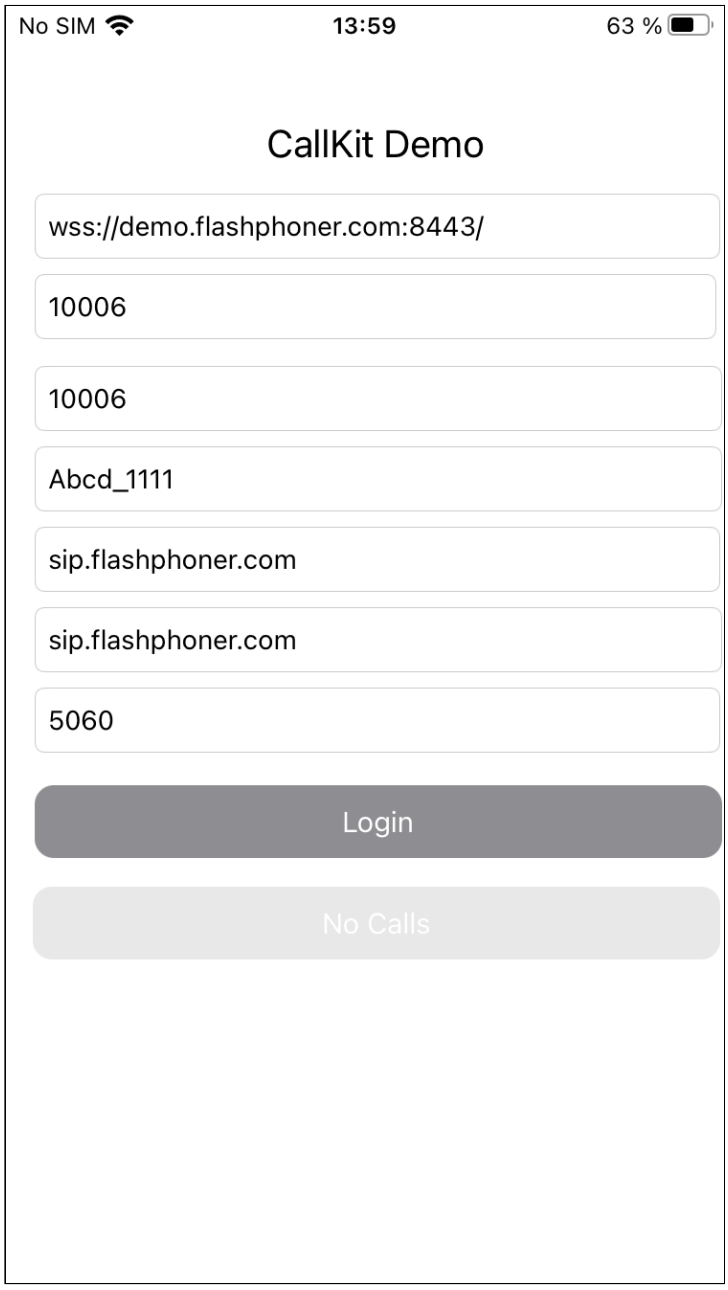
iOS Call Kit Demo Swift

iOS application example using Call Kit to receive incoming SIP calls

The example shows how to use Call Kit and push notifications to receive incoming SIP calls on iOS device.

Screenshot below contains input fields for SIP session credentials



The application receives push notification about an incoming SIP call even if it is in backgound or is closed. If the application is closed, it starts, connects to the SIP session on WCS server using session token received in notification, then accepts the incoming call.

Server configuration

The following parameters should be set on WCS server for push notifications to work

Parameter	Description
notification_apns_key_path	Apple Push Notification service key full name
notification_apns_key_id	APNs key Id
notification_apns_team_id	Apple developers team Id

For example

```
notification_apns_key_path=/opt/apns_auth_key.p8
notification_apns_team_id=SXZF5547NK
notification_apns_key_id=7NQA96WTFZ
```

WCS server sends notification to APNs according to these settings when incoming SIP call is received

Analyzing the example code

To analyze the code, let's take CallKitDemo Swift example, which can be downloaded from GitHub

Application classes:

- class for the main view of the application: `CallKitDemoViewController` (file CallKitDemoViewController.swift)
- class for `CXProviderDelegate` protocol implementation: `ProviderDelegate`(file ProviderDelegate.swift)
- class to work with UI and push registry: `AppDelegate` (file AppDelegate.swift)
- extension to create `CXAnswerCallAction` object by user activity, to receive the call: `NSUserActivity: StartCallConvertible` (file NSUserActivity+StartCallConvertible.swift)
- extension to create `CXAnswerCallAction` object from application URL, to receive the call: `URL: StartCallConvertible` (file URL+StartCallConvertible.swift)

- extension to start call implementing `INStartCallIntentHandling` protocol (file CallKitIntentExtension/IntentHandler.swift)

1. Import of API

code

```
import FPWCSApi2Swift
```

2. Connection establishing to WCS server and SIP session creation

`FPWCSApi2.createSession` code

The following parameters are passed:

- `urlServer` - WCS server URL
- `keepAlive` - keep the SIP session alive when client disconnects
- `sipRegisterRequired` - register the SIP session on SIP PBX
- `sipLogin` - SIP account user login
- `sipAuthenticationName` - SIP accountuser authentication name
- `sipPassword` - SIP account password
- `sipDomain` - SIP PBX address
- `sipOutboundProxy` - SIP outbound proxy address (usually the same as SIP PBX address)
- `sipPort` - SIP PBX port
- `noticationToken` - push notification token
- `appId` - iOS application Id
- `appKey` - REST hook application key on WCS server

```
let options = FPWCSApi2SessionOptions()
options.urlServer = wcsUrl.text

options.keepAlive = true

options.sipRegisterRequired = true
options.sipLogin = sipLogin.text
options.sipAuthenticationName = sipAuthName.text
options.sipPassword = sipPassword.text
options.sipDomain = sipDomain.text
options.sipOutboundProxy = sipOutboundProxy.text
options.sipPort = Int(sipPort.text ?? "5060") as NSNumber?

let userDefaults = UserDefaults.standard
options.noticationToken = userDefaults.string(forKey: "voipToken")
options.appId = "com.flashphoner.ios.CallKitDemoSwift"
```

```
options.appKey = "defaultApp"

do {
    let session = try FPWCSApi2.createSession(options)

    processSession(session)

    appDelegate.providerDelegate?.setSession(session)
    session.connect()
} catch {
    print(error)
}
```

3. Receiving the event about session successful creation

`kFPWCSSessionStatus.fpwcsSessionStatusEstablished` code

Session connection data should be stored to reconnect when notification is received

```
session.on(kFPWCSSessionStatus.fpwcsSessionStatusEstablished, callback: {
rSession in
    NSLog("Session established")
    self.saveFields(rSession?.getAuthToken())
    self.toLogoutState()
})
```

4. Saving WCSSession object and setting up session incoming call handlers

`kFPWCSCallStatus.fpwcsCallStatusFinish`,
`kFPWCSCallStatus.fpwcsCallStatusEstablished` code

```
func setSession(_ session: FPWCSApi2Session) {
    self.session = session;


    session.onIncomingCallCallback({ rCall in

        guard let call = rCall else {
            return
        }

        call.on(kFPWCSCallStatus.fpwcsCallStatusFinish, callback: {rCall in
            self.viewController.toNoCallState()

            guard let uuid = rCall?.getUuid() else {
                return
            }
            self.provider.reportCall(with: uuid, endedAt: Date(), reason:
.remoteEnded)
        })
        let id = call.getId()

        NSLog("CKD - session.onIncomingCallCallback. wcsCallId: " + (id ??
```

```
""))


        call.on(kFPWCSCallStatus.fpwcsCallStatusEstablished, callback: {rCall
in
            self.viewController.toHangupState(call.getId())
        })

        self.viewController.toAnswerState(call.getId())
        self.currentCall = call
        self.actionCall?.fulfill()
    })
}
```

5. Describing answer call action request

code

```
func answer(_ callId: String) {
    guard let call = self.session?.getCall(callId) else {
        return
    }
    let callController = CXCallController()
    let answerCallAction = CXAnswerCallAction(call: call.getUuid())
    callController.request(CXTransaction(action: answerCallAction),
                                          completion: { error in
                                              if let error = error {
                                                  print("Error: \(error)")
                                              } else {
                                                  print("Success")
                                              }
                                          })
}
```

6. Performing answer call action

code

```
func provider(_ provider: CXProvider, perform action: CXAnswerCallAction) {
    NSLog("CKD - CXAnswerCallAction: " + action.callUUID.uuidString)

    guard let call = self.session?.getCallBy(action.callUUID) else {
        if (self.session?.getStatus() ==
kFPWCSSessionStatus.fpwcsSessionStatusDisconnected ||
self.session?.getStatus() == kFPWCSSessionStatus.fpwcsSessionStatusFailed) {
            self.session?.connect()
        }
        self.actionCall = action
        return
    }
    self.currentCall = call
    action.fulfill(withDateConnected: NSDate.now)
}
```

7. Answering the call

`FPWCSApi2Call.answer` code

```
func provider(_ provider: CXProvider, didActivate audioSession:
AVAudioSession) {
    NSLog("CKD - didActivate \(#function)")
    currentCall?.answer()
}
```

8. Performing end call action

code

```
func provider(_ provider: CXProvider, perform action: CXEndCallAction) {
    NSLog("CKD - CXEndCallAction: " + action.callUUID.uuidString)
    guard let call = session?.getCallBy(action.callUUID) else {
        action.fulfill()
        return
    }
    self.hangup(call.getId())
    action.fulfill()

}
```

9. Hangup the call

`FPWCSApi2Call.hangup` code

```
func hangup(_ callId: String) {
    guard let call = self.session?.getCall(callId) else {
        return
    }
    call.hangup()
    self.provider.reportCall(with: call.getUuid(), endedAt: Date(), reason:
.remoteEnded)
}
```

10. Setting up token to receive notification

code

```
func pushRegistry(_ registry: PKPushRegistry, didUpdate credentials:
PKPushCredentials, for type: PKPushType) {
    if (type == .voIP) {
        let token = credentials.token.map { String(format: "%02.2hhx", $0)
}.joined()
        NSLog("CKD - Voip token: " + token)
        UserDefaults.standard.set(token, forKey: "voipToken")
```

```
    }
}
```

11. Receiving push notification

code

```
func pushRegistry(_ registry: PKPushRegistry, didReceiveIncomingPushWith
payload: PKPushPayload, for type: PKPushType) {
    guard type == .voIP else { return }
    if let id = payload.dictionaryPayload["id"] as? String,
       let uuidString = payload.dictionaryPayload["uuid"] as? String,
       let uuid = UUID(uuidString: uuidString),
       let handle = payload.dictionaryPayload["handle"] as? String
    {
        NSLog("CKD - pushRegistry uuidString: " + uuidString + "; id: " + id
+ "; handle: " + handle)
        providerDelegate?.reportIncomingCall(uuid: uuid, handle: handle,
completion: nil)
    }
}
```

12. Start audio call handler for intent extension

code

```
func handle(intent: INStartAudioCallIntent, completion: @escaping
(INStartAudioCallIntentResponse) -> Void) {
    let response: INStartAudioCallIntentResponse
    defer {
        completion(response)
    }

    // Ensure there is a person handle
    guard intent.contacts?.first?.personHandle != nil else {
        response = INStartAudioCallIntentResponse(code: .failure,
userActivity: nil)
        return
    }

    let userActivity = NSUserActivity(activityType: String(describing:
INStartAudioCallIntent.self))

    response = INStartAudioCallIntentResponse(code: .continueInApp,
userActivity: userActivity)
}
```