

Building Game Center Games for OS X

Session 521

Gabriel Belinsky

OS X Engineering

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

Welcome Back



Introduction

- Game Center is new for OS X Mountain Lion
- Access the same social gaming network as on iOS
- OS X users can compete with others around the world
- Learn about the API and user interface

What You Will Learn

- Game Center API for OS X
- Setting up your project
- Differences between iOS and OS X
- Best practices

Game Center

Game Center
App



GameKit
Framework



Game Center
Services



Game Center App

Game Center
App



GameKit
Framework



Game Center
Services



Game Center App

Game Center
App



Game Center App

Me



Game Center App

Friends



Game Center App

Games



Game Center App

Requests



GameKit Framework

Game Center
App



GameKit
Framework



Game Center
Services



GameKit Framework

GameKit
Framework



Leaderboards



Achievements



Multiplayer



GameKit Framework



GameKit

General

Players

Authentication

Friends

Leaderboards

Achievements

GameKit Framework



GameKit

Multiplayer

Auto-Matching

Invitations

Peer-to-Peer Networking

In-Game Voice Chat

Turn-Based Gaming

Feature Parity Between iOS and OS X

- Players
- Leaderboards
- Achievements
- Matchmaking
- Invites
- Multiplayer
- Turn-Based Matches
- Voice Chat

GameKit Differences Between iOS and OS X

- ViewControllers
 - NSViewController in OS X
 - UIViewController in iOS
- Images
 - UIImage in OS X
 - UIImage in iOS

Using Game Center UI on OS X

How to show an NSViewController using GKDialog

- Initialize GKDialogController

```
self.dialogController = [[GKDialogController alloc] init];  
self.dialogController.parentWindow = [self.view window];
```

- Present NSViewController

```
[self.dialogController presentViewController:viewController];
```

- Dismiss NSViewController

```
[self.dialogController dismiss:viewController];
```

Unavailable

- GKSession
 - Used to connect and message participants
 - Use GKMatch
- GKPeerPickerController
 - UI used to browse for other participants
 - Use GKMatchmakerViewController

Game Center Services

Game Center
App



GameKit
Framework



Game Center
Services



Game Center Services

Game Center
Services

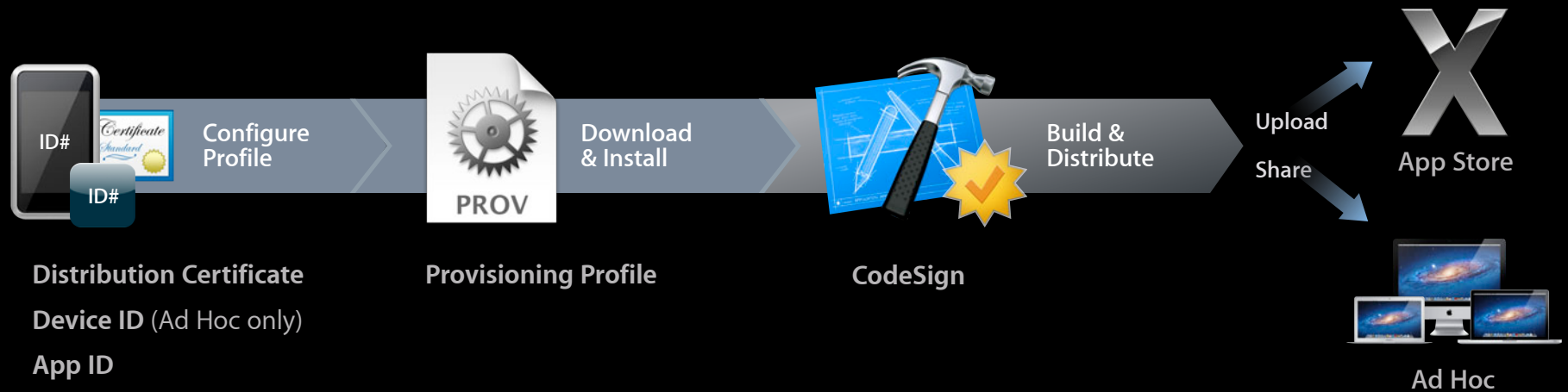


Game Center Servers



- Enable your game to use Game Center
- Add leaderboards
- Add achievements
- Define game groups
- Specify multiplayer version compatibility

Getting Set Up




developer.apple.com

Developer Certificate Utility

Configure App ID

- Game Center entitlement

Enable for Game Center

 Enabled


Connect users to other Mac and iOS game players around the world and bring the excitement of multiplayer and turn-based gaming to your Mac apps. After enabling your App ID for Game Center, you must recreate your provisioning profiles for this App ID and compile your application with the new Game Center entitlement included in your provisioning profile.

Developer Certificate Utility

Configure App ID

- Game Center entitlement

Enable for Game Center

 Enabled

Connect users to other Mac and iOS game players around the world and bring the excitement of multiplayer and turn-based gaming to your Mac apps. After enabling your App ID for Game Center, you must recreate your provisioning profiles for this App ID and compile your application with the new Game Center entitlement included in your provisioning profile.

Missing Game Center Entitlement



iTunes Connect

The screenshot shows the iTunes Connect dashboard for a user named Johnny Appleseed. The page is titled "iTunes Connect" and includes a "Sign Out" link. The main content area is divided into several sections:

- Welcome, Johnny Appleseed:** A message stating that iTunes Connect provides tools to help manage content in the App Store. It includes three news items:
 - We've updated the App Store Marketing and Advertising Guidelines for Developers:** Instructions on using the App Store badge, including new localized versions in Simplified and Traditional Chinese, Japanese, and Portuguese, as well as featuring Apple products in marketing materials.
 - The App Store is now on Facebook and Twitter (@AppStore):** Information about following the App Store on social media for recommendations, offers, and more.
 - You agreed to the iAd Network Contract:** A reminder to view the iAd Network module and set preferences, noting that the contract must be in effect and iAd must be enabled for at least one app.
- Manage Users:** A link to create and manage both iTunes Connect and in-App Purchase Test User accounts.
- Manage Your Applications:** A link to add, view, and manage applications in the iTunes Store.
- Catalog Reports:** A link to request catalog reports for App Store content.
- Contact Us:** A link for users having problems uploading applications, with a note that the Contact Us system can be used to find answers to questions or generate questions for iTunes Reps.

At the bottom of the main content area, there are links for "Download the Developer Guide" and "FAQs Review our answers to common inquiries."

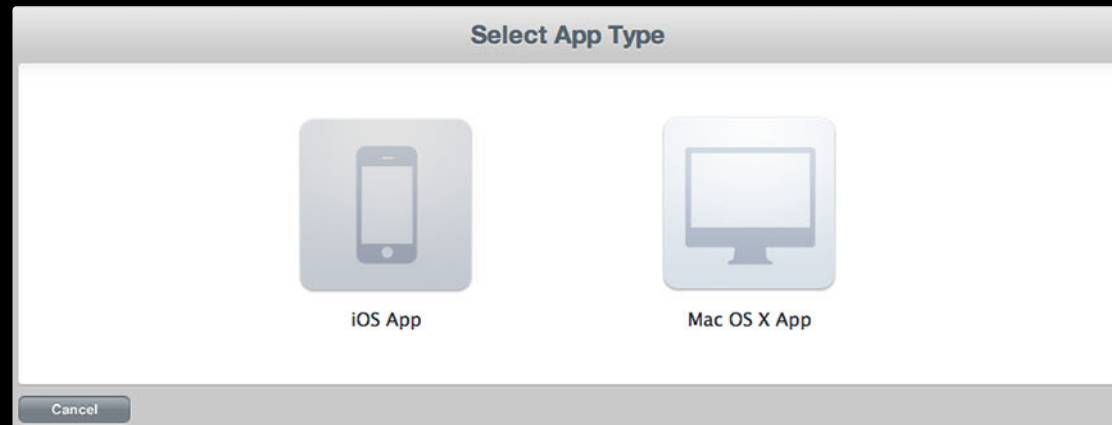
Below the main content area is a section for "iTunes Connect Mobile," which allows users to access sales and trend information anywhere. It includes a "Download" button.

The footer contains navigation links: "Home | FAQs | Contact Us | Sign Out". It also includes copyright information: "Copyright © 2012 Apple Inc. All rights reserved. Terms of Service | Privacy Policy". At the bottom, there are locale selection options: "PageLocale: English | SessionLocale: English" and "New Locale: Select".

itunesconnect.apple.com

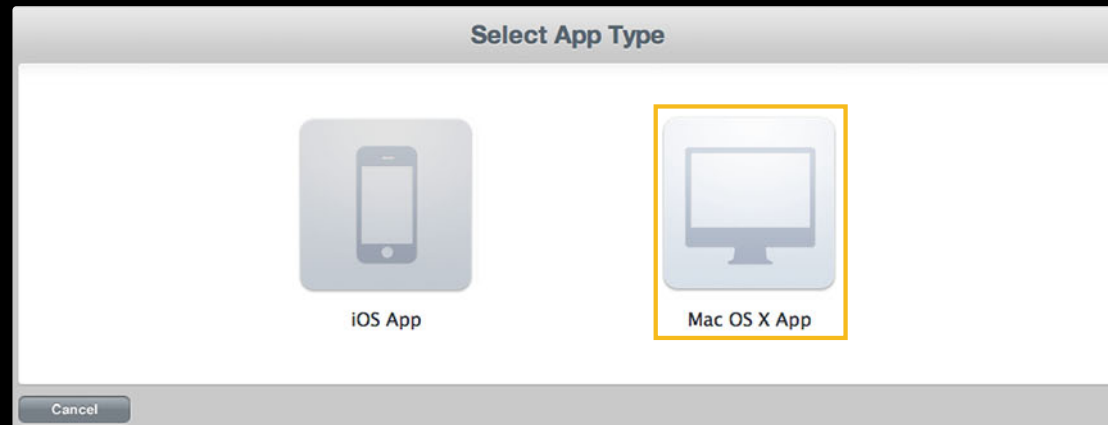
iTunes Connect

Add new app



iTunes Connect

Add new app



iTunes Connect



App information

Great Game

App Information [Edit](#)

Identifiers	Links	Rights and Pricing
SKU: xxxxxxxx	View in App Store	Manage Game Center
Bundle ID: xxxxxxxx.xxxxxxxx.xxx		Delete App
Apple ID: xxxxxxxx		
Type: Mac OS X App		
Default Language: English		

Versions

Current Version	
	Version: 1.0
	Status:  Prepare for Upload
	Date Created: May 24, 2012
View Details	

[Done](#)

iTunes Connect

App information


Great Game

App Information [Edit](#)


Identifiers	Links	Rights and Pricing
SKU XXXXXXXXX	View in App Store	Manage Game Center
Bundle ID XXXXXXXX.XXXXXXXXXX.XXX		Delete App
Apple ID XXXXXXXX		
Type Mac OS X App		
Default Language English		

Versions

Current Version



Version **1.0**

Status  **Prepare for Upload**

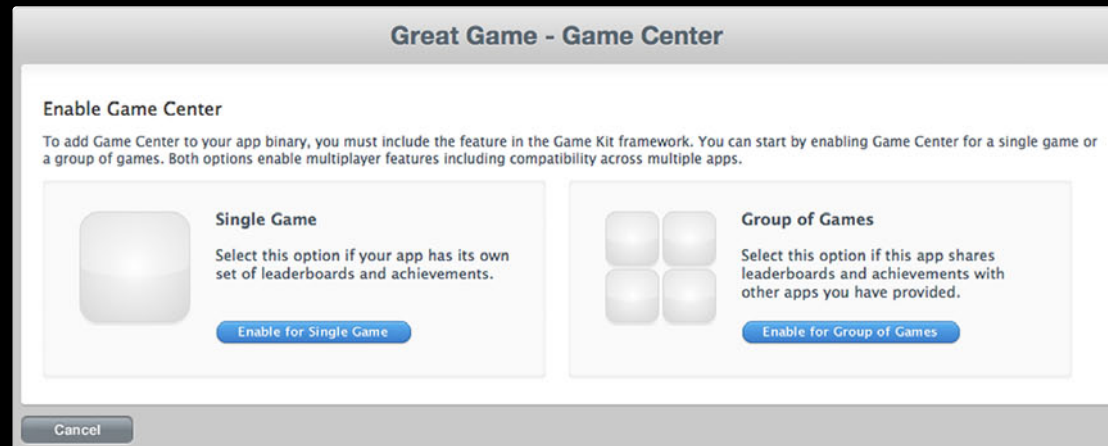
Date Created **May 24, 2012**

[View Details](#)

[Done](#)

iTunes Connect

Enable Game Center



iTunes Connect

Manage Game Center

Great Game

Game Center

Game Center has been enabled for your app. Click below if you want to disable it.

Enabled

To share the leaderboard and achievements of this app with other apps you have provided, move this app to a Game Center group.

Move to Group

Leaderboards

Leaderboards allow users to view the top scores of all Game Center players of your apps in this group. Leaderboards that are live for any app version cannot be removed.

Add Leaderboard Delete Test Data ?

0 Leaderboards

Reference Name	Leaderboard ID	Type	Default	Status
Click Add Leaderboard to get started.				

Achievements

An achievement is a distinction that a player earns for reaching a milestone, or performing an action, defined by you and programmed into your app. Once an achievement has gone live for any version of your app, it cannot be removed.

Add Achievement

0 Achievements

Reference Name	Achievement ID	Points	Status
Click Add New Achievement to get started.			

iTunes Connect

Manage Game Center

Great Game

Game Center

Game Center has been enabled for your app. Click below if you want to disable it.

To share the leaderboard and achievements of this app with other apps you have provided, move this app to a Game Center group.

Enabled

[Move to Group](#)

Leaderboards

Leaderboards allow users to view the top scores of all Game Center players of your apps in this group. Leaderboards that are live for any app version cannot be removed.

[Add Leaderboard](#) [Delete Test Data](#) [?](#)

0 Leaderboards

Reference Name	Leaderboard ID	Type	Default	Status
Click Add Leaderboard to get started.				

Achievements

An achievement is a distinction that a player earns for reaching a milestone, or performing an action, defined by you and programmed into your app. Once an achievement has gone live for any version of your app, it cannot be removed.

[Add Achievement](#)

0 Achievements

Reference Name	Achievement ID	Points	Status
Click Add New Achievement to get started.			

iTunes Connect

Manage Game Center

Great Game

Game Center

Game Center has been enabled for your app. Click below if you want to disable it.

Enabled

To share the leaderboard and achievements of this app with other apps you have provided, move this app to a Game Center group.

Move to Group

Leaderboards

Leaderboards allow users to view the top scores of all Game Center players of your apps in this group. Leaderboards that are live for any app version cannot be removed.

Add Leaderboard Delete Test Data ?

0 Leaderboards

Reference Name	Leaderboard ID	Type	Default	Status
Click Add Leaderboard to get started.				

Achievements

An achievement is a distinction that a player earns for reaching a milestone, or performing an action, defined by you and programmed into your app. Once an achievement has gone live for any version of your app, it cannot be removed.

Add Achievement

0 Achievements

Reference Name	Achievement ID	Points	Status
Click Add New Achievement to get started.			

iTunes Connect



App information

Great Game

App Information [Edit](#)

Identifiers	Links	Rights and Pricing
SKU XXXXXXXXX	View in App Store	Manage Game Center
Bundle ID XXXXXXXX.XXXXXXXXXX.XXX		Delete App
Apple ID XXXXXXXX		
Type Mac OS X App		
Default Language English		

Versions

Current Version	
	Version 1.0
	Status  Prepare for Upload
	Date Created May 24, 2012
View Details	

[Done](#)

iTunes Connect



App information

Great Game

App Information [Edit](#)

Identifiers	Links	Rights and Pricing
SKU: xxxxxxxx	View in App Store	Manage Game Center
Bundle ID: xxxxxxxx.xxxxxxxx.xxx		Delete App
Apple ID: xxxxxxxx		
Type: Mac OS X App		
Default Language: English		

Versions

Current Version	
	Version: 1.0
	Status:  Prepare for Upload
	Date Created: May 24, 2012
View Details	

[Done](#)

iTunes Connect

Version information

Great Game

Enter the following information in English.

Version Information

Version Number ?

Copyright ?

Primary Category ?

Subcategory ?

Subcategory ?

Secondary Category (Optional) ?

Review Notes (Optional)


Rating

For each content description, choose the level of frequency that best describes your app.

[App Rating Details](#)

Apps must not contain any obscene, pornographic, offensive or defamatory content or materials of any kind (text, graphics, images, photographs, etc.), or other content or materials that in Apple's reasonable judgment may be found objectionable.

Apple Content Descriptions	None	Infrequent/Mild	Frequent/Intense
Cartoon or Fantasy Violence	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Realistic Violence	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexual Content or Nudity	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Profanity or Crude Humor	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol, Tobacco, or Drug Use or References	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mature/Suggestive Themes	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Simulated Gambling	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>



4+
App Rating

iTunes Connect

Version information

Game Center Enabled

Leaderboards [View Games in Great Games](#)

1 of 1 Selected to submit (24 of 25 Leaderboards Remaining)

Reference Name	Leaderboard ID	Type
Global	grp.Global	Single

Achievements [View Games in Great Games](#)

3 of 3 Selected to submit (700 of 1000 Points Remaining)

Reference Name	Achievement ID	Points
Six Seconds	grp.WIN_IN_SIX_SECONDS	100
Three In A Row	grp.WIN_THREE_IN_A_ROW	100
Three Steps	grp.WIN_IN_THREE_STEPS	100

Multiplayer Compatibility

5 Versions Selected

App Name	Versions
Great Games (iOS App)	All Versions (including this one)
Great Games (Mac OS X App)	All Versions

EULA

Currently, the [standard End User License Agreement \(EULA\)](#) is being applied to your app. If you want to provide your own EULA, click Edit.

Missing Version Information



Cross Platform Compatibility

Demo

- UINavigationController and NSViewController
- GKDialogController
- UIImage and NSImage
- Using Conditional Compilation TARGET_OS_IPHONE

Demo

Norman Wang
Game Technologies Engineer

Demo Summary

What we showed

- UINavigationController and NSViewController
- GKDialogController
- UIImage and UIImage
- Using Conditional Compilation TARGET_OS_IPHONE

Peer-to-Peer Multiplayer

- GKMatchRequest
 - Match parameters
- GKMatchmaker
 - Quick match
 - Invite handler
- GKMatchmakerViewController
 - UI for making matches
- GKMatch
 - Communicate between players

Multiplayer UI

GKMatchmakerViewController

- Requesting A Match

```
GKMatchmakerViewController *viewController =  
    [[GKMatchmakerViewController alloc] initWithMatchRequest:matchRequest];  
viewController.matchmakerDelegate = self;
```

- Handling Invites

```
GKMatchmakerViewController *viewController =  
    [[GKMatchmakerViewController alloc] initWithInvite:invite];  
viewController.matchmakerDelegate = self;
```

- Displaying UI

```
[self.DialogController presentViewController:viewController];
```


Multiplayer

Creating a GKMatch

- Delegate on GKMatchmakerViewController

```
- (void)matchmakerViewController:(GKMatchmakerViewController *)viewController  
    didFinishMatch:(GKMatch *)match;
```

- Method on shared GKMatchmaker

```
[[GKMatchmaker sharedMatchmaker] findMatchForRequest:matchRequest  
    withCompletionHandler:^(GKMatch *match, NSError *error) {  
    }];
```

Multiplayer Communication

GKMatch

- Sending Data

```
[match sendData:data toPlayers:match.playerIDs  
    withDataMode:GKMatchSendDataUnreliable error:&error];
```

```
[match sendDataToAllPlayers:data  
    withDataMode:GKMatchSendDataReliable error:&error];
```

- Receiving Data

```
- (void)match:(GKMatch *)match didReceiveData:(NSData *)data fromPlayer:  
(NSString *)playerID;
```

Cross Compatible Concerns

Xcode setup

- Starting a new project
- Importing shared code
- Conditional compilation
 - Using `TARGET_OS_IPHONE`

Cross Compatible Concerns

Input handling

- iOS Touch controls and gestures
- OS X Touch Pad gestures
- Mouse and keyboard inputs
- HID—USB or Bluetooth controllers

Summary

- Setup your project
 - Developer Center—Certificate Utility
 - iTunes Connect
 - Xcode
- Game Center UI and API
- Best Practices

More Information

Allan Schaffer

Graphics and Game Technologies Evangelist
aschaffer@apple.com

Apple Developer

<http://developer.apple.com>

Apple Developer Forums

<http://devforums.apple.com>

Related Sessions

What's New in Game Center

Mission
Tuesday 4:30PM

Integrating Your Games with Game Center

Pacific Heights
Wednesday 4:30PM

What's New in iTunes Connect for App Developers

Nob Hill
Thursday 9:00AM

Multiplayer Gaming with Game Center

Pacific Heights
Thursday 10:15AM

Labs

Game Design Lab

Graphics, Media & Games Lab A
Thursday 2:00PM

Game Center Lab

Graphics, Media & Games Lab B
Thursday 2:00PM

Game Center Lab

Graphics, Media & Games Lab C
Friday 9:00PM

 **WWDC2012**