January 1, 1970 UTC.

Common items

The following data structures are used across multiple APIs.

List of identifiers

A list of strings, device UEM identifiers, deviceGuid identifiers, device mac addresses, user Globally, or Universally Unique identifiers.

List of devices format

```
{"
identifiers":["mdm-id-1", "mdm-id-2"]
}
```

Example list of devices

```
 {
      "compliant":true,
         "quarantined": false,
         "compromised": false,
      "status":"ACTIVE",
      "lastCheckInTime":1469176919585,
      "registrationTime":1466449519230,
      "identifier":"24f048d3ec2b1d9f97921588f114b7f1fea9da35b685750bd072b395ba716",
         "imei": "35 2342342342345 64 1"
      "macAddress":"08:d4:2b:1f:1b:2a",
      "manufacturer":"samsung",
      "model":"Nexus 10",
      "os":"ANDROID",
      "osVersion":"5.1.1",
         "serialNumber": "F123431WN123",
```

```
    "userId":"e@m.d",
    "userUuid":"96bd909c-25f8-4434-b243-470e5ebcfb6e",
    "custom attribute 1":"custom attribute value",
    "custom attribute 2":"custom attribute value"
  },
  {
    "compliant": true,
    "quarantined": false,
    "compromised": false,
    "status": "RETIRED",
    "lastCheckInTime": 1493723182655,
    "registrationTime": 1493712801136,
    "identifier": "b9a0d7d05fb4204f52264f805932526b848ca61d",
    "imei": "35 377808 345646 1",
    "manufacturer": "Apple Inc.",
    "model": "iPhone9,3",
    "os": "IOS",
    "osVersion": "10.2.1",
    "serialNumber": "F17ST4356HG7F",
    "userId": "sk@mi.com",
    "userUuid": "7d191915-28d1-444563-bec8-456",
    "iosUdid": "b9a0d7d05fb4563456f805932526b848ca61d"
  }
```


Number result

Number results are single integer responses whose meanings vary depending on the API call, for example, the count of updated entities or the response of a count API.

Example number result


```
{
    "result": 2
}
```


Update attributes

These handle both device and user attributes updates.

Update attributes request format


```
{
    "identifiers": [
        "id-1",
        "id-2"
    ],
    "attributes": {
        "key": "value"
```

```
    }
}
```

Enums

Enum	Values	Used for
AccountSource	LOCAL, LDAP	User # accountSource
DevicePlatform	ANDROID, IOS, OSX, WINDOWS, UNKNOWN	Device # os
DeviceStatus	ACTIVE, RETIRED, WIPED, WIPE_SENT, UNKNOWN, RETIRE_SENT, ENROLLMENT_PENDING	Device # status

Object models

The following sections describe the response fields you will encounter using the APIs.

NOTE: Do not perform strict type checking against the API JSON responses because MobileIron may enhance the responses with additional fields in subsequent releases.

App Catalog

Field name	Description
name	Human readable name.
platformType	Type of OS platform.
version	Application version.
identifier	Application (unique) identifier.
buildNumber	Build number of the application. This is for in-house apps only.
createdAt	Time app was added.

Application

Field name	Description
identifier	Application (unique) identifier
name	Human readable name
version	Application version
managed	Is the application managed.
source	Source of the app, for example, PUBLIC.

Certificate

Field name	Description
identity	Indicates the certificate is an identity certificate.
notAfter	Epoch time after which certificate expires.
notBefore	Epoch time before which certificate is not valid.
issuer	DName of the certificate issuer organization.
serialNumber	Unique identification number for the certificate.
subject	DName of the client to which the certificate belongs.
thumbprint	The thumbprint is a hexadecimal string uniquely identifying a certificate. A thumbprint algorithm calculates the thumbprint. CES accepts Secure Hash Algorithm 1 (SHA-1) thumbprints in the 40-digit hexadecimal string form without spaces.

Device

Note: imei, imsi and macAddress may not be present in all devices.

Field name	Description
compliant	"true" if the device meets the compliance rules established by the MobileIron enterprise administrator, else "false".
quarantined	"true" if the device is violating any policy with respect to quarantine action for device.
blocked	"true" if the device is violating a defined policy that has a compliance action.
compromised	"true" if the device OS is compromised as defined by rules established by the MobileIron enterprise administrator, for example, iOS device is jailbroken or an Android device is rooted.
status	Device registration state; one of: ACTIVE RETIRED WIPED WIPE_SENT UNKNOWN RETIRE_SENT ENROLLMENT_PENDING
lastCheckInTime	The timestamp of the last device check in (number of milliseconds from the epoch). This is the UEM check in time.
registrationTime	The timestamp of the device registration (number of milliseconds from the epoch).
identifier	The unique device UEM identifier for the device in question. UEM identifiers are consistent within an OS, but are not consistently formatted across OSs. This identifier is not present for MAM only and Auth only devices because MDM is required in order to provide this information. Use deviceGuid, described below, which is more reliably available.
macAddress	The device's MAC address, six groups of two hexadecimal digits separated by colons e.g. b0:65:bd:33:fe:2b. Available and valid only after the system fires the device.report_initialized event immediately after device enrollment.
manufacturer	Device manufacturer, e.g. **samsung** , **Apple Inc.** or **MicrosoftMDG**
model	Device model, e.g. **Nexus 10** , **iPad3,1** or **Lumia 950 Dual SIM**
os	The devices operating system; one of: ANDROID

Field name	Description
	IOS OSX WINDOWS UNKNOWN
osVersion	The OS version.
serialNumber	Device serial number.
userId	User name of the user the device belongs to.
userUuid	User unique identifier, can be used with user APIs like Update user attributes on page 81.
iosUdid	The UDID number for iOS device.
deviceGuid	The device GUID of the device.
customAttributes	All custom device attribute fields that have been set with a value for the device will be listed.
ownership	Indicates whether the device is company-owned or employee-owned, or the ownership type is unknown. Returns one of the following values: COMPANY, EMPLOYEE, UNKNOWN
imei	The device International Mobile Station Equipment Identity number. See http://www.imei.info/faq-what-is-IMEI/.
imsi	The IMSI number for the device.
phoneNumber	Phone number.

Device event

Field name	Description
timestamp	milliseconds since the epoch: January 1, 1970
eventType	one of the following: • device.report_initialized Fired only when the device enrolls and the UEM server receives the security status of the device. If the Security status changes, the UEM server processes the change, but does not fire this event.

	NOTE: For Android devices managed by MobileIron Cloud, to include the IMEI value in Android devices' device.report_initialized events, go to **Admin** > **Android** → **Registration** on the MobileIron Cloud Admin portal and enable **Require Android device identifiers during registration (Work Profile & Device Admin)**.This is supported for Android 6.0 devices and above. • device.enrolled • device.check_in • device.not_compliant • device.compliant • device.retired • device.app_inventory • device.cert_inventory • device.profile_inventory • device.wiped
devices	A list of devices.

Profile

Field name	Description
encrypted	Indicates whether the profile payload content is encrypted or not
hasRemovalPasscode	Indicates whether the profile has a removal passcode
managed	Indicates whether the profile is managed by MobileIron
removalDisallowed	Supervised only. If present and set to true, the user cannot delete the profile (unless the profile has a removal password and the user provides it)
content	Array of payload dictionaries. Not present if 'encrypted' is true.
description	A description of the profile
displayName	Friendly name that identifies the entity.
identifier	A reverse-DNS style identifier (com.example.myprofile, for example) that identifies the profile
organization	A human-readable string containing the name of the organization that provided the profile
uuid	A globally unique identifier for the profile
version	The version number of the profile format

Rules

These are the rules used to create device groups on MobileIron Cloud and labels on MobileIron Core.

Field name	Description
id	Unique identifier for rule group
name	Rule name
description	Rule group description
definition	Filter criteria for rule

User

Field name	Description
enabled	Indicates whether or not the user is enabled in the system.
createdAt	Epoch time when the user was on-boarded into the system.
accountSource	AccountSource enum.
displayName	Display name of the user.
emailAddress	Registered email address of the user.
firstName	User first name.
lastName	User last name.
userId	User name. This is the field by which you can search or count users.
userUuid	User unique identifier, to be used for the API call, Update user attributes on page 81.
customAttributes	All custom user attribute fields that have been set with a value for the user will be listed.
ldapCustomAttributes	All LDAP custom attribute fields that have been set with a value for the LDAP user will be listed.

Handling Paged Responses

When making calls that return a large number of results as a list, it will often be of benefit to page the result set. By requesting smaller subsets of data, you will get a response much faster than when requesting the entire, potentially large, data set.

On calls that support result set paging, pass in the following parameters to control size and start point of the page:

Name	Description
offset	The index of the first item for which you want results.
limit	The maximum number of items you want to be included in the result set. Note that there may be less remaining items than the value you specify here. The default limit is 50.

To page through the results, begin with a start value of 0 and a count value of N. To get the next page, set start value to N, while the count value stays the same. Subsequent pages will start at 2N, 3N, 4N, et cetera.

Inventory APIs

Get application inventory

This API returns the application inventory for the device identifier(s) specified in the request. This API consists of a command and optional payload (URL) that you can use to work with GUIDs instead of mdm-identifiers. This call silently ignores invalid device identifiers in the request.

NOTE: The app inventory response depends on the device mode on Android and data privacy permissionson on iOS.

To enable this API call to retrieve Windows 10 device data on MobileIron Core, see Enabling Windows 10 app inventory reporting on MobileIron Core on page 89.

HTTP Method

POST

Request URI

/msa/v1/cps/device/application

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.
		"identifiers": ["e428c618933372785b0641d053c562021ef9cd49"

identifierType	**Optional** **Parameter Type:** Request body **Data Type:** Enum **Possible Values:** One of : • MDM_IDENTIFIERS • GUID If not specified, the server assumes MDM identifiers.	"identifierType":"MDM_IDENTIFIERS"

Response fields

See Application on page 28.

Example request

```
curl --location --request POST 'https://[MobileIron Cloud or Core]/m-
sa/v1/cps/device/application' \
--header 'Authorization: Basic xxxxxEBzYW5kYm94Lm1vYmlsZWlyb24uY29tOk1pNG1hbjEx' \
--header 'Content-Type: application/json' \
--data-raw '{"identifiers": ["e428c618933372785b0641d053c562021ef9cd49"] }'
```

Example response

```
[
    {
        "deviceMdmId": "e428c618933372785b0641d053c562021ef9cd49",
        "applications": [
            {
                "identifier": "com.brainiumstudios.sudokuonetouchfree",
                "name": "Sudoku",
```

```
                "version": "2.3.37",
                "managed": false,
                "source": "PUBLIC"
            },
            {
                "identifier": "com.mobileiron.anyware.ios",
                "name": "MobileIron Go",
                "version": "5.5.0",
                "managed": false,
                "source": "UNKNOWN_APP_TYPE"
            },
            {
                "identifier": "com.paloaltonetworks.globalprotect.vpn",
                "name": "GlobalProtect",
                "version": "5.2.3",
                "managed": false,
                "source": "UNKNOWN_APP_TYPE"
            }
        ]
    }
]
```


Get certificate inventory (iOS only)

This call gets the certificate inventory for the iOS device identifiers specified in the request. This call silently ignores any invalid identifiers passed.

HTTP Method

POST

Request URI

/msa/v1/cps/device/certificate

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.	

Response fields

See Certificate on page 28.

Example response

```
[
    {
        "deviceMdmId": "1cdacac686e39dd367a47f2286be436df0a37433",
        "certificates": [
            {
                "identity": true,
                "notAfter": 1812011724000,
                "notBefore": 1496740310000,
                "issuer": "CN=ppp819.auto.acme.com,OU=iOSMDMCA,UID=1496738424913",
                "serialNumber": "1017",
                "subject": "CN=1cdacac686e39dd367a47f2286be436df0a37433",
                "thumbPrint": "BF0670CFC5B548D5837E9D078F4617D296C9577E"
            },
            {
                "identity": false,
                "notAfter": 2035213580000,
                "notBefore": 1088528780000,
                "issuer": "C=US,O=The Go Daddy Group\\, Inc.,OU=Go Daddy Class 2 Cer-
tification Authority",
                "serialNumber": "0",
                "subject": "C=US,O=The Go Daddy Group\\, Inc.,OU=Go Daddy Class 2 Cer-
tification Authority",
                "thumbPrint": "2796BAE63F1801E277261BA0D77770028F20EEE4"
            },
            {
                "identity": false,
                "notAfter": 2442818116000,
```

```
                "notBefore": 1496738116000,
                "issuer": "CN=ppp819.auto.acme.com,OU=SystemRootCA,UID=1496738416965",
                "serialNumber": "750514842",
                "subject": "CN=ppp819.auto.acme.com,OU=SystemRootCA,UID=1496738416965",
                "thumbPrint": "C3EA70EB304FCD0500FF0369EC06103CF1C0260E"
            },
            {
                "identity": true,
                "notAfter": 1812011720000,
                "notBefore": 1496740332000,
                "issuer": "CN=ppp819.auto.acme.com,OU=AppStoreFrontCA,UID=1496738420411",
                "serialNumber": "1018",
                "subject": "CN=1cdacac686e39dd367a47f2286be436df0a37433",
                "thumbPrint": "C45966CC2222CCB5457D2C614B264ACE89EA683A"
            }
        ]
    }
]
```


Get profile inventory (iOS only)

This calls returns the profile inventory details for the device identifiers specified in the request. This API consists of a command and optional payload (URL) that you can use to work with GUIDs instead of mdm-identifiers.

Any invalid device identifier specified in the request is silently ignored.

HTTP Method

POST

Request URI

/msa/v1/cps/device/profile

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.	

identifierType	**Optional** **Parameter Type:** Request body **Data Type:** Enum **Possible Values:** One of : • MDM_IDENTIFIERS • GUID If not specified, the server assumes MDM identifiers.	identifierType

Response fields

See Profile on page 31.

Example response

```
[
    {
        "deviceMdmId": "8bfb639c2676ed8c4d55c8962773698fe2e04cd4",
        "profiles": [
            {
                "encrypted": true,
                "hasRemovalPasscode": false,
                "managed": true,
                "removalDisallowed": true,
                "description": "Access the Apple App Catalog via this Web Clip.",
                "displayName": "Apple App Catalog",
                "identifier": "mi.webclip.35016.0",
                "organization": "acme, Inc.",
                "uuid": "e45473ff-bc98-4041-a220-94019fd2b9d9",
                "version": "1"
            },
            {
```

```
                "encrypted": true,
                "hasRemovalPasscode": false,
                "managed": true,
                "removalDisallowed": true,
                "description": "The Identity used by this device to access the Apple App Cata-
log securely.",
                "displayName": "Identity for the App Catalog",
                "identifier": "mi.credentialidentitydg.35018.0",
                "organization": "acme, Inc.",
                "uuid": "5d299f56-6dbb-4318-9f53-39e8a78950f1",
                "version": "1"
            },
            {
                "encrypted": true,
                "hasRemovalPasscode": false,
                "managed": false,
                "removalDisallowed": false,
                "description": "The top-level MDM payload containing the MDM profile, the
identities and the trust certificates necessary to MDM-manage this device.",
                "displayName": "Root MDM Profile",
                "identifier": "com.acme.polaris.mdm",
                "organization": "acme, Inc.",
                "uuid": "3cdac85c-d56d-4d75-835c-dce062d66c9e",
                "version": "1"
            }
        ]
    }
]
```

Device APIs

Please note that for any of the device GET APIs, the value returned by the API corresponds to the device state at the last device check-in. If you would like to get the most up to date value, then include a Force checkin call in your work-flow.

Get device attributes metadata

This call returns available device attributes and their types. Some fields such as **devicestatus** and **deviceplatform** will have a value from a finite known set. See Enums on page 27 for all such fields.

HTTP Method

GET

Request URI

/msa/v1/cps/device/$metadata

Example response

```
[
    {
        "name": "compliant",
        "dataType": "boolean",
        "readOnly": true
    },
    {
        "name": "status",
        "dataType": "devicestatus",
        "readOnly": true
    },
    {
        "name": "lastCheckInTime",
        "dataType": "long",
        "readOnly": true
    },
    {
        "name": "macAddress",
```

```
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "os",
        "dataType": "deviceplatform",
        "readOnly": true
    },
    {
        "name": "userId",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "userUuid",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "custom_device_attribute_1",
        "dataType": "string",
        "readOnly": false
    },
    {
        "name": "custom_device_attribute_2",
        "dataType": "string",
        "readOnly": false
    }
]
```


Get devices by UEM or deviceGuid identifiers

This API returns the details of devices with the UEM or deviceGuid identifiers specified in the request body. It silently ignores invalid UEM and deviceGuid identifiers. In the following device details resturn, the UEM identifier is in the field "identifier," and the deviceGuid is in the field, "deviceGuid." Those are the values, for example, "d0838fa7ba1ee023c9ece9192589088325d7aa08" and "dbccbe70-7499-4676-88b0-a6d5d298752e" that you could use in the body of this call.


```
{
    "compliant": true,
    "quarantined": false,
    "blocked": false,
    "compromised": false,
    "status": "ACTIVE",
    "lastCheckInTime": 1581229664468,
    "registrationTime": 1581229603492,
    "identifier": "d0838fa7ba1ee023c9ece9192589088325d7aa08",
    "macAddress": "8c:fe:57:b3:53:96",
    "manufacturer": "Apple Inc.",
```

```
    "model": "iPad7,5",
    "os": "IOS",
    "osVersion": "13.3",
    "serialNumber": "GG7XP285JMVT",
    "userId": "b2@m.com",
    "userUuid": "b8e7fea0-4730-4bc5-a089-cfd631078b9e",
    "iosUdid": "d0838fa7ba1ee023c9ece9192589088325d7aa08",
    "ownership": "UNKNOWN",
    "deviceGuid": "dbccbe70-7499-4676-88b0-a6d5d298752e"
}
```


HTTP Method

POST

Request URI

/msa/v1/cps/device/uuid

Request parameters

Parameter	Description	Sample Value

identifierType	Required
	Parameter Type: Request body
	Data Type: String
	Type of identifier.
	Valid values:
	• "identifierType":"MDM_IDENTIFIER"
	• "identifierType":"GUID"
		{
		"identifierType":"GUID",
		"identifiers":["deviceGuid-1", "deviceGuid-2"]
		}

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifierType":"MDM_IDENTIFIER",
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	
	or
	{
	"identifierType":"GUID",
	"identifiers":["deviceGuid-1", "deviceGuid-2"]
	}
	See List of identifiers on page 25.
		{
		"identifierType":"GUID",
		"identifiers":["dbccbe70-7499-4676-88b0-a6d5d298752e"]
		}

Response fields

A list of devices.

See List of identifiers on page 25 and User on page 32.

Example request

```
curl --location --request POST 'https://<mobileiron_cloud/msa/v1/cps/device/uuid' \
--header 'Authorization: Basic xxxxxdXNlckBtb2JpbGVpcm9uLmNvbTpNaTRtYW4xMQ==' \
```

```
--header 'Content-Type: application/json' \
--data-raw '{
"identifiers":["dbccbe70-7499-4676-88b0-a6d5d298752e"]
}'
```

Example response


```
[
    {
        "compliant": true,
        "quarantined": false,
        "blocked": false,
        "compromised": false,
        "status": "ACTIVE",
        "lastCheckInTime": 1581229664468,
        "registrationTime": 1581229603492,
        "identifier": "d0838fa7ba1ee023c9ece9192589088325d7aa08",
        "macAddress": "8c:fe:57:b3:53:96",
        "manufacturer": "Apple Inc.",
        "model": "iPad7,5",
        "os": "IOS",
        "osVersion": "13.3",
        "serialNumber": "GG7XP285JMVT",
        "userId": "b2@m.com",
        "userUuid": "b8e7fea0-4730-4bc5-a089-cfd631078b9e",
        "iosUdid": "d0838fa7ba1ee023c9ece9192589088325d7aa08",
        "ownership": "UNKNOWN",
        "deviceGuid": "dbccbe70-7499-4676-88b0-a6d5d298752e"
    }
]
```


Get devices by mac addresses

This API returns the details of devices with MAC addresses specified in the request. It silently ignores invalid MAC addresses.

HTTP Method

POST

Request URI

/msa/v1/cps/device/mac

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of wifi MAC identifiers in this format:
	{
	"identifiers":["mac-id-1", "macm-id-2"]
	}
	See List of identifiers on page 25.	

Response fields

A list of devices.

See List of identifiers on page 25 and User on page 32.

Search devices by status

This API returns the device information for devices with status specified in the request. If no status is specified in the request, details of all the devices is returned.

HTTP Method

GET

Request URI

/msa/v1/cps/device?status=<DeviceStatus>&offset=<Integer>&limit=<Integer>

Request parameters

Parameter	Description	Sample Value
status	**Parameter Type:** Query **Data Type:** String	See status on page 29.
offset	**Parameter Type:** Query **Data Type:** Number **Default:** 0	0
limit	**Parameter Type:** Query **Data Type:** String **Default:** 50	50

Response fields

A list of devices.

See List of identifiers on page 25 and User on page 32.

Example response

```
{
   "searchResults": #List of devices,
   "results":2,
   "offset":0,
   "limit":50
}
```

Search devices by device group identifier

This API returns device membership details for device group identifier specified in the search request.

HTTP Method

GET

Request URI

/msa/v1/cps/device?ruleId=<id>&offset=<Offset>&limit=<Limit>

Request parameters

Parameter	Description	Sample Value
id	**Required** **Parameter Type:** Query **Data Type:** String ID of the device group whose device members to find.	38089
offset	**Parameter Type:** Query **Data Type:** Number **Default:** 0	5
limit	**Parameter Type:** Query **Data Type:** String **Default:** 50	50

Response fields

A list of devices.

See List of identifiers on page 25 and User on page 32.

Example response


```
{
    "searchResults": [
        {
            "compliant": true,
            "quarantined": false,
            "blocked": false,
            "compromised": false,
            "status": "ACTIVE",
            "lastCheckInTime": 1516619820303,
            "registrationTime": 1516619792690,
            "identifier": "f4aadce56d25edffggh4958484brr1c35f6b6d5",
            "imei": "6733284512443420",
```

```
            "macAddress": "fa:c6:7b:0f:eb:ff",
            "manufacturer": "Apple Inc.",
            "model": "iPhone6,1",
            "os": "IOS",
            "osVersion": "10.1",
            "phoneNumber": "7171046951",
            "serialNumber": "d028d4db2162",
            "userId": "testuser@auto.automation.com",
            "userUuid": "047rdee6-31c1-4e55a-898d-97de620d5f22",
            "iosUdid": "f4aadce56d25edffggh4958484brr1c35f6b6d5",
            "ownership": "UNKNOWN",
            "customAttributes": {
                "nacCompliant": "false"
            }
        }
    ],
    "results": 1,
    "offset": 0,
    "limit": 50
}
```


Get device location details

This API returns device location details of the target device.

HTTP Method

POST

Request URI

/msa/v1/cps/device/location

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.	

Example response

```
[
    {
        "deviceMdmId": "id-1",
        "lastCaptured": 1525260287000,
        "location": {
            "latitude": "-6.446318",
            "longitude": "8.305312"
        }
    },
    {
        "deviceMdmId": "id-2",
        "lastCaptured": 1525260287000,
        "location": {
            "latitude": "5.178482",
            "longitude": "240.943423"
        }
    }
]
```

Count devices by status

This API returns the count of devices with status specified in the request. If no status is specified in the request, count of all the devices is returned.

HTTP Method

GET

Request URI

/msa/v1/cps/device/count?status=<DeviceStatus>

Request parameters

Parameter	Description	Sample Value
status	**Parameter Type:** Query **Data Type:** String	See status on page 29.

Response fields

A number result.

See Number result on page 26.

Count devices by device group identifier

This API returns device membership count for device group identifier specified in the search request.

HTTP Method

GET

Request URI

/msa/v1/cps/device/count?ruleId=<id>

Request parameters

Parameter	Description	Sample Value
id	**Required** **Parameter Type:** Query **Data Type:** String ID of the device group whose member devices to count.	38089

Response fields

A number result.

See Number result on page 26.

Example response

```
{
    "result": 1
}
```

Update device attributes by device UEM identifiers

This API is used to update attributes for the device identifiers specified in the request. It returns the count of devices for which the attributes were successfully updated.

HTTP Method

POST

Request URI

/msa/v1/cps/device

Request parameters

List of update attributes.

See Update attributes on page 26.

Response fields

API returns the count of devices for which attributes were successfully updated along with HTTP status 200.

See Number result on page 26.

Manage device settings - iOS only

This API updates specific iOS settings based on the device identifiers in the request. The supported settings are:

- Personal hotspot
- Data roaming

NOTE: Mobile data needs to be switched on in the device to allow enabling of the hotspot. WiFi and Bluetooth are not required for enablement, but for other devices to connect to the hotspot.

The API returns the count of devices for which the settings was successfully updated. The call silently ignores any invalid device identifiers specified in the request.

HTTP Method

POST

Request URI

/msa/v1/cps/device/settings

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.
		{
		"identifiers": [
		"b9a0d7d05fb4204f52264f805932526b848ca61d"
		],
		"settings": {
		"type": "PERSONAL_HOTSPOT",
		"value": {
		"enabled": true
		}
		}
		}

settings	Required
	Parameter Type: Request body
	Data Type: String
	JSON container for the type and value parameters.
		{
		"identifiers": [
		"b9a0d7d05fb4204f52264f805932526b848ca61d"
		],
		"settings":
		{
		"type": "PERSONAL_HOTSPOT",
		"value": {
		"enabled": true
		}
		}
		}

type	Required
	Parameter Type: Request body
	Data Type: String
	The settings to update. Can be:
	• PERSONAL_HOTSPOT
	• DATA_ROAMING
		{
		"identifiers": [
		"b9a0d7d05fb4204f52264f805932526b848ca61d"
		],
		"settings": {
		"type": "PERSONAL_HOTSPOT",
		"value": {
		"enabled": true
		}
		}
		}

value	Required	{

Parameter	Description	Sample Value

	Parameter Type: Request body
	Data Type: String
	The value to set for the settings. Can be:
	• true
	• false
		<pre>"identifiers": [
		"b9a0d7d05fb4204f52264f805932526b848ca61d"
		],
		"settings": {
		"type": "PERSONAL_HOTSPOT",
		"value": {
		"enabled": true
		}
		}
		}</pre>

Response fields

API returns the count of devices for which attributes were successfully updated along with HTTP status 200.

See Number result on page 26.

Example requests

Turn on personal hotspot:

```
POST /msa/v1/cps/device/settings
{
    "identifiers": [
        "b9a0d7d05fb4204f52264f805932526b848ca61d"
    ],
    "settings": {
        "type": "PERSONAL_HOTSPOT",
        "value": {
            "enabled": true
        }
    }
}
```

Turn off data roaming:

```
POST /msa/v1/cps/device/settings
{
    "identifiers": [
        "b9a0d7d05fb4204f52264f805932526b848ca61d"
    ],
```

```
    "settings": {
        "type": "DATA_ROAMING",
        "value": {
            "enabled": false
        }
    }
}
```

Example response

```
{
    "result": 1
}
```

In case all the identifiers are invalid, then response code will still be 200, with result as 0.

Get device settings - iOS only

This API returns values for data roaming and personal hotspot received on the last device check in. If you would like the most up to date value, then include a Force checkin call in your work-flow. The supported settings are:

- Personal hotspot
- Data roaming

HTTP Method

POST

Request URI

/msa/v1/cps/device/getDeviceSettings

Request parameters

Parameter	Description	Sample Value

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.
		{
		"settingsType": "DATA_ROAMING",
		"identifiers": [
		"b9a0d7d05fb4204f52264f805932526b848ca61d",
		"a9a0d7d05fb4204f52264f805932526b848ca61d"
		]
		}

settingsType	Required
	Parameter Type: Request body
	Data Type: String
	The settings to retieve. Can be:
	• PERSONAL_ HOTSPOT
	• DATA_ROAMING
		{
		"settingsType": "DATA_ROAMING",
		"identifiers": [
		"b9a0d7d05fb4204f52264f805932526b848ca61d",
		"a9a0d7d05fb4204f52264f805932526b848ca61d"
		]
		}

Response fields

API returns the count of devices for which attributes were successfully updated along with HTTP status 200.

See Number result on page 26.

Example request

```
POST /msa/v1/cps/device/settings
{
    "settingsType": "DATA_ROAMING",
    "identifiers": [
```

```
        "b9a0d7d05fb4204f52264f805932526b848ca61d",
        "a9a0d7d05fb4204f52264f805932526b848ca61d"
    ]
}
```

Example response

```
{
    "settings": [
        {
            "identifier": "b9a0d7d05fb4204f52264f805932526b848ca61d",
            "settings": {
                "type": "DATA_ROAMING",
                "value": {
                    "enabled": false
                }
            }
        },
        {
            "identifier": "a9a0d7d05fb4204f52264f805932526b848ca61d",
            "settings": {
                "type": "DATA_ROAMING",
                "value": {
                    "enabled": true
                }
            }
        }
    ]
}
```

In case all the identifiers are invalid, then response code will still be 200, with an empty response body.

Force checkin

This API is used to initiate force check-in from the server for the device identifiers specified in the request. Invalid device identifiers are silently ignored. The API returns the count of devices for which force check-in action was successfully initiated.

HTTP Method

POST

Request URI

/msa/v1/cps/device/forceCheckin

Request parameters

List of UEM identifiers.

See List of identifiers on page 25.

Response fields

Success: HTTP Status 200, and a number result with the count of successfully checked in devices.

See Number result on page 26

Check-in for Threat Response Matrix update

Mobile Threat Detection vendors use this API to notify their agent in our integrated client to immediately check-in with their management service to receive the latest Threat Response Matrix (TRM). This ensures that their agent is working with the most recent application, network, and device threat information, rather than waiting for the next regularly scheduled check-in event. This API consists of a command and optional payload (URL) that vendors can use to work with GUIDs instead of mdm-identifiers.The API returns the count of devices for which the push notification action successfully initiated. The API silently ignores invalid device identifiers specified in the request.

HTTP Method

POST

Request URI

/msa/v1/cps/device/mtd/notification

Request parameters

Parameter	Description
command	**Required** **Parameter Type:** Request body **Data Type:** String **Possible value:** CHECKIN Command to be forwarded to Mobile Treat Defense vendor.
identifierType	**Optional** **Parameter Type:** Request body **Data Type:** Enum **Possible Values:** One of : • MDM_IDENTIFIERS • GUID If not specified, the server assumes MDM identifiers.
identifiers	**Required** **Parameter Type:** Request body **Data Type:** String List of mdm identifiers in this format: { "identifiers":["mdm-id-1", "mdm-id-2"] } See List of identifiers on page 25.
url	**Optional** **Parameter Type:** Request body **Data Type:** String URL to be forwarded to Mobile Treat Defense vendor.

Response fields

Success: HTTP Status 200, and a number result with the count of successfully checked in devices.

See Number result on page 26

Example request payload

```
{
  "command": "CHECKIN",
  "URL": "http://example.com/example",
  "identifiers": [
    "mdm-id-1",
    "mdm-id-2"
  ]
}
```

Example response

```
{
    "result": 2
}
```

In case all the identifiers are invalid, then response code will still be 200, with result as 0.

Device Group APIs

Device groups are containers for logically grouping devices for the ease of device management. Device Groups are “device groups” on MobileIron Cloud and “labels” on MobileIron Core. See Example device groups API scenario for an example of how you can use these calls to calculate specific group device characteristics.

Get all Device Groups

This call returns device groups information for device groups existing in the system and includes system-defined, statically or manually managed, and dynamically managed device group information. Device groups correspond to rule IDs.

HTTP Method

GET

Request URI

/msa/v1/cps/rule?offset=<Offset>&limit=<Limit>

Request parameters

Parameter	Description	Sample Value
offset	**Parameter Type:** Query **Data Type:** String **Default:** 0 Breaks results into chunks. The syntax is offset=value.	5
limit	**Parameter Type:** Query **Data Type:** String **Default:** 50 Limits the return to the specified number of rows.	25

Response fields

A list of device groups.

See Rules.

Example response

```
{
  "searchResults": [
    {
      "id": 38089,
      "name": "rule1",
      "description": "Rule 1 Description",
      "definition": "PLATFORMTYPE EQ 'IOS'"
    },
    {
      "id": 38090,
      "name": "rule2",
      "description": "Rule 2 Description",
      "definition": "PLATFORMTYPE EQ 'IOS'"
    }
  ],
  "results": 2,
  "offset": 0,
  "limit": 10
}
```

Get device groups associated with device list

This call returns a list of device groups and related information associated with a list of devices. Device groups correspond to rule IDs.

HTTP Method

POST

Request URI

/msa/v1/cps/rule/deviceGuid

Request parameters

Parameter	Description	Sample Value
identifiers	**Required** **Parameter Type:** Request body **Data Type:** String List of device GUIDs identifiers in this format: `{ "identifiers": [ "deviceGuid" ] }` See List of identifiers on page 25.	`{ "identifiers": [ "6b8df48e-7778-4a33-97e4-1cc6b39de61c" ] }`

Response fields

A list of device groups.

See Rules.

Example request

```
curl --location --request POST 'https://[mobileiron-Cloud-or-Core]/msa/v1/cps/rule/deviceGuid' \
--header 'Accept: application/json, text/plain, */*' \
--header 'Content-Type: application/json' \
--header 'Authorization: Basic xxxxxEBzYW5kYm94Lm1vYmlsZWlyb24uY29tOk1pNG1hbjEx' \
--data-raw {
    "identifiers": [
        "6b8df48e-7778-4a33-97e4-1cc6b39de61c"
    ]
}
```

Example response

```
{
    "errors": null,
```

```
    "result": [
        {
            "deviceGuid": "6b8df48e-7778-4a33-97e4-1cc6b39de61c",
            "rules": [
                {
                    "id": 51173,
                    "name": "jk Sandbox User Group",
                    "definition": "DISPLAYNAME EQ 'jk Sandbox User'"
                },
                {
                    "id": 390113,
                    "name": "test#2",
                    "definition": "CURRENTMCC NEQ 'test#'"
                },
                {
                    "id": 361609,
                    "name": "Bozo",
                    "definition": "UNLOCK_TOKEN EQ 'TRUE'"
                },
                {
                    "id": 40165,
                    "name": "All Devices",
                    "description": "Targets any type of device."
                },
                {
                    "id": 118493,
                    "name": "current country",
                    "definition": "CURRENTCOUNTRYNAME EQ 'United States'"
                },
                {
                    "id": 40167,
                    "name": "iOS Devices",
                    "description": "Targets all iOS devices",
                    "definition": "PLATFORMTYPE EQ 'IOS'"
                }
            ]
        }
    ]
}
```


Search device groups by device group name

This call returns device group information for device groups whose name starts with the string specified in the search request.

HTTP Method

GET

Request URI

/msa/v1/cps/rule?name=<name>&offset=<Offset>&limit=<Limit>

Request parameters

Parameter	Description	Sample Value
name	**Required** **Parameter Type:** Query **Data Type:** String The prefix string of the device group name on which to perform the search. Not context sensitive. No records are returned if this parameter is blank.	iOS

Response fields

A list of device groups.

See Rules.

Example response

```
{
    "searchResults": [
        {
            "id": 38089,
            "name": "rule1",
            "description": "Rule 1 Description",
            "definition": "PLATFORMTYPE EQ 'IOS'"
        },
        {
            "id": 38090,
            "name": "rule2",
            "description": "Rule 2 Description",
            "definition": "CFDEVICE[nacCompliant] EQ 'false'"
        }
    ],
    "results": 2,
    "offset": 0,
    "limit": 10
}
```

Get device group by device group identifier

This call returns device group details for the device group identifier specified in the request.

HTTP Method

GET

Request URI

/msa/v1/cps/rule/<id>

Request parameters

Parameter	Description	Sample Value
id	**Required** **Parameter Type:** Query **Data Type:** String The device group ID on which to search. You can use the call, Get all Device Groups on page 62, or the call, Search device groups by device group name on page 65, to find the device group id.	38089

Response fields

Rule information for the device group identifier specified.

See Rules.

Example response

```
{
    "id": 38089,
    "name": "rule1",
    "description": "Rule 1 Description",
    "definition": "PLATFORMTYPE EQ 'IOS'"
}
```

Example device groups API scenario

You can use the device group APIs to calculate device group characteristics, such as the percentage of Android Enterprise-enrolled devices. Remember that device groups are “device groups” on MobileIron Cloud, and “labels” on MobileIron Core.

Example

1. First, use the Get all Device Groups call to get a list of all the device groups, so you know which device groups you can use for your calculations.

   Call:
   GET msa/v1/cps/rule

   Response:


```
{
    "searchResults": [
        {
            "id": 38000,
            "name": "All Devices",
            "description": "Targets any type of device."
        },
        {
            "id": 38001,
            "name": "Android Devices",
            "description": "Targets all Android devices",
            "definition": "PLATFORMTYPE EQ 'ANDROID'"
        },
        {
            "id": 38002,
            "name": "Android Enterprise Devices",
            "description": "Targets all Android Enterprise devices",
            "definition": "PLATFORMTYPE EQ 'ANDROID' AND ANDROIDWORKENABLED EQ 'true'"
        },
        {
            "id": 38003,
            "name": "iOS Devices",
            "description": "Targets all iOS devices",
            "definition": "PLATFORMTYPE EQ 'IOS'"
        },
        {
            "id": 38004,
            "name": "Windows Devices",
            "description": "Targets all Windows devices",
            "definition": "PLATFORMTYPE EQ 'WINDOWS_PHONE'"
        },
        {
            "id": 38005,
            "name": "macOS Devices",
```

```
            "description": "Targets all OSX devices",
            "definition": "PLATFORMTYPE EQ 'OSX'"
        },
        {
            "id": 38006,
            "name": "tvOS Devices",
            "description": "Targets all tvOS devices.",
            "definition": "PLATFORMTYPE EQ 'IOS' AND MODEL STARTS_WITH 'AppleTV')"
        }
    ],
    "results": 7,
    "offset": 0,
    "limit": 50
}
```


2. Use the Count devices by device group identifier call to find the total android device count.

   Call:
   GET : /msa/v1/cps/device?ruleId=38001

   Note that ruleId 38001 targets all Android devices.

3. Use the Count devices by device group identifier and then the number of Android Enterprise-enrolled devices.

   Call:
   GET : /msa/v1/cps/device?ruleId=38002

   Note that ruleId 38002 targets all Android Enterprise-enrolled devices.

4. Using the two values returned by the preceding two calls, you can calculate the percentage of Android devices that are also Android Enterprise-enrolled devices.

Message APIs

Send email to device owners

This API is used to send email notification to device owners by specifying device identifiers in the request. The API returns the count of devices for which the send email action was successfully initiated. Any invalid device identifier specified in the request is silently ignored.

HTTP Method

POST

Request URI

/msa/v1/cps/device/email

Request parameters

Parameter	Description	Sample Value
subject	**Parameter Type:** Request body **Data Type:** String Subject of the email. Character limit is 100.	Please backup your device.
body	**Parameter Type:** Request body **Data Type:** String Body of the email. Character limit is 3000.	Please backup your device to ensure against data loss.
html	**Parameter Type:** Request body **Data Type:** Boolean Specifies whether the email is in HTML format.	true
identifiers	Required Parameter Type: Request body	

Parameter	Description	Sample Value

	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.	

See List of identifiers on page 25.

Response fields

Success: HTTP Status 200

See Number result on page 26.

Send push notification to devices

This API is used to send notifications by specifying device identifiers in the request. The API returns the count of devices for which the push notification action was successfully initiated. Any invalid device identifier specified in the request is silently ignored.

HTTP Method

POST

Request URI

/msa/v1/cps/device/notification

Request parameters

Parameter	Description	Sample Value
message	**Parameter Type:** Request body **Data Type:** String Content of push message. Character limit is 140.	Please backup your device.

identifiers	Required
	Parameter Type: Request body
	Data Type: String
	List of UEM identifiers in this format:
	{
	"identifiers":["mdm-id-1", "mdm-id-2"]
	}
	See List of identifiers on page 25.	

Response fields

Success: HTTP Status 200

See Number result on page 26.

User APIs

This chapter describes the Common Platform Services API calls you use to query and manipulate MobileIron users.

Get user attributes metadata

Get user attributes metadata

This call returns available user attributes and their types.

HTTP Method

GET

Request URI

/msa/v1/cps/user/$metadata

Example response


```
[
    {
        "name": "enabled",
        "dataType": "boolean",
        "readOnly": true
    },
    {
        "name": "createdAt",
        "dataType": "long",
        "readOnly": true
    },
    {
        "name": "accountSource",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "displayName",
```

```
    "dataType": "string",
    "readOnly": true
},
{
    "name": "emailAddress",
    "dataType": "string",
    "readOnly": true
},
{
    "name": "firstName",
    "dataType": "string",
    "readOnly": true
},
{
    "name": "lastName",
    "dataType": "string",
    "readOnly": true
},
{
    "name": "userId",
    "dataType": "string",
    "readOnly": true
},
{
    "name": "userUuid",
    "dataType": "string",
    "readOnly": true
},
{
    "name": "customAttributes",
    "dataType": "map",
    "readOnly": true
},
{
    "name": "ldapCustomAttributes",
    "dataType": "map",
    "readOnly": true
},
{
    "dataType": "map",
    "name": "ldapStandardAttributes",
    "readOnly": true
},
{
    "name": "ios",
    "dataType": "string",
    "readOnly": false
},
{
    "name": "site",
    "dataType": "string",
    "readOnly": false
```

```
    }
]
```

Search users by GUID

This call searches for users by GUID. See User on page 32. This call returns custom LDAP attributes along with other user information, unless issued with the **fields="ldapStandardAttributes"** parameter, which adds LDAP standard attributes to the response.

HTTP Method

GET

Request URI

/msa/v1/cps/user?guid=<string>&fields="ldapStandardAttributes"

Request parameters

Parameter	Description	Sample Value
guid	**Parameter Type:** Query **Data Type:** String	dd8b7006-2780-49c1-9b03-f85aa57c9da4
fields="ldapStandardAttributes"	**Optional** **Parameter Type:** Query **Data Type:** String If this parameter is included, the return includes the following standard LDAP attributes: • distinguishedName • samAccountName • userPrincipalName	fields="ldapStandardAttributes"

Response fields

A list of users.

See List of identifiers on page 25 and User on page 32.

Example responses

Local accountSource


```
{
  "searchResults": [
    {
      "enabled": true,
      "createdAt": 1580812767902,
      "accountSource": "LOCAL",
      "displayName": "John Doe",
      "emailAddress": "admin@acme.com",
      "firstName": "John",
      "lastName": "Doe",
      "userId": "admin@acme.com",
      "userUuid": "dd8b7006-2780-49c1-9b03-f85aa57c9da4",
      "guid": "dd8b7006-2780-49c1-9b03-f85aa57c9da4"
    }
  ],
  "results": 1,
  "offset": 0,
  "limit": 50
}
```


LDAP accountSource with fields="ldapStandardAttributes" parameter included in the call


```
{
  "limit": 50,
  "offset": 0,
  "results": 1,
  "searchResults": [
    {
      "accountSource": "LDAP",
      "createdAt": 1500444347689,
      "displayName": "Fred A",
      "emailAddress": "Freda@auto8.mobileiron.com",
      "enabled": true,
      "firstName": "Fred",
      "ldapCustomAttributes": {
        "lastlogontimestamp": "131516814255658414",
        "mailnickname": "Fred",
        "mdbusedefaults": "TRUE",
        "msexchmailboxguid": "k\ufffd\ufffdVt\ufffdN\ufffd\ufffdS)\u289e=",
        "msexchrecipientdisplaytype": "1073741824",
        "msexchwhenmailboxcreated": "20140407185418.0Z"
```

```
      },
      "ldapStandardAttributes": {
        "distinguishedName": "foo",
        "samAccountName": "bar",
        "userPrincipalName": "baz"
      }
      "userId": "Freda@auto8.mobileiron.com",
      "userUuid": "a3343fd0-c1f2-424f-a993-83b951c94246",
      "guid": "dd8b7006-2780-49c1-9b03-f85aa57c9da4"
    }
  ]
}
```


Search users by user id

This call searches for users by user IDs by searching for users whose user ID starts with the given string. See User on page 32. This call returns custom LDAP attributes along with other user information, unless issued with the **fields="ldapStandardAttributes"** parameter, which adds LDAP standard attributes to the response. Note that the call searches only on the email address as the user ID.

HTTP Method

GET

Request URI

/msa/v1/cps/user?uid=<String>&fields="ldapStandardAttributes"&offset=<Offset>&limit=<Limit>

Request parameters

Parameter	Description	Sample Value
uid	**Parameter Type:** Query **Data Type:** String	The email prefix, for example, the “btarris” in “:btarris@mobileiron.com.”
fields="ldapStandardAttributes"	**Optional** **Parameter Type:** Query **Data Type:** String If this parameter is included, the return includes the following standard LDAP attributes: • distinguishedName • samAccountName • userPrincipalName	fields="ldapStandardAttributes"
offset	**Parameter Type:** Query **Data Type:** Number **Default:** 0	0
limit	**Parameter Type:** Query **Data Type:** String **Default:** 50	50

Response fields

A list of users.

See List of identifiers on page 25 and User on page 32.

Example responses

Local accountSource


```
{
    "searchResults": [
        {
            "enabled": true,
            "createdAt": 1466202626423,
            "accountSource": "LOCAL",
            "displayName": "JGB",
            "emailAddress": "abc@mobileiron.com",
            "firstName": "Josh",
```

```
            "lastName": "Brit",
            "userId": "abc@mobileiron.com",
            "userUuid": "0aed8d85-6dfd-40ac-b3b5-82f629e3c168"
        },
        {
            "enabled": true,
            "createdAt": 1466525975950,
            "accountSource": "LOCAL",
            "displayName": "Bob Tarris",
            "emailAddress": "btarris@mobileiron.com",
            "firstName": "Bob",
            "lastName": "Tarris",
            "userId": "btarris@mobileiron.com",
            "userUuid": "b7149c70-30ef-4b88-b8f3-18ec273e8c80"
        },
        {
            "enabled": true,
            "createdAt": 1467161380058,
            "accountSource": "LOCAL",
            "displayName": "test user",
            "emailAddress": "test@mob.dev",
            "firstName": "test",
            "lastName": "user",
            "userId": "test@mob.dev",
            "userUuid": "e0ad3de5-2390-4bb3-afdf-acfa9838503b",
            "custom_user": "from rest 2"
        }
    ],
    "results": 3,
    "offset": 0,
    "limit": 10
}
```


LDAP accountSource with fields="ldapStandardAttributes" parameter included in the call


```
{
  "limit": 50,
  "offset": 0,
  "results": 1,
  "searchResults": [
    {
      "accountSource": "LDAP",
      "createdAt": 1500444347689,
      "displayName": "Fred A",
      "emailAddress": "Freda@auto8.mobileiron.com",
      "enabled": true,
      "firstName": "Fred",
      "ldapCustomAttributes": {
        "lastlogontimestamp": "131516814255658414",
        "mailnickname": "Fred",
        "mdbusedefaults": "TRUE",
```

```
        "msexchmailboxguid": "k\ufffd\ufffdVt\ufffdN\ufffd\ufffdS)\u289e=",
        "msexchrecipientdisplaytype": "1073741824",
        "msexchwhenmailboxcreated": "20140407185418.0Z"
      },
      "ldapStandardAttributes": {
        "distinguishedName": "foo",
        "samAccountName": "bar",
        "userPrincipalName": "baz"
      }
      "userId": "Freda@auto8.mobileiron.com",
      "userUuid": "a3343fd0-c1f2-424f-a993-83b951c94246"
    }
  ]
}
```


Count users by user id

This call counts users by user IDs by searching for users whose user ID starts with the given string. See User on page 32. Note that the call searches only on the email address as the user ID.

HTTP Method

GET

Request URI

/msa/v1/cps/user/count?uid=<String>

Request parameters

Parameter	Description	Sample Value
uid	**Parameter Type:** Query **Data Type:** String	jilldoe@acme.com

Response fields

A number result of users whose user id starts with the given string.

See Number result on page 26.

Update user attributes

This API is used to update attributes for the user identifiers specified in the request. It returns the count of users for which the attributes were successfully updated. The API silently ignores any invalid user identifiers specified in the request body.

HTTP Method

POST

Request URI

/msa/v1/cps/user

Request parameters

List of update attributes.

See Update attributes on page 26.

Response fields

Count of users for which attributes were successfully updated.

See Number result on page 26.

App Catalog APIs

Get application inventory

This API returns information about the apps in the app catalog.

HTTP Method

GET

Request URI

/msa/v1/cps/appcatalog/apps

Request parameters

Parameter	Description	Sample Value
identifier	**Parameter Type:** Query **Data Type:** String Bundle id of the application (exact match).	com.facebook.Facebook
name	**Parameter Type:** Query **Data Type:** String Name of the app (matches starts with) Note: This parameter is case sensitive. See this known issue.	Facebook
platformType	**Parameter Type:** Query **Data Type:** String Type of the os platform (exact match). Case sensitive. Must be one of these values: • IOS	IOS

Parameter	Description	Sample Value
	• OSX • ANDROID • WINDOWS • WEBAPPS WEBAPPS is only supported for MobileIron Core. WINDOWS is not working in this release. See this known issue.	

Response fields

See App Catalog on page 27.

Example request

/msa/v1/cps/appstore/apps

Example responses


```
{
    "searchResults": [
        {
            "name": "Google Photos",
            "platformType": "Android",
            "version": "2019.02.19",
            "identifier": "com.google.android.apps.photos",
            "createdAt": 1550659389308
        },
        {
            "name": "Facebook",
            "platformType": "iOS",
            "version": "208.0",
            "identifier": "com.facebook.Facebook",
            "createdAt": 1550659372336
        },
        {
            "name": "Windows Scan",
            "platformType": "Windows",
            "identifier": "Microsoft.WindowsScan_8wekyb3d8bbwe",
            "createdAt": 1550659437232
        },
        {
            "name": "MAC Address Scan",
            "platformType": "Mac OS X",
```

```
            "version": "2.6.9",
            "identifier": "com.Dandelion.MACAddressScan",
            "createdAt": 1550659454097
        }
    ],
    "results": 4,
    "offset": 0,
    "limit": 50
}
```


In-house app response

Note that this response contains the buildNumber field, available only for in-house apps.


```
{
    "searchResults": [
        {
            "name": "HAC-Extension",
            "platformType": "iOS",
            "version": "1.4.2.0.0.17",
            "identifier": "com.mobileiron.enterprise.HAC-Extension",
            "buildNumber": "1.4.2.0.0.17",
            "createdAt": 1550660326185
        }
    ],
    "results": 11,
    "offset": 0,
    "limit": 50
}
```

Metadata APIs

Get current minor version of the API

This call gets the current minor version of the API.

HTTP Method

GET

Request URI

/msa/v1/cps/version

Response fields

Field	Description
minorVersion	A string representing the minor version of the target API.

.

Example response

{

"minorVersion": "1.0.0"

}

Get device registration URI

This API returns the URL used to register the device for a user.

HTTP Method

GET

Request URI

/msa/v1/cps/device/registration

Example responses

MobileIron Cloud

```
{
    "registrationUrl": "https:<mobileiron_cloud_host>/ireg/index.html"
}
```

MobileIron Core

```
{
    "registrationUrl": "https:<mobileiron_core_host>/go"
}
```

Get device app metadata

This API returns the device app metadata.

HTTP method

GET

Request URI

/msa/v1/cps/device/application/$metadata

Example response


```
[
    {
        "name": "identifier",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "name",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "version",
        "dataType": "string",
        "readOnly": true
    }
]
```


Get device certificate metadata

This API returns the device certificate metadata.

HTTP method

GET

Request URI

/msa/v1/cps/device/certificate/$metadata

Example response

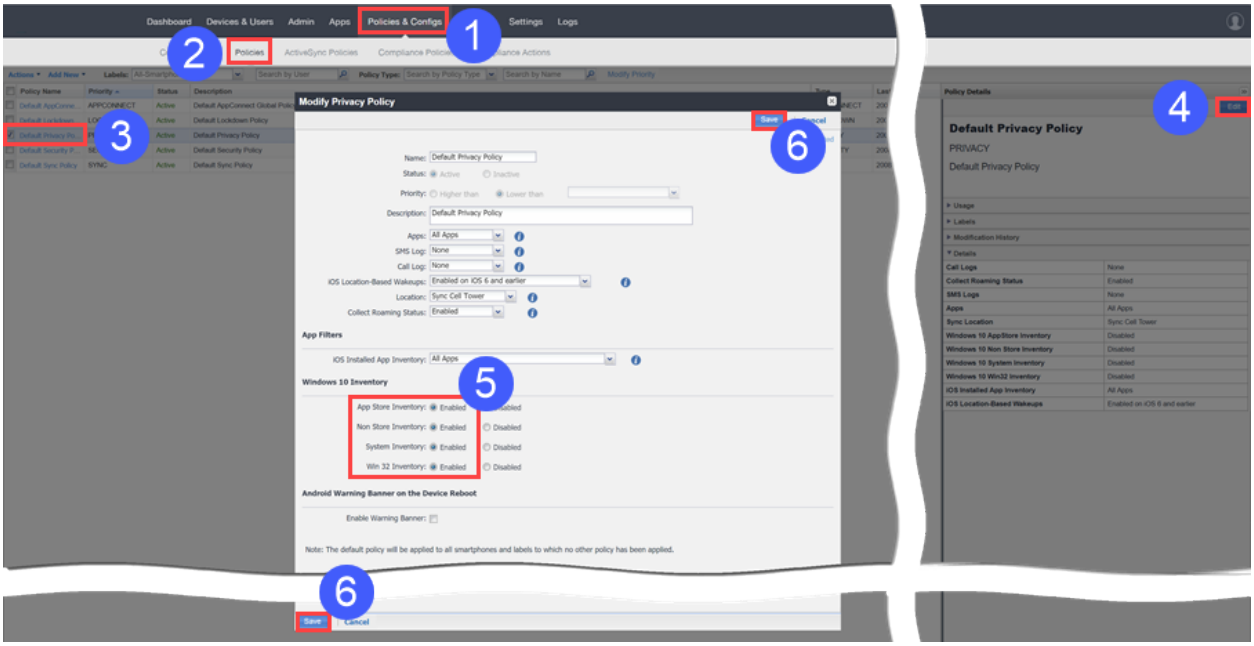

```
[
    {
        "name": "identity",
        "dataType": "boolean",
        "readOnly": true
    },
    {
        "name": "notAfter",
        "dataType": "long",
        "readOnly": true
```

```
    },
    {
        "name": "notBefore",
        "dataType": "long",
        "readOnly": true
    },
    {
        "name": "issuer",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "serialNumber",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "subject",
        "dataType": "string",
        "readOnly": true
    },
    {
        "name": "thumbPrint",
        "dataType": "string",
        "readOnly": true
    }
]
```

Enabling Windows 10 app inventory reporting on MobileIron Core

To enable app inventory reporting for Windows 10:

1. Log into MobileIron Core, and then select **Policies and Configs**.



2. Select **Policies**.
3. Select **Privacy Policy**.
4. Click **Edit**.
5. Enable the following Windows 10 inventory settings:
   - App Store Inventory
   - Non Store Inventory
   - System Inventory
   - Win 32 Inventory
6. Click one of the **Save** buttons.