Worst. Bug. Ever.

And how we stopped it happening again.

Stuart Sharpe

iPlayer 4.9.0

July 8th 2015

★☆☆☆☆

"*Crashes constantly*

Literally does not work at all."

– sifarrar1

★☆☆☆☆

*"**Just updated, what's wrong!**
Just updated now nothing will play, just crashes and closes the app. Annoying."*

– Stevey83

★☆☆☆☆

*"**WHAT THE HELL?!?**
Ever since this new update I haven't been able
to watch anything!! It will buffer for a minute
then kick me out of the app! FIX IT NOW
PLEASE!!!!"*

– Jammy cod man rr

★☆☆☆☆

"**_TOTAL CRAP !!!!_** 💩💩💩💩💩
_Glitches all the time an never lets me watch
nothin what a waste of storage and time
😤😤😤😤😤😤_"

– Junior miss banana

★★★★★

"**Oh my god**
I loved this but the new update
has ruined it so badly"

– Katty bel sweet

133 One-Star Reviews

In 6 hours

So, What Happened?

This is the Code

```
88    if ([versionId length] == 0 || [pid length] == 0) { return; }
89
90    NSDate *now = [NSDate date];
91    CGFloat delta = [now timeIntervalSinceDate:self.lastPut];
92
93    if(delta < [[BBCConfig shared] heartbeatThreshold]) { return; }
```

self.lastPut should be an NSDate

self.lastPut is a strong property

Sometimes, self.lastPut is nil

Sometimes, self.lastPut is a random object

Why?

m BBCiBLEntity.m ...in Network Services/IBL

m BBCiPScheduleView_iPad.m ...in Schedule

m BBCiPDynamiteFavouritesStore.m ...in Favourites

m AFPropertyListRequestOperation.m ...in ThirdParty/AFNetworking

m BBCiPPickUpAProgrammeManager.m ...in Model/PickUpAProgramme   -fno-objc-arc

m BBCiPUASErrorHandler.m ...in Favourites

m BBCiPFetchedSectionDataProvider.m ...in GlobalNavigation

m BBCiPGlobalNavigationDeepLinkHandler.m ...in Model

m BBCiPImageBlur.m ...in Misc

m BBCiPCategoriesViewController.m ...in Categories

m BBCiPStaticSectionDataProvider.m ...in GlobalNavigation

One of These Things
Is Not Like The Others

How Did We Miss It?

Not Testing
What We Ship

Five Targets

(Debug, Release, Enterprise, Beta, Calabash)
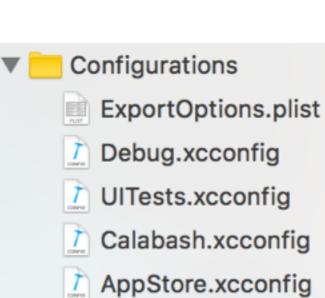
Why So Many?

How Did We Fix It?

One Target,
Many Configurations

But…

.xcconfig Files

Configurations

- ExportOptions.plist
- Debug.xcconfig
- UITests.xcconfig
- Calabash.xcconfig
- AppStore.xcconfig
- Enterprise.xcconfig
- Beta.xcconfig
- DRMDebug.xcconfig

LibraryConfigs

- Hockey.xcconfig
- DRM-Protected.xcconfig
- DRM-Stub.xcconfig
- DRM-Unprotected.xcconfig
- BBCiD-Stub.xcconfig
- BBCiD-Live.xcconfig
- LiveApp.xcconfig
- EnterpriseApp.xcconfig
- TestStoreToken.xcconfig

```
//
//   LiveApp.xcconfig
//   BBCiPlayer
//

BUNDLE_IDENTIFIER=uk.co.bbc.iplayer
CONFIG_BASE_URL=polling.bbc.co.uk
ASSETCATALOG_COMPILER_APPICON_NAME=AppIcon
URL_SCHEME=bbciplayer
```

Linking Libraries

Use Linker Flags!

Hockey.xcconfig

```
HOCKEY_GCC_DEFINITIONS=HOCKEY_APP_ID='"'$(HOCKEY_APP_ID)'"' $HOCKEY_FLAGS
HOCKEY_LINKER_FLAGS=-framework HockeySDK -framework QuickLook
```

Project Settings

▼ Other Linker Flags		\<Multiple values\>
	AppStore	-lxml2 -ObiC -ObiC -l"c++" -framework '' 'Foundation" -framew
	Beta	$(inherited)
	Calabash	$(HOCKEY_LINKER_FLAGS)
	DRMDebug	$(DRM_LINKER_FLAGS)
	Debug	$(CALABASH_LINKER_FLAGS)
	Enterprise	$(BBCID_LINKER_FLAGS)
	UITests	

Conditional Code

Avoid!

(Just Kidding)

(Actually Not Kidding)

BBCiD-Stub.xcconfig

`BBCID_GCC_DEFINITIONS=IS_BBCID_STUB=1`

Project Settings

Setting	BBCiPlayer-Combined
▼ **Preprocessor Macros**	\<Multiple values\>
AppStore	NS_BLOCK_ASSERTIONS COCOAPODS=1 ONFIG_BASE_URL=""polling.bbc.co.uk...
Beta	$(inherited)
Calabash	CONFIG_BASE_URL=""'$(CONFIG_BASE_URL)'""
DRMDebug	CONFIG_FILE_SUFFIX=""'$(CONFIG_FILE_SUFFIX)'""
Debug	$(HOCKEY_GCC_DEFINITIONS)
Enterprise	$(DRM_GCC_DEFINITIONS)
UITests	$(OTHER_GCC_DEFINITIONS)
Preprocessor Macros Not Used In Precompiled Headers	TEST_STORE_TOKEN=""'$(TEST_STORE_TOKEN)'""
	$(BUILD_TYPE_GCC_DEFINITIONS)
	CONFIG_PROTOCOL=""'$(CONFIG_PROTOCOL)'""
▼ **Apple LLVM 8.0 - Warning Policies**	$(BBCID_GCC_DEFINITIONS)

```objc
@implementation BBCiPAuthenticationManagerProvider

- (id<BBCiPAuthManager>) authenticationManager {
#ifndef IS_BBCID_STUB
    return [BBCiPToolkitAuthenticationManager sharedInstance];
#else
    return [BBCiPStubAuthenticationManager sharedInstance];
#endif
}

@end
```

Resources

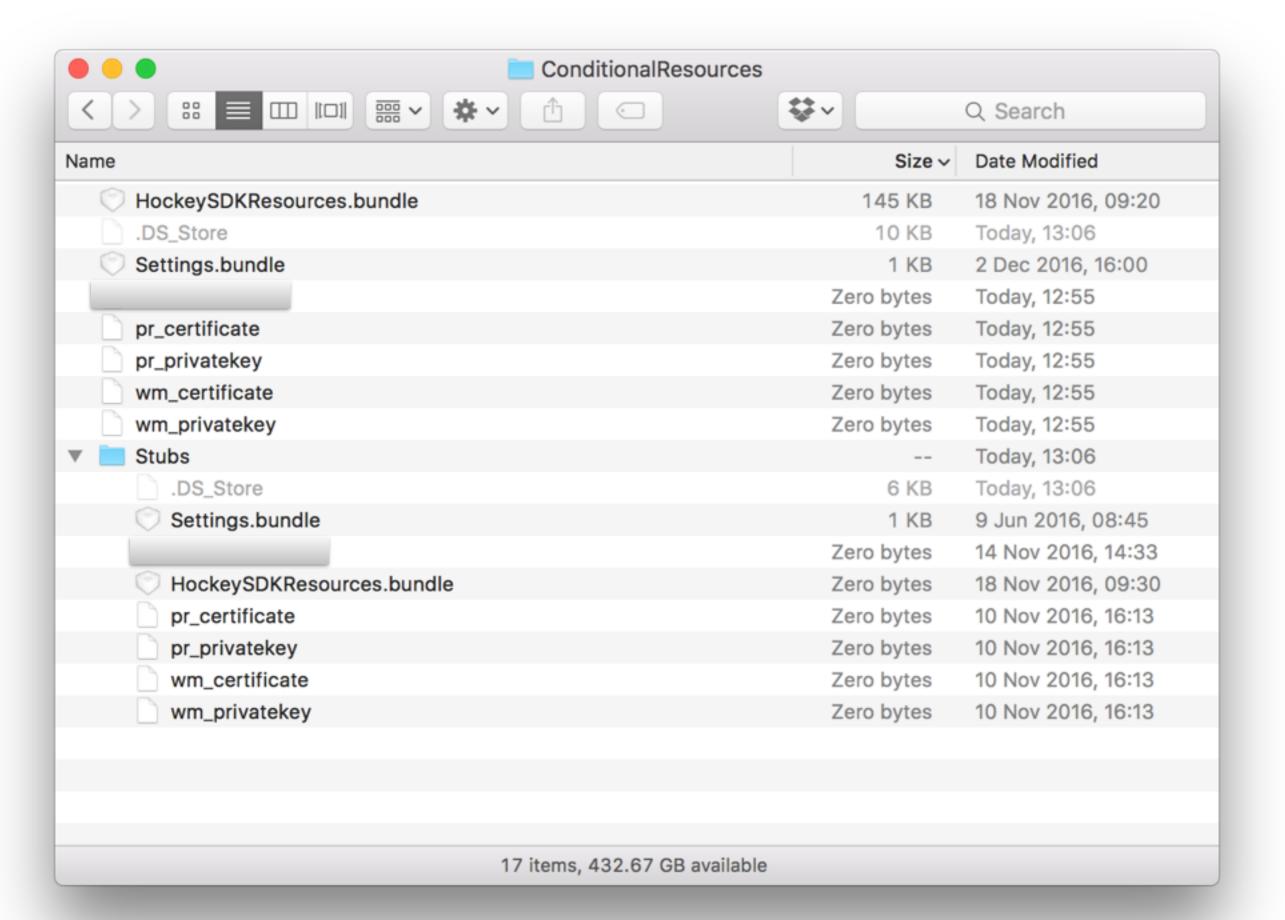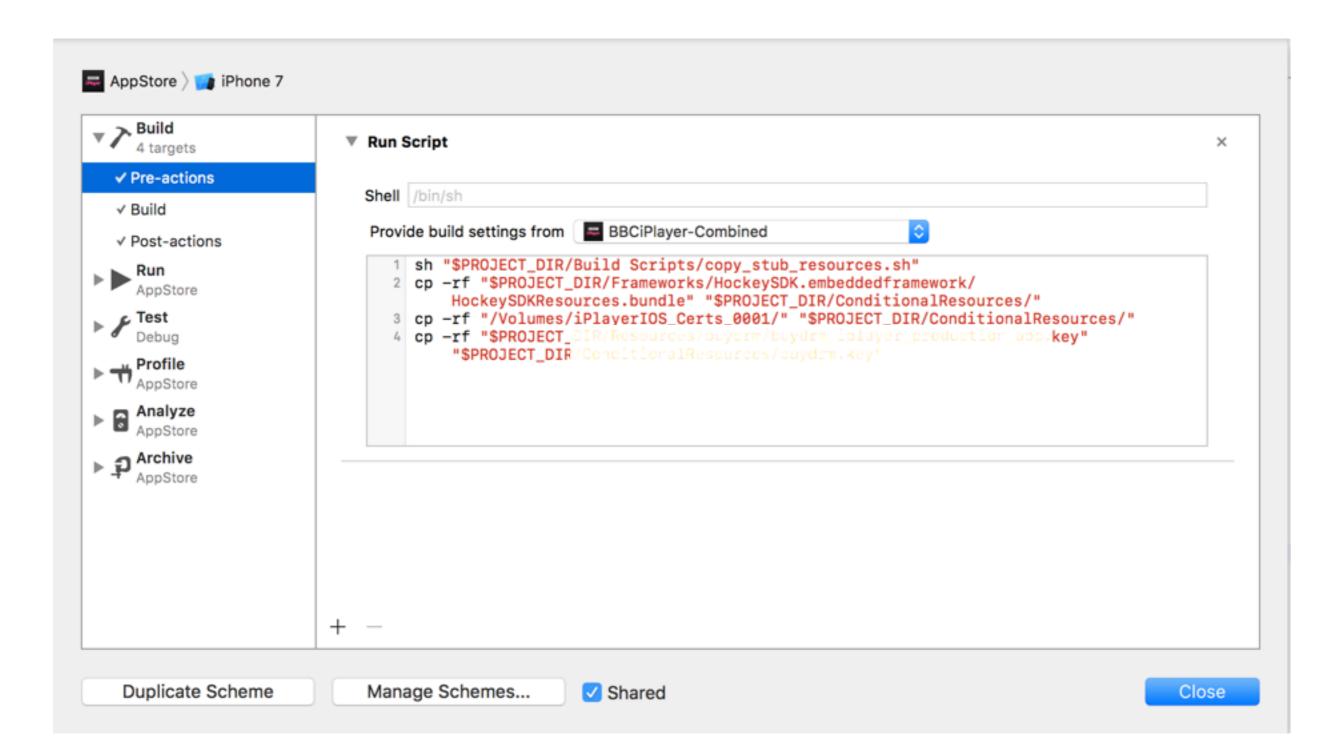| Name	Size	Date Modified
HockeySDKResources.bundle	145 KB	18 Nov 2016, 09:20
.DS_Store	10 KB	Today, 13:06
Settings.bundle	1 KB	2 Dec 2016, 16:00
	Zero bytes	Today, 12:55
pr_certificate	Zero bytes	Today, 12:55
pr_privatekey	Zero bytes	Today, 12:55
wm_certificate	Zero bytes	Today, 12:55
wm_privatekey	Zero bytes	Today, 12:55
▼ Stubs	--	Today, 13:06
.DS_Store	6 KB	Today, 13:06
Settings.bundle	1 KB	9 Jun 2016, 08:45
	Zero bytes	14 Nov 2016, 14:33
HockeySDKResources.bundle	Zero bytes	18 Nov 2016, 09:30
pr_certificate	Zero bytes	10 Nov 2016, 16:13
pr_privatekey	Zero bytes	10 Nov 2016, 16:13
wm_certificate	Zero bytes	10 Nov 2016, 16:13
wm_privatekey	Zero bytes	10 Nov 2016, 16:13

17 items, 432.67 GB available

Build
4 targets

✓ **Pre-actions**

✓ Build

✓ Post-actions

Run
AppStore

Test
Debug

Profile
AppStore

Analyze
AppStore

Archive
AppStore

▼ **Run Script**   ✕

Shell `/bin/sh`

Provide build settings from `BBCiPlayer-Combined` ⬍

```
1  sh "$PROJECT_DIR/Build Scripts/copy_stub_resources.sh"
2  cp -rf "$PROJECT_DIR/Frameworks/HockeySDK.embeddedframework/
       HockeySDKResources.bundle" "$PROJECT_DIR/ConditionalResources/"
3  cp -rf "/Volumes/iPlayerIOS_Certs_0001/" "$PROJECT_DIR/ConditionalResources/"
4  cp -rf "$PROJECT_DIR/Resources/buydrm/buydrm_iplayer_production_aac.key"
       "$PROJECT_DIR/ConditionalResources/buydrm.key"
```

\+   \−

Duplicate Scheme   Manage Schemes...   ☑ Shared   Close

3 Lessons

App Targets Are Work Multipliers

Configurations and Schemes Are Powerful

Test What You Ship

(Hint: TestFlight is really useful)

Other Advantages of Single Targets

- Minimises the number of build variants

- New files only need adding to one target

- App Extensions are easier to manage

- Using Swift code in Objective-C is less error prone

Any Questions?