Wireless Enterprise App Distribution

Networking & Internet

2010-07-06

Contents

Distributing Enterprise Applications for iOS 4 Devices

Commercial applications can be purchased, downloaded, and installed by users directly onto their device through the App Store. But if you develop an enterprise application that you want to distribute to your employees, the app must be digitally signed with a certificate issued by Apple through the Developer Enterprise Program. You must also provide your users with a distribution provisioning profile that allows their device to use the application. Without a valid provisioning profile, the application won't open.

The process for deploying an in-house applications is:

- Register for the Developer Enterprise Program with Apple.

- Prepare your app for distribution.

- Create an enterprise distribution provisioning profile that authorizes devices to use applications you've signed.

- Deploy the application and the enterprise distribution provisioning profile.

Registering for Application Development

To develop and deploy custom applications for iOS 4, first register for the Developer Enterprise Program at: http://developer.apple.com/programs/iphone/enterprise/

Once you complete the registration process, you'll have access to the iPhone Dev Center and Provisioning Portal which contain detailed instructions on how to prepare your application for enterprise distribution..

Preparing Apps for Distribution

Enterprise applications must be signed with your distribution certificate, and must have a provisioning profile that authorizes devices to use the app. The designated Team Agent for your program membership creates the distribution certificate and provisioning profiles at the online Provisioning Portal.

Generating the distribution certificate involves using the Certificate Assistant, which is part of the Keychain Access application on your Mac OS X development system, to generate a Certificate Signing Request (CSR). You upload the CSR to the Provisioning Profile Portal and receive a distribution certificate in response. When you install this certificate in Keychain, Xcode uses the certificate to sign your app. For detailed instructions, see the help available online at the Enterprise Provisioning Profile Portal.

Next, you need to create an enterprise distribution provisioning profile so your users can use your application on their device. You create an enterprise distribution provisioning profile for a specific application, or multiple applications, by specifying the AppID that is authorized by the profile. If a user has an application, but doesn't have a profile that authorizes its use, the user isn't able to use the application.

The designated Team Agent for your enterprise can create distribution provisioning profiles at the Enterprise Provisioning Portal at http://developer.apple.com/iphone. See the website for instructions.

Once you create the enterprise distribution provisioning profile, download the .mobileprovision file. You can embed it in your application by building an archived app (.ipa) using Xcode, or you can distribute the application and provisioning profile separately to authorized users. They'll need to have the both the app and the .mobileprovision file to use the application. If you are using a mobile device management server, you can control access to the application by wirelessly installing or removing the profile.

Deploying Applications and Provisioning Profiles

There are three methods for installing apps and distribution provisioning profiles:

- Distribute the app and distribution provisioning profile, if you didn't embed in the app, to your users for installation using iTunes.

- Have an IT administrator install the app and distribution provisioning profile, if you didn't embed it in the app, on devices using iPhone Configuration Utility

- Post the app and distribution provisioning profile, if you didn't embed it in the app, on a secure web server; users access and perform the installation wirelessly.

Installing Applications Using iTunes

Your users use iTunes to install applications on their devices. Securely distribute the application to your users and then have them follow these steps:

1. In iTunes, choose File > Add to Library and select the application (.app or .ipa) you provided. You can also drag the file to the iTunes application icon.

2. Connect a device to the computer, and then select it in the Devices list in iTunes.

3. Click the Applications tab, and then select the application in the list.

4. Click Apply to install the application and all distribution provisioning profiles that are located in the designated folders discussed below.

Installing Provisioning Profiles for Managed Clients

If the user's computer is managed, deploy the provisioning profile to one of the locations below and the user's copy of iTunes automatically installs the files the next time the user syncs the device. If the folders don't exist, create them with the names shown.

Mac OS X

- ~/Library/MobileDevice/Provisioning Profiles/

- /Library/MobileDevice/Provisioning Profiles/

- the path specified by the Provisioning Profiles Path key in ~/Library/Preferences/ com.apple.itunes

Windows XP

- *bootdrive*:\Documents and Settings*username*\Application Data\Apple Computer\ MobileDevice\Provisioning Profiles

- *bootdrive*:\Documents and Settings\All Users\Application Data\Apple Computer\ MobileDevice\Provisioning Profiles

- the path specified in the HKCU or HKLM by the Provisioning Profiles Path registry key SOFTWARE\Apple Computer, Inc\iTunes

Windows Vista

- *bootdrive*:\Users*username*\AppData\Roaming\Apple Computer\MobileDevice\ Provisioning Profiles

- *bootdrive*:\ProgramData\Apple Computer\MobileDevice\Provisioning Profiles

- the path specified in the HKCU or HKLM by the Provisioning Profiles Path registry key SOFTWARE\Apple Computer, Inc\iTunes

Once installed, the provisioning profiles can be viewed on the device in Settings > General > Profiles.

Installing Applications and Provisioning Profiles Using iPhone Configuration Utility

You can use iPhone Configuration Utility to install applications and distribution provisioning profiles on connected devices.

Installing Distribution Provisioning Profiles:

1. In iPhone Configuration Utility, choose File > Add to Library, and then select the distribution provisioning profile that you want to install.

   The profile is added to iPhone Configuration Utility and can be viewed by selecting the Provisioning Profiles category in the Library.

2. Select a device in the Connected Devices list.

3. Click the Provisioning Profiles tab.

4. Select the provisioning profile in the list, and then click its Install button.

Installing Applications Using iPhone Configuration Utility

You can use iPhone Configuration Utility to install applications on connected devices.

1. In iPhone Configuration Utility, choose File > Add to Library, and then select the application that you want to install.

   The application is added to iPhone Configuration Utility and can be viewed by selecting the Applications category in the Library.

2. Select a device in the Connected Devices list.

3. Click the Applications tab.

4. Select the application in the list, and then click its Install button.

Installing Applications and Distribution Provisioning Profiles Wirelessly

iOS 4 supports over-the-air installation of enterprise applications, allowing you to distribute in-house software to your iPhone and iPod touch users without having to use iTunes or iPhone Configuration Utility.

Requirements

■ A secure web server accessible by authenticated users

■ In-house iOS 4 application in .ipa file format

■ An enterprise distribution provisioning profile for your application

■ An XML manifest file, described in this document

Installing the application is simple. Users first install the provisioning profile that authorizes their device to use your application. Then they download the manifest file from your website to their iOS 4 device, which instructs the device to download and install your application.

You can distribute the URL for downloading the manifest file and provisioning profile via SMS, email, or by embedding it in another enterprise application you've created.

It's up to you to design and host the website used to distribute applications. You need to make sure that users are authenticated, perhaps using basic auth or directory-based authentication, and that the website is accessible via your intranet or the Internet. The application and manifest can be placed in a hidden directory, or in any other location that's readable using HTTP or HTTPS.

Preparing an Enterprise Application for Wireless Distribution

To prepare your enterprise app for wireless distribution, you build an archived version in the form of a .ipa file, and a manifest file that enables wireless distribution and installation of the application.

In Xcode, you create an app archive using the "Build > Build and Archive" menu item. Then, in the Archived Applications source in Xcode's Organizer, select the archived application and click the "Share Application…" button. Select the distribution provisioning profile, if you want to embed it, then click the "Distribute for Enterprise…" button. You'll be asked to provide information for the manifest file, which Xcode creates along with the .ipa. See "About the Wireless Manifest," below, for more information about the manifest file. For more information about building and provisioning applications, see the iPhone Dev Center.

About the Wireless Manifest

The manifest is a file in XML plist format. It's used by an iOS 4 device to find, download, and install the application from your web server. The manifest is created by Xcode, using information you provide when you share an archived application for enterprise distribution. See "Preparing an Enterprise Application for Wireless Distribution."

A sample manifest plist is included at the end of this document. The following fields are required:

Item	Description
URL	The fully qualified HTTP or HTTPS URL of the application (.ipa) file.
display-image	A 57 x 57 pixel PNG image that is displayed during download and installation. Specify the image's fully qualified URL.
full-size-image	A 512 x 512 pixel PNG image that represents the application in iTunes.
bundle-identifier	Your application's bundle identifier, as specified in your Xcode project.
bundle-version	Your application's bundle version, as specified in your Xcode project.
title	The name of the application, which is displayed during download and installation.

Optional Keys

There are optional keys that you can use, which are described in the sample manifest plist. You can use the MD5 keys if your application file is large and you want to ensure download integrity beyond the error checking normally done during TCP communications.

Constructing your Website

Upload these items to an area of your website that your authenticated users can access:

- The application (.ipa file)
- The provisioning profile (.mobileprovision file), if it's not embedded in the .ipa
- The manifest file

Your website desgn is up to you. It can be as simple as a single page that includes links to the provisioning profile and the manifest file. When users tap the web links, each of the files is downloaded and installed. Users can install either piece first, but both the provisioning profile and the application file (as installed by the manifest) are required. A link to the provisioning profile isn't necessary if it was embedded in the .ipa file when you built the archived application. See "Preparing an Enterprise Application for Wireless Distribution," above.

Here are sample links for downloading each type of file:

```
<a href="http://example.com/foo.mobileprovision">Install Provisioning File</a>
```

```
<a href="itms-services://?action=download-manifest&url=http://example.com/
manifest.plist">Install Application</a>
```

Don't add a web link to the archived application (.ipa). It's downloaded by the device when the manifest file is loaded.

Setting Server MIME Types

It may be necessary to configure your webserver so that manifest and application file are transmitted correctly.

For Mac OS X Server, add the following MIME types to the MIME Types settings using Server Admin:

```
application/octet-stream ipa
text/xml plist
```

For IIS, add the MIME type in the Properties page of the server using IIS Manager:

```
.ipa application/octet-stream
.plist text/xml
```

Providing Updated Applications

Applications that you distribute using these techniques aren't automatically updated. When you have a new version for users to install, notify them of the update and instruct them to install the application. If you're using wireless app distribution, provide a link to the website or manifest file of the updated application. If you're using iTunes, provide them with a new app to install on their device. If you're using iPhone Configuration Utility, have them contact an IT administrator to install the new version.

If you want users to retain data stored on their device, make sure the new version uses the same bundle-identifier as the one it's replacing and tell users not to delete their old version before installing the new one. The new version will replace the old one and retain data stored on the device, provided that the bundle-identifiers match.

Disabling an Enterprise Application

If you need to disable an in-house application, revoke the identity used to sign the enterprise distribution provisioning profile. The status of the certificate is validated using OCSP when the app is opened, and the app will refuse to run if the certificate has been revoked.

If the profile was installed by a mobile device management server, you can remove the profile from the device over the air, and the application will no longer open.

Sample Manifest File

```
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
    <!-- array of downloads. -->
```

```
<key>items</key>
<array>
    <dict>
        <!-- an array of assets to download -->
        <key>assets</key>
        <array>
            <!-- software-package: the ipa to install. -->
            <dict>
                <!-- required.  the asset kind. -->
                <key>kind</key>
                <string>software-package</string>
                <!-- optional.  md5 every n bytes.  will restart a chunk if
md5 fails. -->
                <key>md5-size</key>
                <integer>10485760</integer>
              <!-- optional.  array of md5 hashes for each "md5-size" sized
chunk. -->
                <key>md5s</key>
                <array>
                    <string>41fa64bb7a7cae5a46bfb45821ac8bba</string>
                    <string>51fa64bb7a7cae5a46bfb45821ac8bba</string>
                </array>
                <!-- required.  the URL of the file to download. -->
                <key>url</key>
                <string>http://www.example.com/apps/foo.ipa</string>
            </dict>
            <!-- display-image: the icon to display during download .-->
            <dict>
                <key>kind</key>
                <string>display-image</string>
              <!-- optional.  indicates if icon needs shine effect applied.
 -->
                <key>needs-shine</key>
                <true/>
                <key>url</key>
                <string>http://www.example.com/image.57x57.png</string>
            </dict>
            <!-- full-size-image: the large 512x512 icon used by iTunes. -->

            <dict>
                <key>kind</key>
                <string>full-size-image</string>
                <!-- optional.  one md5 hash for the entire file. -->
                <key>md5</key>
                <string>61fa64bb7a7cae5a46bfb45821ac8bba</string>
                <key>needs-shine</key>
                <true/>
<key>url</key><string>http://www.example.com/image.512x512.jpg</string>
            </dict>
        </array><key>metadata</key>
        <dict>
            <!-- required -->
            <key>bundle-identifier</key>
            <string>com.example.fooapp</string>
            <!-- optional (software only) -->
            <key>bundle-version</key>
            <string>1.0</string>
```

```
            <!-- required.  the download kind. -->
            <key>kind</key>
            <string>software</string>
            <!-- optional. displayed during download; typically company name
 -->
            <key>subtitle</key>
            <string>Apple</string>
            <!-- required.  the title to display during the download. -->
            <key>title</key>
            <string>Example Corporate App</string>
        </dict>
      </dict>
   </array>
</dict>
</plist>
```

Document Revision History

This table describes the changes to *Wireless Enterprise App Distribution*.

Date	Notes
2010-07-06	First Release for iOS 4.
2010-06-23	New document that describes over-the-air installation of iPhone applications in an enterprise setting.