

## Identity Certificate Export

VMware Workspace ONE® integrated authentication supports end user identification by electronic certificate. If that feature is in use, identity certificates will be stored by Workspace ONE on end user mobile devices. Stored certificates can be exported by mobile applications that have integrated the Workspace ONE mobile software development kit.

Integrated authentication is configured in the Workspace ONE Unified Endpoint Manager (UEM) console. Identity certificate storage and export is handled by the Workspace ONE mobile Software Development Kit (SDK). Identity certificate export is available in the SDK for iOS.

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## Description

The integrated authentication feature of the Workspace ONE platform supports end user identification by electronic certificate. Integrated authentication is configured in the enterprise UEM and applies to its enrolled end users, according to organization group and SDK profile. Depending on the configuration that applies to a particular end user, one or more identity certificates could be stored on their mobile device.

In an application that has integrated the Workspace ONE mobile SDK, stored identity certificates will be used by the SDK to respond to applicable authentication challenges. The SDK also supports certificate export, in case there is a requirement for other uses of identity certificates.

The SDK will make use of a secure store on the device to protect certificates that it handles. It is intended that an application that exports stored certificates from the SDK immediately imports the certificates into a suitable secure store, such as the iOS keychain.

## Integration

To integrate identity certificate export into your application, follow the instructions below.

### Compatibility

Before you begin integration, ensure you have access to compatible versions of software. The following table shows the version numbers of the Workspace ONE components in which this feature first became available.

Software	Available
Workspace ONE SDK for iOS	20.2
Workspace ONE management console	9.7*

Version 9.7\* is the earliest supported UEM at time of writing. All current versions of UEM support integrated authentication and identity certificates.

### Configuration

An integrated authentication configuration that will give exportable identity certificates can be set up in the Workspace ONE management console. The following instructions are intended for application developers or other users wishing to try out certificate export. Full documentation can be found in the online help.

You will need a suitable certification authority (CA) certificate. Typical formats are .pfx and .p12 files. You can find instructions online for creating a CA for self-signing.

The configuration can be set up as the default for a UEM organization group, or as a custom SDK profile.

### Configure as Default

To configure as the default:

1. Log in to the management console.  
The dashboard will be displayed.
2. Select an organization group.  
By default, the Global group is selected.
3. Navigate to: Groups & Settings, All Settings, Apps, Settings and Policies, Security Policies.

This opens the Security Policies configuration screen, on which a number of settings can be switched on and off, and configured.

4. For the Integrated Authentication setting, select Enabled.  
When Enabled is selected, further controls will be displayed.
5. Make the following selections:
  - Use Certificate: Enabled.
  - Credential Source: Upload.Select the option to Upload.
6. Upload your CA certificate.
7. Select Save to commit your changes to the configuration.

## Configure as Custom Profile

To configure as a custom profile:

1. Log in to the management console.  
The dashboard will be displayed.
2. Select an organization group.  
By default, the Global group is selected.
3. Navigate to: Groups & Settings, All Settings, Apps, Settings and Policies, Profiles.  
This opens the Profiles list.
4. Either add a new profile, or edit an existing profile, as follows.
  - To create a new profile, select Add Profile, then SDK Profile, then iOS Apple profile. Enter a name for your new profile.
  - To edit an existing profile, click its label in the list. It must be an iOS Apple profile.In either case, a profile editing screen will be displayed.
5. Select Credentials and then Configure, then select to Upload.
6. Upload your CA certificate.
7. Select Save to commit your changes to the configuration.

See also the console user interface screen captures in the appendix to this document.

## Programming Interface for Swift

The certificate export programming interface for Swift is asynchronous. The application code requests the export and specifies a callback. The SDK then invokes the callback with the exported certificates as a parameter.

## Code Snippets

The following code snippet illustrates the **request programming interface**.

```
let controller = AWController.clientInstance()
controller.exportIdentityCertificates { (certificateMap, nsError) in
    if nsError == nil {
        for (key, certificates) in certificateMap! {
            handle(certificates:certificates, usedFor:key)
        }
    }
    else {
        // Handle the error, represented by an NSError.
    }
}
```

The request programming interface is in the `AWController` singleton object; call the `exportIdentityCertificates` method. Its parameter is a callback that receives a dictionary and an `NSError`, either of which can be `nil`. The dictionary is a mapping in which each key is a `String` and each value is an `Array` of exported certificates, see next snippet.

The following code snippet illustrates the **exported certificate programming interface**.

```
func handle(
    certificates: [PKCS12Certificate],
    usedFor usageKey: String
) {

    // Code to determine onward processing goes here. Check usageKey against these values:
    //
    // - CertificateUsageKey.integratedAuthIdentity
    // - CertificateUsageKey.uncategorizedIdentity
    //
    // Following assumes that all certificates will be imported into a secure store.

    for certificate in certificates {

        // Code to import one certificate into the secure store goes here, for example a call to the
        // SecItemImport function.
        //
        // In each iteration, certificate has these properties:
        //
        // - certificate.data: Data
        //   Suitable for the SecItemImport importedData argument.
        //
        // - certificate.importExportPassphrase: String
        //   Suitable as a SecItemImportExportKeyParameters passphrase value, in the SecItemImport
        //   keyParams argument.

    }
}
```

Exported certificates are represented by instances of the `Workspace ONE PKCS12Certificate` class. Each instance has two properties, `data` holding the encrypted certificate, and `importExportPassphrase` holding the passphrase for the decryption.

See also the `SecItemImport` reference documentation, on the Apple developer website here:

<https://developer.apple.com/documentation/security/1395728-secitemimport>

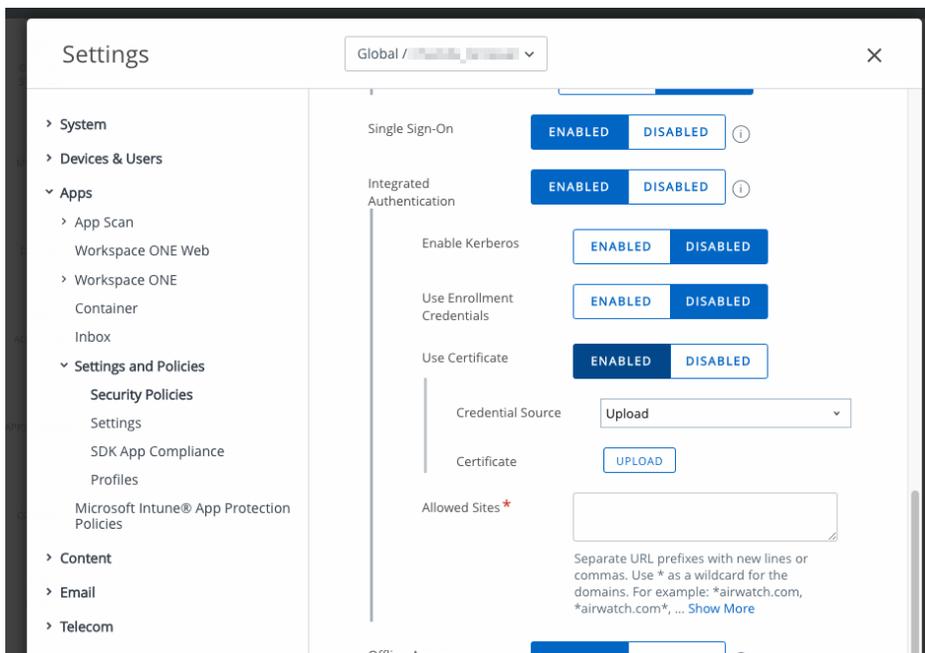
## Notes

The following notes apply to the programming interface, above.

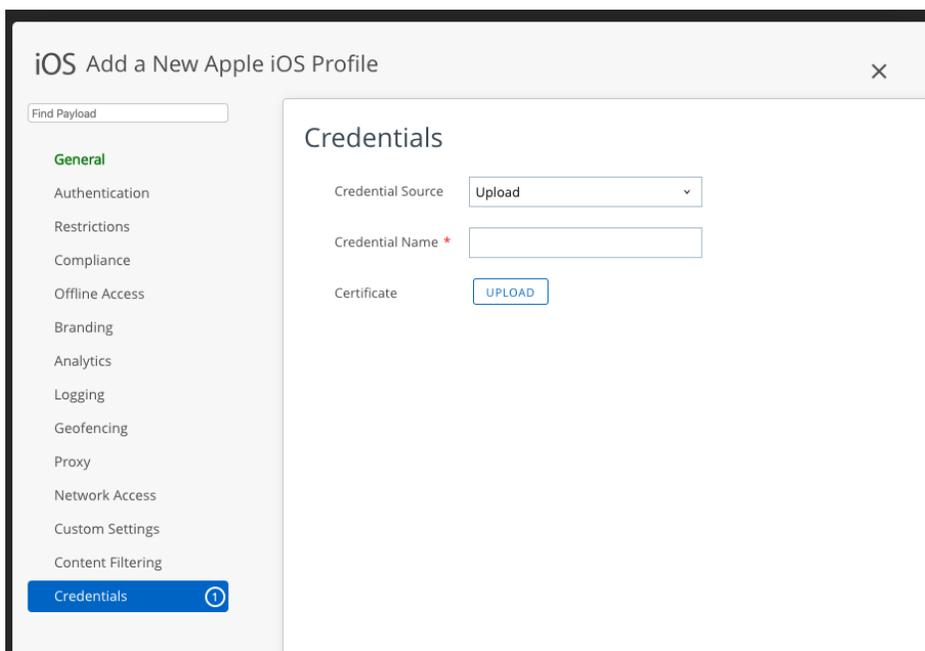
- The request callback won't be invoked on the main thread.
- The import-export passphrase values in the programming interface are transient.
- Either of the parameters passed to the request callback can be nil, and the map can be empty, as follows.
  - If the SDK somehow fails to export certificates, the map will be nil and the error won't be nil.
  - If identity certificates aren't available for the current end user, due to the enterprise settings and configuration, the error will be nil and the map will be empty.
  - Expired or otherwise invalid certificates won't be returned in the map. If no stored certificates are valid, then the map will be empty. The error won't be nil in either case.
- The UEM administrator can change the integrated authentication configuration at any time. If use of identity certificates is stopped, the next time export is requested, the returned map will be empty.
- The SDK will in general handle renewal of certificates. If the application code determines that a certificate will expire, a fresh export should be requested using the same programming interface as above. The same applies in the case that an exported certificate is rejected.

## Appendix: Console User Interface

The following screen captures shows this feature’s configuration in the management console.



Screen capture 1: Console User Interface Default



Screen capture 2: Console User Interface Custom Profile

## Document Information

### Revision History

31mar2020 First Publication.

### Legal

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