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Advanced Payment Solutions

Datatrans iOS Payment Library

Developer's Manual

Datatrans AG
Swiss E-Payment Competence
Kreuzbühlstrasse 26, 8008 Zürich, Switzerland
Tel. +41 44 256 81 91, Fax +41 44 256 81 98
www.datatrans.ch

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4.4.2	2020-11-25	Patrick Fompeyrine	Adapting to backend API change
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4.4.4	2020-12-08	Basil Achermann	TWINT alias request returns transaction Id
4.4.5	2021-01-22	Sebastian Kirsche	iOS 13/14 3D secure alias payment fix
4.4.6	2021-02-08	Sebastian Kirsche	Bugfixes for TWINT and PayPal
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4.6.2	2021-06-14	Sebastian Kirsche	Send expiration date in card alias request
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Table of Contents

1 Introduction

Datatrans AG, leading Swiss payment service provider, has developed Datatrans iOS Payment Library (DTiPL). DTiPL allows application developers to use Datatrans AG's credit card payment services natively on iPhones and iPads. This manual provides guidance on library installation, invocation, and other issues of importance to developers who wish to integrate DTiPL into their mobile applications.

1.1 Document Structure

Chapter 1 – Introduction
Explains this document's structure and content.

Chapter 2 – Overview
Gives an overview of the Datatrans iOS Payment Library.

Chapter 3 – Key Concepts
Explains key concepts of DTiPL and discusses some of the most common use cases.

Chapter 4 – API
Contains detailed API documentation.

Chapter 5 – Integration
Explains library installation and integration into Xcode.

1.2 Scope

This document provides information on using DTiPL to create mobile commerce apps on iPhone and iPad devices. As such, it is primarily aimed at developers of iOS applications.

It is assumed that the reader is already familiar with Datatrans AG's products and services. Also, knowledge of the Objective-C programming language, UIKit, as well as basic understanding of Xcode are required. Covering these topics is beyond the scope of this document.

1.3 Conventions

Throughout this document, the following styles are used:

Name
    Emphasized technical terms, organization/product names

Path
    File system paths, file names etc.

Class
    Class and method names

```
void codeSample() {
   code(); // sample code
}
```

    Code listings

<replaceable>
    Text meant to be replaced with data by the developer

2 Overview

2.1 Payment Methods

The library currently supports the following cards: VISA, Mastercard, Diners Club, American Express, JCB, UATP, Manor MyOne, Discover and Coop Supercard. Additionally, PayPal, PostFinance Card/ E-Finance, Swisscom Easypay, German Lastschriftverfahren (ELV), SwissBilling, Byjuno, TWINT, Reka, Apple Pay, SwissPass, POWERPAY, Paysafecard and Boncard (Lunch-Check) are supported.

2.2 Supported Platforms

Apple devices with iOS 11.0 or higher are supported. The library has been localized for English, French, German, Italian, and Dutch.

2.3 Library Tasks

The payment library is responsible for the following tasks:

- Validation: credit card number, expiration date and CVV are validated online.
- Authentication: if merchant and credit card are enrolled with 3-D Secure services, authentication ensures that the card is being used by its legitimate owner.
- Authorization: if amount and currency are valid and within the card's limit, the payment transaction is authorized and can be completed by the merchant once goods are being delivered (settlement process).

2.4 Payment Process

Figure 2-1 gives an overview of the shopping and payment process on the iOS device.

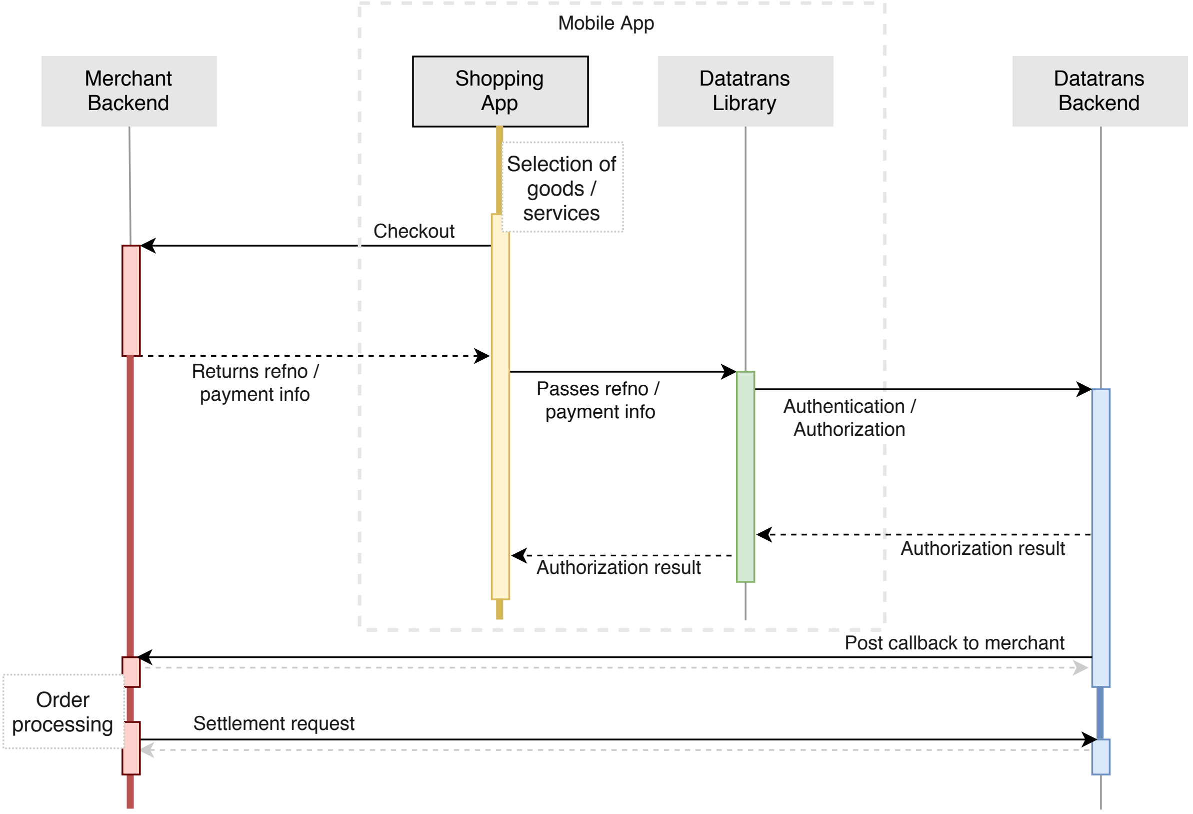


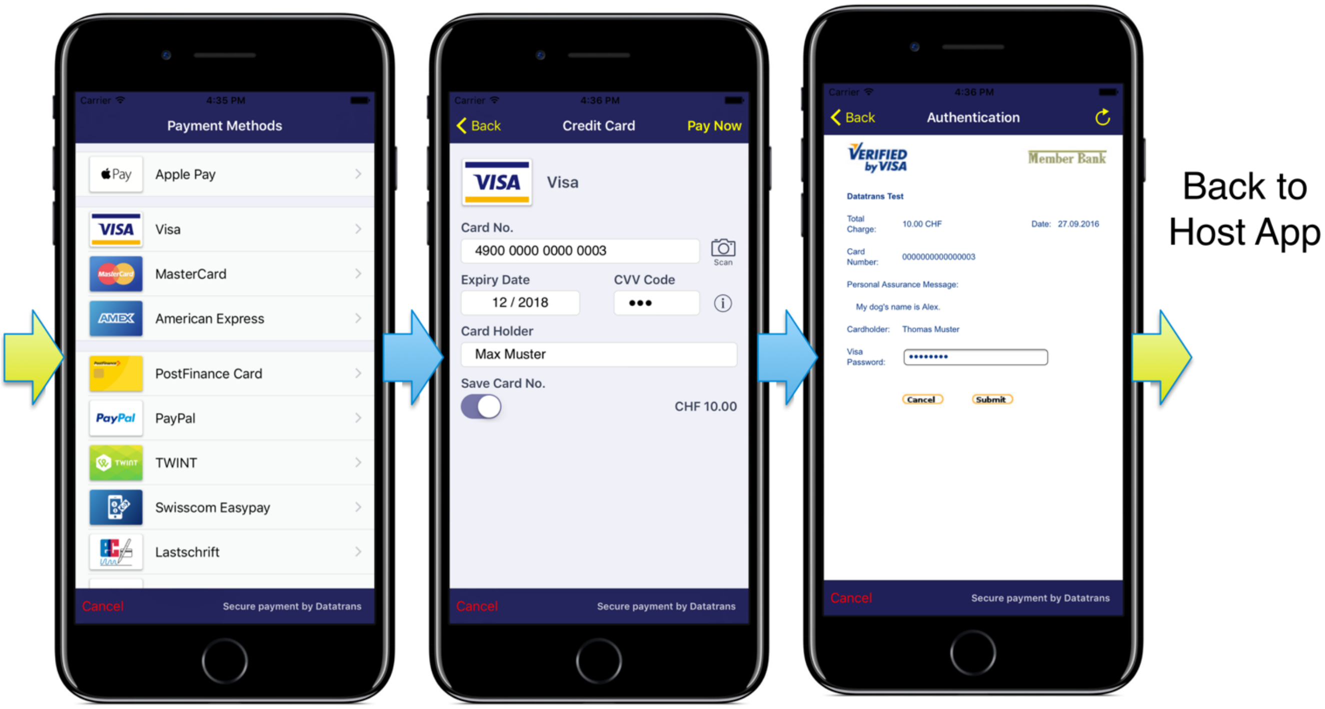
Figure 2-1: Payment process overview

The following steps occur during a successful session:

1. Host app: user selects goods/services to buy from a merchant. When the user proceeds to checkout, complete order information is sent to the merchant's server. In return, the app receives a transaction reference number (refno).
2. App passes payment information and refno to DTiPL.
3. In a series of network calls and user interactions, the library performs all necessary steps to authenticate the user (including 3-D Secure) and authorize the purchase.
4. Transaction is authorized in the background.
5. When authorization is completed, the merchant's server is informed by Datatrans AG's server. The previously supplied refno (see step 1) is used to identify and execute the order.
6. App control is given back to the main app component via callback.
7. Merchant server makes settlement request to Datatrans server.

2.5 User Interface

Figure 2-2 shows how the payment process is presented to the app user. The library can be invoked with or without payment method selection. If a credit card has been used for a previous order, an alias can be supplied to directly proceed to authentication and/or authorization steps (first two screens skipped). An app may also choose to implement its own payment method selection. In this case, the first screen is not displayed.



Card No. 4900 0000 0000 0003
Expiry Date 12 / 2018
CVV Code •••
Card Holder Max Muster
CHF 10.00

Datatrans Test
Total Charge: 10.00 CHF
Date: 27.09.2016
Card Number: 0000000000000003
Personal Assurance Message:
My dog's name is Alex.
Cardholder: Thomas Muster
Visa Password: ••••••••

Figure 2-2: Library screen shots

3 Key Concepts

3.1 DTPaymentController

The library's core component is the DTPaymentController class. It must be invoked on an existing UINavigationController instance. The payment controller pushes its own view controllers on top of existing ones. The navigation bar is used to navigate back and forth between library screens.

At the bottom of the screen, a toolbar with a cancel button is displayed. Previous toolbar/navigation bar items are kept and restored when the payment controller is dismissed.

When the payment process is finished, a delegate method is invoked to put the app back in control. At this point, the app may choose to push additional view controllers (e. g. thank you screen) or just dismiss the payment view controller.

This navigation-based design as well as customizable colors and fonts allow payment to be put into a bigger checkout process unobtrusively, and make it look like an integral part of the host application.

3.2 Library Invocation

Prior to library invocation, the host app must obtain a unique transaction reference number (refno) to identify the order. This is typically done by sending complete order information (basket contents, shipping information etc.) to the merchant's web server. The server generates a refno that is stored along with the order and sends it back to the mobile device. Optionally, the server also returns the HMAC-SHA256 signature for additional payment security.

The library is invoked with refno, merchant ID, and pricing information. Alternatively, the library can be invoked in hidden mode. In hidden mode, credit card information is also supplied by the app. The payment method selection screens are then skipped and authentication and/or authorization take place immediately.

Listing 3-1 shows an example of how DTiPL is invoked in standard mode.

```
DTPaymentRequest* paymentRequest = [[DTPaymentRequest alloc] init];
paymentRequest.amountInSmallestCurrencyUnit = 1000;
paymentRequest.currencyCode = @"CHF";
paymentRequest.localizedPriceDescription = @"CHF 10.-";
paymentRequest.merchantId = @"12345";
paymentRequest.refno = @"refno12345";

NSArray* paymentMethods = [DTPaymentController allAvailablePaymentMethods];

DTPaymentController* paymentController = [DTPaymentController
                                           paymentControllerWithDelegate:self
                                           paymentRequest:paymentRequest
                                           paymentMethods:paymentMethods];

// set some options here... (see next chapter)

[paymentController presentInNavigationController:self.navigationController
                    animated:YES];
```

Listing 3-1: DTPaymentController invocation in standard mode

Some notes:

- Payment methods can be adjusted to include only methods supported by the merchant, e.g. for merchants without Diner's Club contract, DTPaymentMethodDinersClub should not be present in the paymentMethods array.
- Default styles are used in this example, see section 3.6 for customized styles.
- No signature is used in this example.

3.3 Options

The payment controller can be configured with a number of options. For example, if the library is supposed to connect to the Datatrans test system instead of production servers, the testing option must be enabled. Listing 3.2 shows a sample configuration.

In this example:

- the library is invoked in test mode
- a back button is displayed in the upper left corner of the start screen
- the library shows the credit card holder field, but doesn't force the user to fill it in
- the library tries to acquire an alias for future PostFinance Card payments

See section 5.11 for a list of all options.

```
...
DTPaymentController* paymentController = [DTPaymentController
                                           paymentControllerWithDelegate:self
                                           paymentRequest:paymentRequest
                                           paymentMethods:paymentMethods];

paymentController.paymentOptions.testing = YES;
paymentController.paymentOptions.showBackButtonOnFirstScreen = YES;
paymentController.paymentOptions.cardHolder = DTPaymentCardHolderOptional;
paymentController.paymentOptions.returnsAlias = YES;

[paymentController presentInNavigationController:self.navigationController
                    animated:YES];
...
```

Listing 3-2: DTPaymentOptions example

3.4 App Callback Notification

The app must register a DTPaymentControllerDelegate delegate with the payment controller. The delegate is notified when payment is finished (success, error, or user cancellation).

After successful payment, the app can retrieve payment method information from the payment controller. This information can be stored for future payments in hidden mode.

Aliases for future/recurring payments are returned if option returnsAlias is enabled. For credit card aliases, additional return options exist, which can be configured with option returnsCreditCard.

Listing 3-3 contains a delegate notification code sample. Please note:

- It is impossible to securely store credit card information on the device or server without prompting the user for his or her password every time. However, considerable effort is necessary to access data on an iPhone/iPad and even more so to understand how this data was stored on the device. It is therefore acceptable to store the alias in encrypted form on the iOS device if the user gives permission to do so.

- In the example, the payment controller is simply dismissed, meaning that the screen before DTiPL invocation reappears. Typically, the app would push yet another screen (success screen) on top of the last view controller and then remove everything using [controller.naviationController popToRootViewControllerAnimated:YES] or pop to some other view, i.e. last view before the checkout (not payment) process.

```
- (void)paymentControllerDidFinish:(DTPaymentController *)controller {
   if (controller.recurringPaymentMethod != nil) {
      DTRecurringPaymentMethod* recurring = controller.recurringPaymentMethod;
      // store recurring payment details securely on server...
      NSString* alias = recurring.alias;
      if ([recurring isKindOfClass:DTCreditCard.class]) {
         DTCreditCard* cc = (DTCreditCard *)recurring;
         NSString* holder = cc.cardHolder;
         NSString* maskedCC = cc.maskedCC;
         //...
      } else if ([recurring isKindOfClass:DTPostFinanceCard.class]) {
         DTPostFinanceCard * pfc = (DTPostFinanceCard *)recurring;
         NSString* maskedCC = pfc.maskedCC;
         //...
      } else if ([recurring isKindOfClass:DTPayPal.class]) {
         DTPayPal* pp = (DTPayPal *)recurring;
         NSString* email = pp.email;
         //...
      }

      // or serialize the payment method and store locally...
      NSData* data = [recurring data];
      // store data encrypted on device (app responsible for encryption)
      // Use [DTRecurringPaymentMethod recurringPaymentMethodWithData:data]
      // to deserialize.
   }
   [controller dismissAnimated:YES];
}
```

Listing 3-3: Delegate notification on success

3.5 Merchant Notification

On successful authorization, Datatrans AG's authorization server invokes the merchant's postURL as defined by field URL Post in Datatrans Web Admin. Among other information, fields shown in Listing 3-4 are posted as form post or XML post. The merchant's web server retrieves payment information previously stored with the same refno and matches currency code and amount. It then executes the order and performs transaction settlement with Datatrans using the returned uppTransactionId value.

For additional information, please refer to the online documentation.

```
amount=1000
currency=CHF
pmethod=VIS
refno=refno12345
uppTransactionId=100916141012915292
acqAuthorizationCode=982889
authorizationCode=915285337
responseCode=01

// if available
aliasCC=70323122544331174
expy=21
expm=12
```

Listing 3-4: postURL fields

3.6 UI Customization

Many colors and fonts used by payment views are customizable. For this purpose, a DTVisualStyle object can be set on the payment controller as shown in Listing 3-5. In this example, only the background color is set. For a conclusive list of display options, see API section 5.12.

```
DTPaymentController* paymentController = [DTPaymentController
                                          paymentControllerWithDelegate:self
                                          paymentRequest:paymentRequest
                                          paymentMethods:paymentMethods];

DTVisualStyle* style = [DTVisualStyle defaultStyle];
style.backgroundColor = [UIColor blackColor];

paymentController.visualStyle = style;
```

Listing 3-5: Applying custom style

Note that DTVisualStyle does not cover navigation bar color and toolbar color. These colors must be set on the app's UINavigationController directly or controlled with UIAppearance.

3.6.1 Dark mode

The library supports light and dark mode using adaptive UIColors introduced with iOS 13 (see Apple's official documentation[1]). It is also possible to change just the color for one style. This can be done by calling colorWithDTLightStyleColor or colorWithDTDarkStyleColor on the UIColor set on the DTVisualStyle. Check Listing 3-6 for an example.

```
style.backgroundColor =
        [style.backgroundColor colorWithDTDarkStyleColor:[UIColor whiteColor]];
```

Listing 3-6: Applying a custom color on the dark style only

[1] https://developer.apple.com/documentation/appkit/supporting_dark_mode_in_your_interface

3.7 Hidden mode payments

In hidden mode, no payment selection takes place in the library. The app has to provide a recurring payment method (alias) from a previous transaction or payment method registration (see section 3.8), or complete card data as entered into the app's own payment selection screen. Note that for security reasons, **card number and CVV must not be stored by the app under any circumstances**! If no payment can take place at the moment of data entry, credit card data has to be discarded, or, at the very least, an alias has to be created. Listing 3-7 shows an invocation of the payment controller with a recurring payment method.

```
// aliasPaymentMethod from previous transaction
DTRecurringPaymentMethod* aliasPaymentMethod = ...;

DTPaymentController* pc;
pc = [DTPaymentController paymentControllerWithDelegate:self
                                         paymentRequest:paymentRequest
                                 recurringPaymentMethod:aliasPaymentMethod];
[pc presentInNavigationController: navigationController animated:YES];
```

Listing 3-7: Recurring payment in hidden mode

A MyOne sample payment in hidden mode with raw card data is shown in Listing 3-8.

```
DTCardPaymentMethod* card = [[DTCardPaymentMethod alloc]
                              initWithPaymentMethod:DTPaymentMethodMyOne
                                             number:@"6004520200668702072"
                                           expMonth:12
                                            expYear:2021
                                                cvv:@"123"
                                             holder: @"Max Muster"];
DTPaymentController* pc;
pc = [DTPaymentController paymentControllerWithDelegate:self
                                         paymentRequest:paymentRequest
                                      cardPaymentMethod:card];
[pc presentInNavigationController:self.navigationController animated:YES];
```

Listing 3-8: Hidden mode payment with card data

3.8 Payment method registration (alias request)

The library supports creating credit card, PostFinance Card, Easypay, Reka, ELV, TWINT, SwissPass, POWERPAY, Boncard (Lunch-Check) and Byjuno alias numbers without making a payment. Aliases are allowed to be stored by the app and can be used for future hidden mode payments.

When creating an alias for cards, the app can either use its own card input screen and pass the data to the library or let the library manage payment method input. For all other payment methods, the library manages the registration and any user input.

3.8.1 Payment method selection/input by library (standard mode)

In this mode, the library's input screens are used to gather data for alias generation. DTPaymentOptions and DTVisualStyle options can be used to control test/production mode and cell styling. Credit card data is automatically verified in this mode with a test authorization of a small amount.

Listing 3-9 shows creation of a credit card alias in testing mode. The app is notified when the alias is available, see Listing 3-10.

```
NSArray* paymentMethods = [NSArray arrayWithObjects:DTPaymentMethodVisa,
                           DTPaymentMethodMyOne, DTPostFinanceCard, nil];

DTAliasRequest* ar = [[DTAliasRequest alloc] initWithMerchantId:merchantId
                                             currencyCode:currencyCode
                                             paymentMethods:paymentMethods];

DTPaymentController* pc = [DTPaymentController
                          paymentControllerWithDelegate:self aliasRequest:ar];

 pc.paymentOptions.testing = YES;
 pc.paymentOptions.showBackButtonOnFirstScreen = YES;
[pc presentInNavigationController:self.navigationController animated:YES];
```

Listing 3-9: Creation of credit card alias in standard mode

```
- (void)paymentControllerDidFinish:(DTPaymentController *)controller {
      // the same as with regular payments, alias payment method stored in
      // controller.recurringPaymentMethod property
}
```

Listing 3-10: Alias notification

3.8.2 Card input by app (hidden mode)

In this mode, the library is invoked with the necessary credit card data. The library generates an alias and verifies the given credit card with a test authorization transaction.

Listing 3-11 shows creation of a credit card alias in testing mode. The app is notified as usual via the delegate. Note that this example will fail because the given credit card data is not valid.

```
DTCardPaymentMethod* card = [[DTCardPaymentMethod alloc]
     initWithPaymentMethod:DTPaymentMethodVisa number:@"4444333322221111"
                  expMonth:12 expYear:2021 cvv:@"123" holder:nil];

DTAliasRequest* ar = [[DTAliasRequest alloc] initWithMerchantId:merchantId
     currencyCode:currencyCode cardPaymentMethod:card];

DTPaymentController* pc = [DTPaymentController
                          paymentControllerWithDelegate:self aliasRequest:ar];

 pc.paymentOptions.testing = YES;
[pc presentInNavigationController:self.navigationController animated:YES];
```

Listing 3-11: Creation of credit card alias in hidden mode

3.8.3 (De-)Serialization to/from JSON of recurring payment method

Alias data returned by the library after a successful transaction or registration needs to be stored for future payments. To facilitate this process and to have a platform independent solution, the library can serialize the DTRecurringPaymentMethod object to a JSON string which, for example, can then be sent to a server or stored locally. If stored locally on the device, appropriate encryption techniques should be applied to protect the data from unauthorized access.

As soon as the user wants to pay with the alias, the previously saved JSON can be deserialized to a DTRecurringPaymentMethod. See Listing 3-12 for an example implementation.

```
NSString* json = [recurringPaymentMethod JSON];
// save the JSON string, e.g. on a server
// ...
// User decides to pay with the alias, retrieve JSON
paymentMethod = [DTRecurringPaymentMethod recurringPaymentMethodWithJSON:json];
```

Listing 3-12: (De-)Serialization to/from JSON of a DTRecurringPaymentMethod

Important: Even if an app has its own credit card input dialog it *must never* store the original credit card number or CVV.

3.9 Deferred Authorization

Sometimes the payment amount is unknown when the user initiates a long-running business transaction. An example would be a check-in / check-out train journey. This can usually be done by server-to-server authorization once the amount is known using a payment method alias.

In case of Apple Pay, it is **not** possible to receive an alias for future server-to-server transactions. However, it is possible to obtain a partially authorized transactionId for deferred completion. This process is shown in Figure 3-1, again using a check-in and check-out example.

To achieve this:

- Perform regular Apple Pay payment with option skipAuthorizationCompletion=YES
- Create an Apple Pay summary item using a non-final amount (must be greater than 0) and type PKPaymentSummaryItemTypePending (see Listing 3-13)
- As soon as the amount is known, you can either authorize the payment server-to-server (authorizationSplit) or invoke the library again

See Listing 3-14 for an example implementation.

```
PKPaymentSummaryItem* summaryItem = [[PKPaymentSummaryItem alloc] init];
summaryItem.label = @"Merchant name";
summaryItem.type = PKPaymentSummaryItemTypePending;
summaryItem.amount = [NSDecimalNumber decimalNumberWithString:@"1"];
options.applePayConfig.request.paymentSummaryItems = @[summaryItem];
```

Listing 3-13: Summary items for deferred Apple Pay authorization

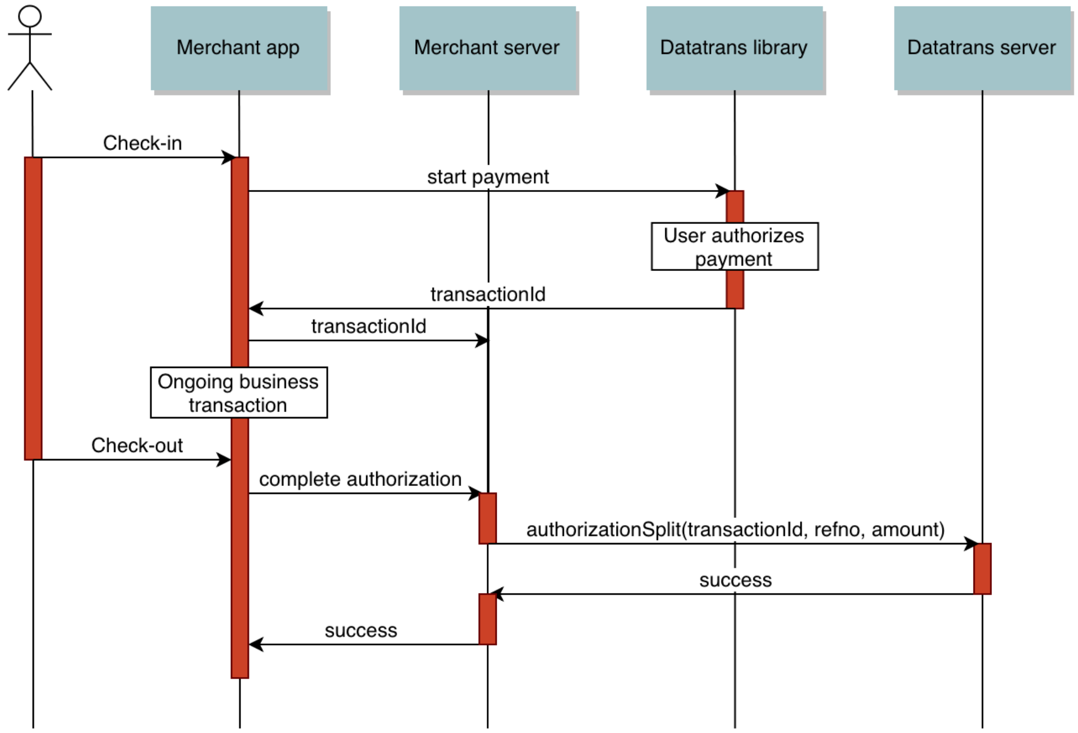


Figure 3-1: Flow of a payment with deferred authorization (Apple Pay)

```
 // Select / register a payment method
 DTPaymentController* pc = [DTPaymentController
                           paymentControllerWithDelegate:self aliasRequest:ar];

 // -----

// Check-in: in case of Apple Pay get a transactionId for future completion
 DTPaymentController* pc;
 pc = [DTPaymentController paymentControllerWithDelegate:self
                                         paymentRequest:paymentRequest
                                    paymentMethods:@[DTPaymentMethodApplePay]];
 pc.paymentOptions.skipAuthorizationCompletion = YES; // summary items etc.
 [pc presentInNavigationController:self.navigationController animated:YES];
 //...
- (void)paymentControllerDidFinish:(DTPaymentController *)controller {
    // get the transaction id and store for actual payment
}

 // -----

// Check-out:
 // use transaction id, refno and final amount for the actual authorization
 // (server-to-server, or paymentControllerWithDelegate:authorizationRequest:)
```

Listing 3-14: Example implementation of deferred payment authorization (Apple Pay)

3.10 Error Handling

There are three kinds of errors:

- Technical errors: network interruption, memory or I/O errors
- Business errors: 3-D authentication failure, authorization failure

- Mistakes: typo or missing field

3.10.1 Technical Errors

The library is built with the policy that recoverable technical errors lead to non-fatal error messages. The user is lead to the previous screen and encouraged to try again.

3.10.2 Business Errors

The policy for business errors is that the payment process is aborted immediately. In these cases, the payment method identifier is set in the user info of the error that will be returned (key DTPaymentMethodKey). In addition, the user info holds an underlying error of type DTBusinessError that contains more information.

Note: The DTPaymentController has to be dismissed and the payment restarted in case of a business error.

```
NSString* identifier = [error.userInfo objectForKey:DTPaymentMethodKey];
if ([identifier isEqualToString:DTPaymentMethodVisa]) {
    // handle VISA payment error
}

DTBusinessError* underlyingError =
            (DTBusinessError *)[error.userInfo objectForKey:NSUnderlyingErrorKey];
if (underlyingError. acquirerErrorCode != nil) {
   // use acquirer error code for detailed/specific error handling
}
[controller dismissAnimated:YES];
```

Listing 3-15: Get payment method and underlying error from NSError

3.10.3 Mistakes

Mistakes are caught by the app if easily possible (plausibility checks). The user is given the possibility to make a correction. Everything else is treated as business error.

3.11 Accessibility

The library supports Apple's *Accessibility* feature for people with disabilities and for automated UI testing. Controls have their accessibility label set to their title text. Credit card input fields are labeled as seen in Table 3-1.

Accessibility label	Description
Credit Card Number	Credit card number text field (UITextField)
Expiry Date	Credit card expiration date text field
CVV Code	CVV2/CVC2 code text field
Card Holder	Credit card holder text field
Save Credit Card	Save credit card number switch (UISwitch)

Table 3-12: Accessibility labels

3.12 New JSON API Flow

In the new JSON API flow, a payment or alias registration is initialized using the new Datatrans backend API (https://api-reference.datatrans.ch/json/#tag/v1transactions). In order to invoke the library, a mobileToken has to be requested in the initialize transaction API call. This is done by adding **returnMobileToken=true** on the OptionRequest. This token can then be used to invoke the DTPaymentController without providing any payment details.

Note: A new mobile token has to be requested for every invocation of the library.

```
 NSString* mobileToken = [self initializePaymentInBackend];

 DTPaymentController* paymentController = [DTPaymentController
                                           paymentControllerWithDelegate:self
                                           mobileToken:mobileToken];

// set some options here...

[paymentController presentInNavigationController:self.navigationController
                   animated:YES];
```

Listing 3-16: Invoking the library using the new API flow

Moreover, various parameters from the DTPaymentOptions object can be added to the initial request to the Datatrans backend. Refer to the online documentation to see which ones are supported.

3.12.1 Credit card selection/input by app (hidden mode)

If the credit card selection and input is handled by the merchant app, the details **must not** be sent in the initial request to the Datatrans backend. Instead, the credit card information should be passed to the DTPaymentController.

```
 NSString* mobileToken = [self initializePaymentInBackend];

 DTCardPaymentMethod* card = [[DTCardPaymentMethod alloc]
      initWithPaymentMethod:DTPaymentMethodVisa number:@"4444333322221111"
                   expMonth:12 expYear:2021 cvv:@"123" holder:nil];

DTPaymentController* pc = [DTPaymentController
                          paymentControllerWithDelegate:self
                                           mobileToken:mobileToken
                                     cardPaymentMethod:card];

 pc.paymentOptions.testing = YES;
 [pc presentInNavigationController:self.navigationController animated:YES];
```

Listing 3-17: Hidden mode credit card payment using the new API flow

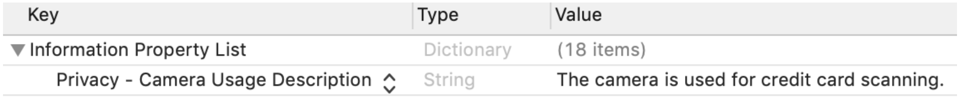
4 Mandatory settings

For some payment methods a number of configuration steps are required, otherwise payment transactions will fail.

4.1 Credit Cards

4.1.1 NSCameraUsageDescription

Unless your app disables credit card scanning, you have to add the NSCameraUsageDescription to the app's info.plist. Refer to Figure 4-2 on how to achieve this. This step is not necessary if your app already uses the camera.



Key	Type	Value
▼ Information Property List	Dictionary	(18 items)
Privacy - Camera Usage Description	String	The camera is used for credit card scanning.

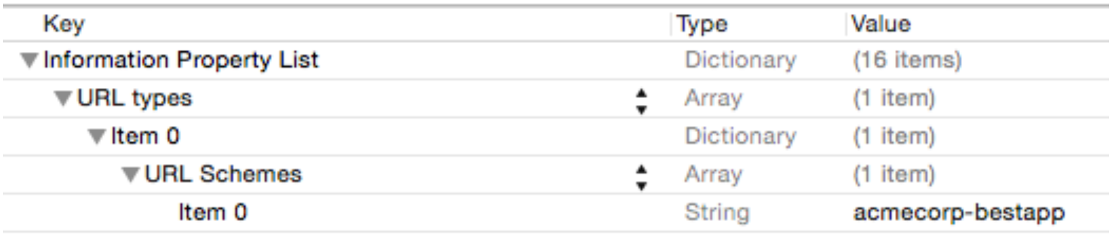
Figure 4-1: Mandatory NSCameraUsageDescription setting

4.2 TWINT

4.2.1 Define app callback scheme

The TWINT app on the user's device has to call back into the shopping app during TWINT transactions. In order to do this, a URL scheme has to be defined in the app's info.plist (Figure 4-2) ***and*** configured via DTPaymentOptions.appCallbackScheme (Listing 4-1).

Please note that there is no need to define a new scheme just for TWINT. Just set the appCallbackScheme option if you already have a scheme defined. However, keep in mind that the scheme must be unique to the shopping app. Do not use actual protocols or file types such as "http", "mailto", "pdf" etc., generic names like "ticket", and especially do not use "twint".



Key	Type	Value
▼ Information Property List	Dictionary	(16 items)
▼ URL types	Array	(1 item)
▼ Item 0	Dictionary	(1 item)
▼ URL Schemes	Array	(1 item)
Item 0	String	acmecorp-bestapp

Figure 4-2: Application URL scheme definition

```
paymentController.paymentOptions.appCallbackScheme = @"acmecorp-bestapp";
```

Listing 4-1: TWINT URL scheme option

4.2.2 Register TWINT schemes

In order to invoke TWINT apps on the user's device, your app needs to register all known TWINT schemes. To do this, the entries in Listing 4-2 need to be added to the app's info.plist file (LSApplicationQueriesSchemes).

If this is neglected, the library does not find any installed TWINT app, let alone open them.

```
	<key>LSApplicationQueriesSchemes</key>
	<array>
		<string>twint-issuer1</string>
		<string>twint-issuer2</string>
		<string>twint-issuer3</string>
		<string>twint-issuer4</string>
		<string>twint-issuer5</string>
		<string>twint-issuer6</string>
		<string>twint-issuer7</string>
		<string>twint-issuer8</string>
		<string>twint-issuer9</string>
		<string>twint-issuer10</string>
		<string>twint-issuer11</string>
		<string>twint-issuer12</string>
		<string>twint-issuer13</string>
		<string>twint-issuer14</string>
		<string>twint-issuer15</string>
		<string>twint-issuer16</string>
		<string>twint-issuer17</string>
		<string>twint-issuer18</string>
		<string>twint-issuer19</string>
		<string>twint-issuer20</string>
		<string>twint-issuer21</string>
		<string>twint-issuer22</string>
		<string>twint-issuer23</string>
		<string>twint-issuer24</string>
		<string>twint-issuer25</string>
		<string>twint-issuer26</string>
		<string>twint-issuer27</string>
		<string>twint-issuer28</string>
		<string>twint-issuer29</string>
		<string>twint-issuer30</string>
		<string>twint-issuer31</string>
		<string>twint-issuer32</string>
		<string>twint-issuer33</string>
		<string>twint-issuer34</string>
		<string>twint-issuer35</string>
		<string>twint-issuer36</string>
		<string>twint-issuer37</string>
		<string>twint-issuer38</string>
		<string>twint-issuer39</string>
		<string>twint-issuer40</string>
		<string>twint-issuer41</string>
		<string>twint-issuer42</string>
		<string>twint-issuer43</string>
		<string>twint-issuer44</string>
		<string>twint-issuer45</string>
		<string>twint-issuer46</string>
		<string>twint-issuer47</string>
		<string>twint-issuer48</string>
		<string>twint-issuer49</string>
		<string>twint-issuer50</string>
	</array>
```

Listing 4-2: Mandatory TWINT schemes to be added to info.plist

4.3 PostFinance Card

PostFinance Card supports two ways to authenticate the user: in a web view which is handled by the library or by switching to the PostFinance app. For the latter, following settings are needed.

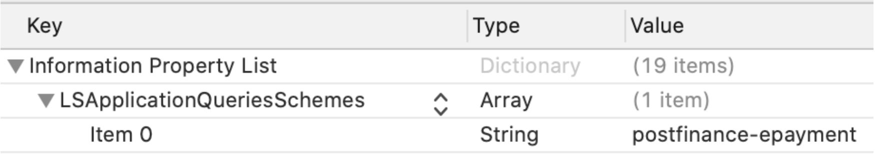
4.3.1 Define app callback scheme

If you have not already worked through section 4.2.1 of this document, please do so as the setting is the same for PostFinance Card.

4.3.2 Register PostFinance scheme

In order to invoke the PostFinance app on the user's device, your app needs to register the PostFinance scheme. To do this, the entry in Figure 4-3 needs to be added to the app's info.plist file.

If this is neglected, the library does not find an installed PostFinance app, let alone open it.



Key	Type	Value
▼ Information Property List	Dictionary	(19 items)
▼ LSApplicationQueriesSchemes	Array	(1 item)
Item 0	String	postfinance-epayment

Figure 4-3: Mandatory PostFinance scheme to be added to info.plist

4.4 SwissBilling

For SwissBilling transactions, a DTCustomer (see section 5.22) has to be created and configured via DTPaymentOptions.customer. In addition, an optional DTSwissBillingPaymentInfo (see section 5.16) can be initialized and set via DTPaymentOptions.swissBillingPaymentInfo. An example implementation for both configurations is given in Listing 4-3.

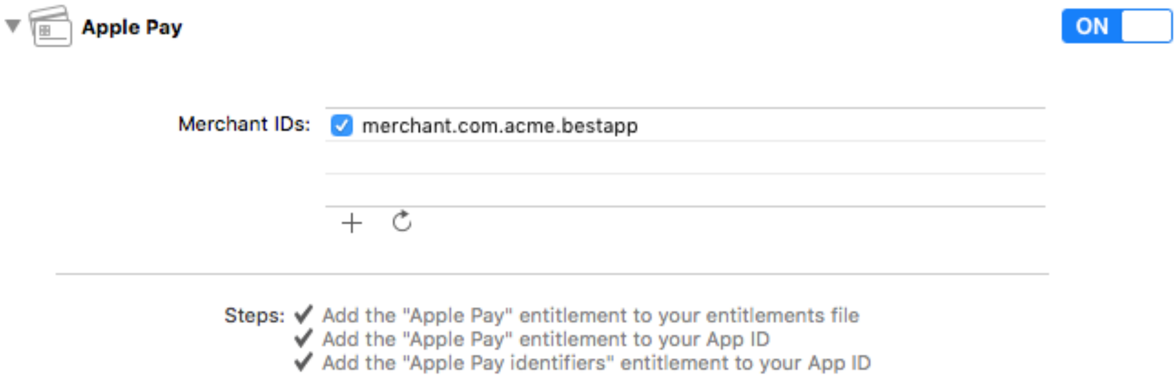
```
DTAddress* address = [[DTAddress alloc] initWithFirstName:@"Good"
                                                 lastName:@"Customer"
                                                   street:@"Limmatquai 55"
                                                  zipCode:@"8001"];

address.city = @"Zürich";
address.countryCode = @"CH";

DTCustomer* customer = [[DTCustomer alloc] init];
customer.address = address;
customer.phone = @"+41584333034";
customer.mailAddress = @"eshop@example.com";
customer.birthDate = [[DTDate alloc] initWithYear:1969 month:9 day:19];
paymentController.paymentOptions.customer = customer;

DTSwissBillingPaymentInfo* info = [[DTSwissBillingPaymentInfo alloc] init];
// additional configuration of SwissBillingPaymentInfo
paymentController.paymentOptions.swissBillingPaymentInfo = info; // optional
```

Listing 4-3: SwissBilling payment

4.5 Apple Pay

4.5.1 Merchant ID

In order to use Apple Pay in your App you need to register a merchant ID in your developer account's Certificates, Identifiers & Profiles section. Your app then needs to be configured with Apple Pay capabilities (Target -> Capabilities -> Apple Pay) and entitlements. Figure 4-4 shows what the configuration should look like in Xcode.



▼ Apple Pay ON

Merchant IDs: ☑ merchant.com.acme.bestapp

Steps:
✓ Add the "Apple Pay" entitlement to your entitlements file
✓ Add the "Apple Pay" entitlement to your App ID
✓ Add the "Apple Pay identifiers" entitlement to your App ID

Figure 4-4: Apple Pay Capability

4.5.2 Get a CSR

A Certificate Signing Request (CSR) is needed to create a payment processing certificate for your merchant ID on developer.apple.com. The CSR can be downloaded in the Datatrans webadmin tool under *UPP Administration* > *UPP Security* > *Apple Pay Key and certificate* ("Download CSR File").

After creating the payment processing certificate, you need to upload the certificate in the Datatrans webadmin tool ("Import new certificate").

4.5.3 Supported Networks (Cards)

Apple Pay must be configured with the list of card types supported by the merchant's acquirer, usually at least Visa and Mastercard. If you would like to support other cards, e.g. American Express, please check with Datatrans support (support@datatrans.ch) or ask your acquirer.

Card types are configured via supportedNetworks parameter as an array of PKPaymentNetwork string constants (see code example below).

4.5.4 Regular Payment

There are several possibilities to use the library as described in this and the following sections.

If you want to use Apple Pay just like any other payment method, you only have to provide your registered merchant ID and supported card types as shown in Listing 4-4 and add DTPaymentMethodApplePay to the list of payment methods you want to support.

Note that the library determines whether Apple Pay is present and hides that payment method if the device is not configured for Apple Pay.

```
DTPaymentController* controller = [DTPaymentController ...

NSArray* supportedNetworks = @[PKPaymentNetworkVisa, PKPaymentNetworkMasterCard];
DTApplePayConfig* ap = [[DTApplePayConfig alloc]
                         initWithMerchantIdentifier:@"merchant.com.acme.bestapp"
                         supportedNetworks:supportedNetworks];
controller.paymentOptions.applePayConfig = ap;
```

Listing 4-4: Configure Apple Pay for payments

4.5.5 Configuration Options

Apple Pay can be configured to request additional information from users, such as the shipping address or shipping type. It can also be set up to show more information than just the payment total. These settings are configured via PKPaymentRequest object (see official Apple Pay documentation for more information). The request object can be obtained and configured as shown in Listing 4-5. In this example, users are required to enter their postal and email addresses.

Note that user input must be handled by the invoking app via delegation. See next section for more information.

```
DTApplePayConfig* ap = [[DTApplePayConfig alloc] ... // see regular payment
ap.request.requiredShippingAddressFields = PKAddressFieldPostalAddress |
                                           PKAddressFieldEmail;
controller.paymentOptions.applePayConfig = ap;
```

Listing 4-5: More Apple Pay configuration options

4.5.6 Interactive Payment

If you want to have full control over the Apple Pay process, you can register a DTApplePayDelegate object. This allows you to respond interactively to a user's actions. For example, you can calculate a new payment total based on the selected payment method or you can add an additional fee for the selected shipping method.

In the example in Listing 4-6 two shipping methods are configured and the delegate set.

```
DTApplePayConfig* ap = [[DTApplePayConfig alloc] ... // see regular payment

PKShippingMethod* sm1 = [[PKShippingMethod alloc] init];
sm1.identifier = @"N";
sm1.label = @"Free shipping";
sm1.detail = @"Ships within 48 hours";
sm1.amount = [NSDecimalNumber decimalNumberWithString:@"0.00"];

PKShippingMethod* sm2 = [[PKShippingMethod alloc] init];
sm2.identifier = @"E";
sm2.label = @"Express delivery";
sm2.detail = @"Delivered within 24 hours";
sm2.amount = [NSDecimalNumber decimalNumberWithString:@"10.00"];

ap.request.shippingMethods = [NSArray arrayWithObjects:sm1, sm2, nil];
ap.delegate = self;

controller.paymentOptions.applePayConfig = ap;
```

Listing 4-6: Set the DTApplePayDelegate for interactive updates

The delegate's didSelectShippingMethod method is invoked when a user chooses or changes the shipping method. The new payment total (new summary items) can then be calculated based on the selected method (Listing 4-7).

```
- (void)paymentAuthorizationViewController:(PKPaymentAuthorizationViewController
      *)controller didSelectShippingMethod:(PKShippingMethod *)shippingMethod
                                completion:(void (^)(PKPaymentAuthorizationStatus,
         NSArray<PKPaymentSummaryItem *> *))completion {
     NSMutableArray* summaryItems = [NSMutableArray array];
     ... // create new summary items based on ‘shippingMethod’ and call completion
     completion(PKPaymentAuthorizationStatusSuccess, summaryItems);
}
```

Listing 4-7: Update summary items / payment total

DTApplePayDelegate's delegate methods are taken directly from Apple's PKPaymentAuthorizationViewControllerDelegate definition and behave in the exact same way. For more information, please consult the official Apple Pay documentation.

4.5.7 Apple Pay Button

If you want to use a stand-alone Apple Pay button in your app, please do so by following Apple's guidelines. Once the user has pressed the button, configure the payment library as described above and set Apple Pay as the sole accepted payment method (Listing 4-8). Apple Pay will then start directly without additional library screens.

```
NSArray* paymentMethods = [NSArray arrayWithObject:DTPaymentMethodApplePay];
DTPaymentController* c = [DTPaymentController paymentControllerWithDelegate:self
                                 paymentRequest:request paymentMethods:paymentMethods];
// additional Apple Pay configurations as explained above...
```

Listing 4-8: Direct invocation of Apple Pay

4.6 PayPal

To support PayPal payments, your app **must define** an app callback scheme and set the appCallbackScheme option as described in section 4.2.1 (the same scheme can be used for TWINT and PayPal).

4.7 Byjuno

For Byjuno transactions, a DTCustomer (see section 5.22) has to be created and configured via DTPaymentOptions.customer. In addition, an optional DTByjunoPaymentInfo (see section 5.23) can be initialized and set via DTPaymentOptions.byjunoPaymentInfo. An example implementation for both configurations is given in Listing 4-9.

```
DTAddress* address = [[DTAddress alloc] initWithFirstName:@"Mark"
                                                 lastName:@"Uber"
                                                   street:@"Amstelstrasse 11"
                                                  zipCode:@"4123"];
address.city = @"Allschwil";
address.countryCode = @"CH";

DTCustomer* customer = [[DTCustomer alloc] init];
customer.customerId = @"10067822";
customer.type = @"P";
customer.gender = @"female";
customer.address = address;
customer.birthDate = [[DTDate alloc] initWithYear:1986 month:5 day:14];
customer.language = @"DE";
customer.mailAddress = @"h.mustermann@intrum.com";
paymentController.paymentOptions.customer = customer;

DTByjunoPaymentInfo* byjunoInfo = [[DTByjunoPaymentInfo alloc] init];
byjunoInfo.subtype = @"INVOICE";
byjunoInfo.deviceFingerprintId = @"deviceFingerprintId-test";
paymentController.paymentOptions.byjunoPaymentInfo = byjunoInfo; // optional
```

Listing 4-9: Byjuno payment

4.8 SwissPass

For SwissPass transactions, there are four possible ways to configure the library:

- Doing nothing
- Provide a DTCustomer (see section 5.22)
- Provide a DTSwissPassPaymentInfo (see section 5.26)
- Provide both objects

The DTCustomer and DTSwissPassPaymentInfo can be set via DTPaymentOptions.customer or DTPaymentOptions.swissPassPaymentInfo respectively. Keep in mind that the user needs to put in the information that are not already provided.

If a DTCustomer is given, then the contents of the object **must** match the details stored in the given SwissPass account. Example configurations are shown in Listing 4-10.

```
DTAddress* address = [[DTAddress alloc]
                           initWithFirstName:@"Anna"
                                    lastName:@"Deiss"
                                      street:@"SBB Personenverkehr - VS-VE-VS"
                                     zipCode:@"3000"];
DTCustomer* customer = [[DTCustomer alloc] init];
customer.address = address;
customer.birthDate = [[DTDate alloc] initWithYear:1980 month:1 day:1];
customer.mailAddress = @"anna.deiss@mail.com"; // optional
customer.phone = @"+41 79 555 44 33"; // optional
paymentController.paymentOptions.customer = customer;

DTSwissPassPaymentInfo* swissPassInfo =
     [[DTSwissPassPaymentInfo alloc] initWithSwissPassCardNumber:@"S48681516807"
                                                swissPassZipCode:@"3000"];
paymentController.paymentOptions.swissPassPaymentInfo = swissPassInfo;
```

Listing 4-10: SwissPass payment

4.9 POWERPAY

For POWERPAY transactions, a DTCustomer (see section 5.22) has to be created and configured via DTPaymentOptions.customer. In addition to the default parameters, this object must contain a gender and an address with a city. The date of birth can be omitted but the user will be prompted to enter it manually in that case.

```
DTAddress* address = [[DTAddress alloc]
                           initWithFirstName:@"Max"
                                    lastName:@"Muster"
                                      street:@"via streccione 2"
                                     zipCode:@"6900"];
address.city = @"Lugano"; // required

DTCustomer* customer = [[DTCustomer alloc] init];
customer.address = address;
customer.gender = @"male"; // required
customer.birthDate = [[DTDate alloc] initWithYear:1980 month:1 day:1]; // optional
paymentController.paymentOptions.customer = customer;
```

Listing 4-11: POWERPAY payment

4.10 ELV / Lastschrift

If a customer address is required for ELV (contact Datatrans support if you are unsure), a DTCustomer object has to be created and configured via DTPaymentOptions.customer, see Listing 4-12.

```
DTAddress* address = [[DTAddress alloc]
                           initWithFirstName:@"Max"
                                    lastName:@"Muster"
                                      street:@"Gutstrasse 12"
                                     zipCode:@"70197"];
address.countryCode = @"DE";
address.city = @"Stuttgart";

DTCustomer* customer = [[DTCustomer alloc] init];
customer.address = address;
customer.gender = @"male";
customer.birthDate = [[DTDate alloc] initWithYear:1980 month:1 day:1];
customer.mailAddress = @"max.muster@mail.de";
paymentController.paymentOptions.customer = customer;
```

Listing 4-12: ELV payment

4.11 Paysafecard

For Paysafecard transactions, a unique ID has to be set via DTPaymentOptions.paysafecardMerchantClientId for identifying a customer. As an example, this could be the unique ID of your customer as registered within your database. If you are using the e-mail address or any other personal information, please encrypt it.

```
paymentController.paymentOptions.paysafecardMerchantClientId = id;
```

Listing 4-13: Paysafecard payment

5 API

This chapter contains the library class reference. Each Objective-C class is presented in its own section.

Figure 4-5-1 gives an overview of the library's classes.

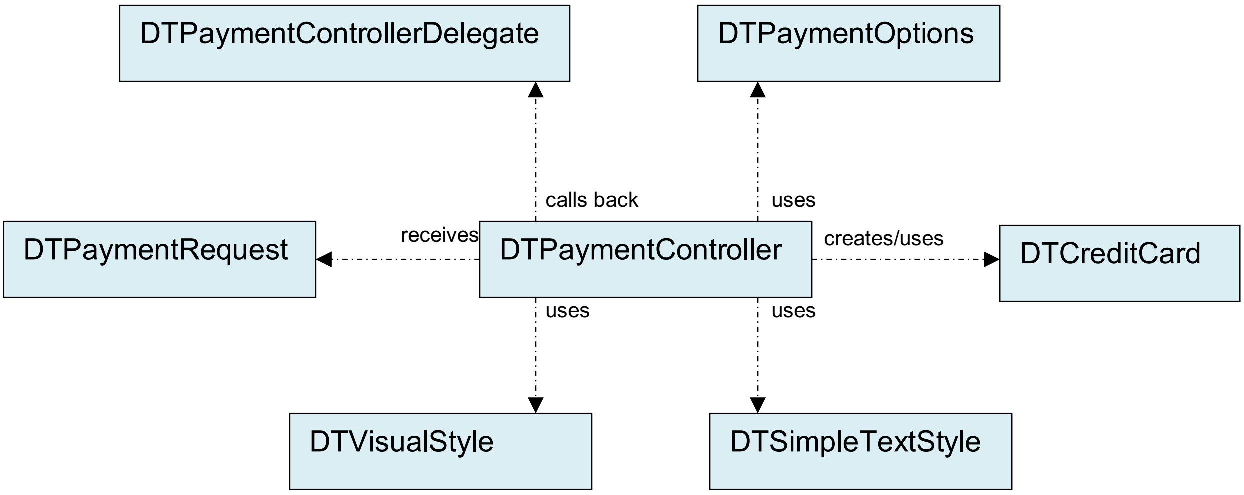


Figure 4-5-1: Library classes

5.1 DTPaymentController

The DTPaymentController class is the library's main entry point, see sections 3.1 and 3.2. The payment controller displays credit card selection and authentication screens and does all the necessary network calls in the background. The payment controller must be invoked on an existing UINavigationController instance.

5.1.1 Class Methods

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                 paymentRequest:(DTPaymentRequest *)request
                 paymentMethods:(NSArray *)methods
```

Creates and returns a new DTPaymentController object. The controller will display a payment method selection screen with the given payment methods.

Parameters

delegate

The delegate to receive success/error/cancellation notification.

request

The object containing payment information such as merchant ID, currency, amount, refno etc.

methods

An array of payment method string constants, i.e. one or more of:
DTPaymentMethodVisa, DTPaymentMethodMasterCard,
DTPaymentMethodDinersClub, DTPaymentMethodAmericanExpress, etc.

If only one method is supplied, the payment selection screen is skipped. This allows for external payment method selection.

Payment methods can be visually grouped. To achieve this, add lists of payment methods to the methods array. Only one level of grouping is supported, see Listing 5-1 for example.

```
NSArray* creditCards = [NSArray arrayWithObjects:DTPaymentMethodVisa,
                       DTPaymentMethodMasterCard,
                       DTPaymentMethodAmericanExpress,
                       DTPaymentMethodDinersClub,
                       nil];
NSArray* paypal = [NSArray arrayWithObjects:DTPaymentMethodPayPal, nil];
NSArray* paymentMethods = [NSArray arrayWithObjects:creditCards, paypal, nil];
```

Listing 5-1: Grouping payment methods

Returns

a newly created and initialized DTPaymentController object in standard mode.

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                        mobileToken:(NSString *)mobileToken;
```

Creates and returns a new DTPaymentController object for the new JSON API flow.

Parameters

delegate

The delegate to receive success/error/cancellation notification.

mobileToken

Mobile token which is returned by the Datatrans backend after calling the initialize transaction API call.

Returns

a newly created and initialized DTPaymentController object for the JSON API flow.

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                paymentRequest:(DTPaymentRequest *)request
                cardPaymentMethod:(DTCardPaymentMethod *)cardPaymentMethod;
```

Creates and returns a new DTPaymentController object in hidden mode with card information entered by the user. The controller will not display payment method selection/entry screens and proceed to authentication/authorization directly.

Parameters

delegate

The delegate to receive success/error/cancellation notification.

request

The object containing payment information such as merchant ID, currency, amount, refno etc.

cardPaymentMethod

Raw credit card information entered by the user in a previous step.

Returns

a newly created and initialized DTPaymentController object in hidden mode.

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                        mobileToken:(NSString *)mobileToken
                  cardPaymentMethod:(DTCardPaymentMethod *)cardPaymentMethod;
```

Creates and returns a new DTPaymentController object for the new JSON API flow.

Parameters

delegate

The delegate to receive success/error/cancellation notification.

mobileToken

Mobile token which is returned by the Datatrans backend after calling the initialize transaction API call.

cardPaymentMethod

Raw credit card information entered by the user in a previous step.

Returns

a newly created and initialized DTPaymentController object for the hidden mode JSON API flow.

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                paymentRequest:(DTPaymentRequest *)request
                recurringPaymentMethod:(DTRecurringPaymentMethod *)recurringPM;
```

Creates and returns a new DTPaymentController object in hidden mode. The controller will not display payment method selection/entry screens and proceed to authentication/authorization directly.

Parameters

delegate

The delegate to receive success/error/cancellation notification.

request

The object containing payment information such as merchant ID, currency, amount, refno etc.

recurringPaymentMethod

Recurring payment information previously obtained from the controller after a successful transaction, see sections 3.4 and 5.5.

Returns

a newly created and initialized DTPaymentController object in hidden mode.

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                aliasRequest:(DTAliasRequest *)aliasRequest
```

Creates and returns a new DTPaymentController object for alias generation only (no payment).

Parameters

delegate
The delegate to receive success/error/cancellation notification.

aliasRequest
Alias request for standard/hidden mode alias generation.

Returns

a newly created and initialized DTPaymentController.

```
+ (id)paymentControllerWithDelegate:(id<DTPaymentControllerDelegate>)delegate
                 authorizationRequest:(DTAuthorizationRequest *)authorizationRequest
```

Creates and returns a new DTPaymentController object for authorizing a payment.

Parameters

delegate
The delegate to receive success/error/cancellation notification.

authorizationRequest
Authorization request for payment.

Returns

a newly created and initialized DTPaymentController object for a payment authorization.

```
+ (NSArray *)allAvailablePaymentMethods
```

Returns all available payment method constants.

Returns

an array of available payment method string constants.

5.1.2 Instance Methods

```
- (void)presentInNavigationController:animated
```

Shows the payment controller.

Parameters

controller
The navigation controller used to push payment view controllers.

animated
YES if view controllers are to be pushed animated, NO otherwise.

```
- (void)dismissAnimated:(BOOL)animated
```

Removes payment view controllers from the payment controller's navigation controller.

Parameters

animated
YES if view controllers are to be popped animated, NO otherwise.

Attention: Do not perform view controller actions while an animation is taking place.

For example dismissAnimated:YES immediately followed by pushViewController:animated: will cause rendering issues. Only animate the last action.

```
- (NSString *)paymentMethodIdentifier
```

The identifier of the payment method used for payment or alias registering.

5.1.3 Properties

@property (nonatomic, retain) DTVisualStyle* visualStyle
Display options (colors and fonts) for payment views. Optional property.

@property (nonatomic, copy) DTPaymentOptions* paymentOptions
Options unrelated to display style. Optional property.

@property (nonatomic, readonly) DTRecurringPaymentMethod* recurringPaymentMethod
Credit card or PF/PayPal alias information for future use in hidden mode. The property is only available (not nil) after successful payment or alias request.

@property (nonatomic, readonly) NSString* transactionId
The ID of the last transaction if available. Call from paymentControllerDidFinish: or paymentController:didFailWithError:

5.2 DTPaymentControllerDelegate (protocol)

The DTPaymentControllerDelegate protocol is used to receive notifications from DTPaymentController. It must be implemented by the host application.

5.2.1 Class Methods

There are no class methods.

5.2.2 Instance Methods

```
- (void)paymentControllerDidFinish:(DTPaymentController *)controller
```

Invoked when authorization or alias generation has completed successfully. Alias payment method is available via the recurringPaymentMethod property.

Parameters

controller
The payment controller responsible for this notification.

request
The payment request that has been completed successfully.

```
- (void)paymentController:(DTPaymentController *)controller
             didFailWithError:(NSError *)error
```

Invoked when the payment transaction failed.

Parameters

controller
The payment controller responsible for this notification.

error
The error that has occurred. Possible error codes are specified in Table 5-1.

Error code	Description
DTPaymentErrorTechnical	Internal or technical error.
DTPaymentErrorValidation	Credit card information was invalid.
DTPaymentErrorAuthentication	Credit card holder could not be authenticated.
DTPaymentErrorAuthorization	Payment could not be authorized for the specified credit card.

Table 5-1: DTPaymentErrorCode codes

```
- (void)paymentController:(DTPaymentController *)controller
                didCancelWithType:(DTPaymentCancellationType)cancellationType;
```

Invoked when the payment transaction has been canceled by the user.

Parameters

controller

The payment controller responsible for this notification.

cancellationType

The reason why the transaction has been canceled. Possible values are specified in

Cancellation Type	Description
DTPaymentCancellationTypeBackButton	User pressed the back button on the first library screen. Only possible if back button is enabled via DTPaymentOptions.
DTPaymentCancellationTypeCancelButton	User pressed the Cancel button at the bottom of the screen.

Table 5-2: DTCancellationType types

```
- (BOOL) paymentController:(DTPaymentController*)controller
                shouldAutorotateToInterfaceOrientation:(UIInterfaceOrientation)
                orientation
```

Invoked when the device is rotated, see shouldAutorotateToInterfaceOrientation of class UIViewController. If this optional method is not implemented, only portrait mode is supported.

Parameters

orientation

The orientation of the application’s user interface after rotation. The possible values are described in UIInterfaceOrientation.

5.3 DTPaymentRequest

The DTPaymentRequest class describes a payment transaction. It contains information such as currency, amount, refno, merchant ID etc. The payment request is used when a new DTPaymentController is created.

5.3.1 Class Methods

There are no class methods.

5.3.2 Instance Methods

See properties.

5.3.3 Properties

@property (nonatomic, copy) NSString* merchantId
The merchant ID, supplied by Datatrans AG.

@property (nonatomic, copy) NSString* refno
The refno, supplied by the merchant's server.

@property (nonatomic, copy) NSString* currencyCode
The currency code (ISO 4217).

@property (nonatomic, assign) NSUInteger amountInSmallestCurrencyUnit
The payment amount in the smallest unit of the given currency. For example, EUR 10 is represented as 1000, because one Euro is divided into 100 Euro cents, or, in other words, EUR is specified to have 2 digits after the decimal separator (ISO 4217).

@property (nonatomic, copy) NSString* signature
The HMAC-MD5 signature of merchant ID, amount, currency, and refno using a shared secret between the merchant and Datatrans AG. Optional property.

@property (nonatomic, copy) NSString* localizedPriceDescription
The price displayed on the credit card entry screen.

5.4 DTCardPaymentMethod

Class representing raw credit card data to be used for immediate payment. Apps use this class if they have their own user interface for payment method entry.

5.4.1 Class Methods

There are no class methods.

5.4.2 Instance Methods

```
-(id)initWithPaymentMethod:(NSString *)method number:(NSString *)number
        expMonth:(NSUInteger)expMonth  expYear:(NSUInteger)expYear
        cvv:(NSString *)cvv holder:(NSString *)holder;
```

Initalizes a DTCardPaymentMethod object with card data. See properties for description of values.

5.4.3 Properties

@property (nonatomic, copy) NSString* paymentMethod
Payment method constant, e.g. DTPaymentMethodVisa.

@property (nonatomic, copy) NSString* number
Card number.

@property (nonatomic, assign) NSUInteger expMonth
Expiration month, [1, 12], e. g. 9 for September.

@property (nonatomic, assign) NSUInteger expYear
Expiration year, 4 digits, e. g. 2010 for 2010.

@property (nonatomic, copy) NSString* cvv
CVV string, nil for Diners Club cards.

@property (nonatomic, copy) NSString* holder
Card holder's name or nil.

5.5 DTRecurringPaymentMethod

Base class for recurring payment methods. This class contains only an alias string for future payments. Subclasses DTPostFinanceCard, DTPayPal, DTReka and DTCreditCard provide additional information e.g. the masked card number.

5.5.1 Class Methods

```
+ (instancetype)recurringPaymentMethodWithData:(NSData *)data
```

Creates and returns a new recurring payment method object from a given NSData object. This is a convenience method for serialization/deserialization.

Note: This method deserializes to the correct subclass, i.e. a DTCreditCard object is returned if data contains a serialized credit card.

Parameters

data

Data to be deserialized into a recurring payment method object.

See also instance method -(NSData *) data.

```
+ (instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON
```

Creates and returns a new recurring payment method object from a given JSON string. This is a convenience method for serialization/deserialization.

Note: This method deserializes to the correct subclass, i.e. a DTCreditCard object is returned if JSON contains a serialized credit card.

Parameters

JSON

JSON string to be deserialized into a recurring payment method object.

See also instance method -(NSString *)JSON.

5.5.2 Instance Methods

```
- (NSData *)data
```

Returns an NSData representation of the recurring payment method. This is a convenience method for serialization/deserialization. The data object is not encrypted.

See also class method +(instancetype)recurringPaymentMethodWithData:(NSData *)data.

```
- (NSString *)JSON
```

Returns an NSString JSON representation of the recurring payment method. This is a convenience method for serialization/deserialization.

See also class method +(instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON.

5.5.3 Properties

@property (nonatomic, copy) NSString* alias

Alias string to be used for future payments.

5.6 DTCreditCard

The DTCreditCard class contains information about a credit card used in an earlier payment transaction. The DTCreditCard object is used to initialize a DTPaymentController in hidden mode, i.e. without payment method selection screen. It can be obtained by either making a successful credit card payment or by creating an alias.

5.6.1 Class Methods

```
+ (instancetype)creditCardWithData:(NSData *)data
```

Creates and returns a new credit card from a given NSData object. This is a convenience method for serialization/deserialization.

Parameters

data

Data to be deserialized into a credit card object.

See also instance method -(NSData *) data.

5.6.2 Instance Methods

```
- (NSData *)data
```

Returns an NSData representation of the credit card. This is a convenience method for serialization/deserialization. The data object is not encrypted.

See also class method +(instancetype)creditCardWithData:(NSData *)data.

```
- (NSString *)JSON
```

Returns an NSString JSON representation of the credit card. This is a convenience method for serialization/deserialization.

See also class method +(instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON of DTRecurringPaymentMethod.

5.6.3 Properties

@property (nonatomic, assign) NSUInteger expMonth

Expiration month, [1, 12], e. g. 9 for September.

@property (nonatomic, assign) NSUInteger expYear

Expiration year, 4 digits, e. g. 2010 for 2010.

@property (nonatomic, copy) NSString* maskedCC

Masked credit card number for displaying purposes, e. g. 432930xxxxxx6095.

@property (nonatomic, copy) NSString* alias

Credit card number alias. May be used interchangeably with the real credit card number for a given merchant.

@property (nonatomic, copy) NSString* cardHolder

Card holder’s name.

@property (nonatomic, copy) NSString* paymentMethod

Payment method constant, e.g. DTPaymentMethodVisa.

5.7 DTELV

Payment information for recurring ELV payments.

5.7.1 Class Methods

```
+ (instancetype)elvWithData:(NSData *)data
```

Creates and returns a new DTELV object from a given NSData object. This is a convenience method for serialization/deserialization.

Parameters

data

Data to be deserialized into a DTELV object.

See also instance method -(NSData *)data.

5.7.2 Instance Methods

```
- (instancetype)initWithAlias:(NSString *)alias
```

Init method with an alias string.

Parameters

alias

ELV alias string.

```
- (instancetype)initWithAlias:(NSString *)alias bankrouting:(NSString *)routing
```

Init method to be used with old-style ELV aliases. Please use initWithAlias: with aliases returned by the library.

Parameters

alias

ELV alias string obtained before April 15 2015.

routing

Bank routing (Bankleitzahl) required for aliases created before April 15 2015.

```
- (NSData *)data
```

Returns an NSData representation of this method. This is a convenience method for serialization/deserialization. The data object is not encrypted.

See also class method +(instancetype)elvWithData:(NSData *)data.

```
- (NSString *)JSON
```

Returns an NSString JSON representation of the DTELV object. This is a convenience method for serialization/deserialization.

See also class method +(instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON of DTRecurringPaymentMethod.

5.7.3 Properties

@property (nonatomic, copy) NSString* alias

ELV alias for future payments.

5.8 DTPostFinanceCard

Payment information for recurring PostFinance Card payments.

5.8.1 Class Methods

```
+ (instancetype)pfCardWithData:(NSData *)data
```

Creates and returns a new PostFinance card from a given NSData object. This is a convenience method for serialization/deserialization.

Parameters

data

Data to be deserialized into a PostFinance card object.

See also instance method -(NSData *)data.

5.8.2 Instance Methods

```
- (NSData *)data
```

Returns an NSData representation of the PostFinance card. This is a convenience method for serialization/deserialization. The data object is not encrypted.

See also class method +(instancetype)pfCardWithData:(NSData *)data.

```
- (NSString *)JSON
```

Returns an NSString JSON representation of the PostFinance card. This is a convenience method for serialization/deserialization.

See also class method +(instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON of DTRecurringPaymentMethod.

5.8.3 Properties

@property (nonatomic, copy) NSString* maskedCC

Masked post finance card number for displaying purposes, e.g. xxx xxx xxx 471.

@property (nonatomic, copy) NSString* alias

PostFinance card alias for future payments.

@property (nonatomic, assign) NSNumber* expMonth

Expiration month, [1, 12], e. g. 9 for September.

@property (nonatomic, assign) NSNumber* expYear

Expiration year, 4 digits, e. g. 2010 for 2010.

5.9 DTPayPal

Payment information for recurring PayPal payments.

5.9.1 Class Methods

```
+ (instancetype)ppWithData:(NSData *)data
```

Creates and returns a new PayPal object from a given NSData object. This is a convenience method for serialization/deserialization.

Parameters

data

Data to be deserialized into a PayPal object.

See also instance method -(NSData *)data.

5.9.2 Instance Methods

```
- (NSData *)data
```

Returns an NSData representation of the payment method. This is a convenience method for serialization/deserialization. The data object is not encrypted.

See also class method +(instancetype)ppWithData:(NSData *)data.

```
- (NSString *)JSON
```

Returns an NSString JSON representation of the PayPal object. This is a convenience method for serialization/deserialization.

See also class method +(instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON of DTRecurringPaymentMethod.

5.9.3 Properties

@property (nonatomic, copy) NSString* email
PayPal email address for displaying purposes.

@property (nonatomic, copy) NSString* alias
PayPAl alias for future payments.

5.10 DTReka

The DTReka class contains information about an earlier Reka payment/registration.

5.10.1 Class Methods

```
+ (instancetype)rekaWithData:(NSData *)data
```

Creates and returns a new Reka object from a given NSData object. This is a convenience method for serialization/deserialization.

Parameters

data
Data to be deserialized into a Reka object.

See also instance method -(NSData *) data.

5.10.2 Instance Methods

```
- (NSData *)data
```

Returns an NSData representation of the Reka object. This is a convenience method for serialization/deserialization. The data object is not encrypted.

See also class method +(instancetype)rekaWithData:(NSData *)data.

```
- (NSString *)JSON
```

Returns an NSString JSON representation of the Reka object. This is a convenience method for serialization/deserialization.

See also class method +(instancetype)recurringPaymentMethodWithJSON:(NSString *)JSON.

5.10.3 Properties

@property (nonatomic, assign) NSUInteger expMonth
Expiration month, [1, 12], e. g. 9 for September.

@property (nonatomic, assign) NSUInteger expYear
Expiration year, 4 digits, e. g. 2010 for 2010.

@property (nonatomic, copy) NSString* maskedCC
Masked card number for displaying purposes, e. g. 432930xxxxxx6095.

@property (nonatomic, copy) NSString* alias
Reka alias for future payments.

5.11 DTPaymentOptions

The DTPaymentOptions class is used for settings unrelated to visual appearance.

5.11.1 Class Methods

There are no class methods.

5.11.2 Instance Methods

See properties.

5.11.3 Properties

@property (nonatomic, assign) BOOL testing

Whether Datatrans AG's test or production server should be used. YES, if the test environment should be used, NO otherwise. Default value: NO.

@property (nonatomic, assign) BOOL returnsAlias

Whether the payment transaction should be performed in pay+register mode. If the selected payment method supports it, and if the user accepts the terms, an alias object for future payments will be returned. (See DTPaymentController property recurringPaymentMethod)

Default value: NO

@property (nonatomic, assign) DTPaymentReturnsCreditCard returnsCreditCard

Whether the app is interested in the user's credit card data for future recurring/alias transactions. Default values:

DTPaymentReturnsCreditCardNever if property returnsAlias = NO
DTPaymentReturnsCreditCardAlways if property returnsAlias = YES

See Table 5-3 for a description of DTPaymentReturnsCreditCard constants.

Constant	Description
DTPaymentReturnsCreditCardNever	Credit card information is not returned and the user is not asked if credit card should be stored.
DTPaymentReturnsCreditCardSelectableDefaultNo	Credit card information is returned if the user gives permission to do so. The UISwitch is initially set to NO (don't store credit card).
DTPaymentReturnsCreditCardSelectableDefaultYes	Credit card information is returned if the user gives permission to do so. The UISwitch is initially set to YES (store credit card).
DTPaymentReturnsCreditCardAlways	Credit card information is always returned. The user is not asked whether data should be stored.

Table 5-3: DTPaymentReturnsCreditCard constants

@property (nonatomic, assign) BOOL displayShippingDetails

Whether shipping details (address) should be visible when making a PayPal transaction in recurring payment mode (returnsPayPalAlias flag set). Default value: YES.

@property (nonatomic, assign) BOOL showBackButtonOnFirstScreen

Whether the first screen of the library should have its back button enabled. When the user presses this button, a cancel notification is sent to the app. Default value: NO.

@property (nonatomic, assign) NSDictionary* merchantProperties

A set of merchant-defined key-value pairs of type NSString*. Properties are sent along with the payment request and posted to the merchant's PostURL.

@property (nonatomic, assign) BOOL useWebCreditCardInput

Whether non-native credit card forms should be used. Default value: NO.

@property (nonatomic, assign) BOOL useWebELVInput
Whether non-native ELV form should be used. Default value: NO.

@property (nonatomic, assign) BOOL autoSettlement
Whether the transaction should be settled automatically. Default value: NO.

@property (nonatomic, copy) NSString* easypayTitle
Title used for Swisscom Easypay payments.

@property (nonatomic, copy) NSString* easypayDescription
Description used for Swisscom Easypay payments.

@property (nonatomic, copy) NSString* easypayPaymentInfo
Payment info used for Swisscom Easypay payments.

@property (nonatomic, assign) BOOL easypayPresentedAsNATELPay
Whether Swisscom Easypay should be displayed as Swisscom NATEL Pay instead. Default value: NO.

@property (nonatomic, copy) NSString* creditCardInputLocalizedDoneButtonTitle
Override title for the done button on the credit card input screen (default: "Pay" or "Proceed").

@property (nonatomic, assign) BOOL certificatePinning
Whether secure connections to Datatrans servers require a certificate chain signed with a specific CA private key. The device's trust settings are explicitly ignored, i.e. custom installed/white-listed certificates and/or CAs will not work.

Please be advised that enabling this option will break your app in many corporate networks with anti-malware/-theft/-espionage SSL proxying.

Default value: NO.

@property (nonatomic, copy) NSString* language
Library language override, ISO 639-1 two-letter code, e.g. "de" or "en".
Default value: nil (use device language)

@property (nonatomic, copy) DTSwissBillingPaymentInfo* swissBillingPaymentInfo
Payment information for a SwissBilling transaction.

@property (nonatomic, copy) NSString* appCallbackScheme
Unique URL scheme used by other apps (e.g. TWINT) to call the merchant app.

@property (nonatomic, assign) BOOL suppressBusinessErrorDialog
Do not present an error dialog if a critical/business error occurs. Default value: NO.

@property (nonatomic, assign) BOOL skipAuthorizationCompletion
Skip the last step of the authorization process for external/manual authorization. Default:NO

@property (nonatomic, copy) DTApplePayConfig* applePayConfig
Configuration object, mandatory for Apple Pay transactions.

@property (nonatomic, assign) BOOL creditCardScanningEnabled
Whether a scan button should be shown on the credit card entry screen. Default value: YES.

@property (nonatomic, copy) DTByjunoPaymentInfo* byjunoPaymentInfo
Payment information for a Byjuno transaction.

@property (nonatomic, assign) DTPaymentCardHolder cardHolder
Whether the cardholder's name is required. See Table 5-4 for a description of DTPaymentCardHolder constants.

@property (nonatomic, copy) DTCustomer* customer
Object representing information about the customer.

@property (nonatomic, copy) DTSwissPassPaymentInfo* swissPassPaymentInfo
Payment information for a SwissPass transaction.

@property (nonatomic, copy) NSString* paysafecardMerchantClientId
Sets the id for identifying a customer of a Paysafecard transaction, i.e. two transactions made from the same customer must have the same id.

Constant	Description
DTPaymentCardHolderHidden	The credit cardholder field is hidden. This is the default setting.
DTPaymentCardHolderOptional	The credit card holder field is visible but the value is optional.
DTPaymentCardHolderRequired	The credit card holder's name is required.

Table 5-4: DTPaymentCardHolder constants

5.12 DTVisualStyle

The DTVisualStyle class is used for all settings related to visual appearance. Classes DTSimpleTextStyle and DTShadowTextStyle are used for most style settings (see sections 5.13 and 5.14).

5.12.1 Class Methods

```
+ (DTVisualStyle *)defaultStyle;
```

Creates and returns the default display style. Changes can then be applied selectively using properties.

5.12.2 Instance Methods

See properties.

5.12.3 Properties

All properties are optional if the object is created using +(DTVisualStyle *)defaultStyle.

@property (nonatomic, retain) UIColor* backgroundColor
Screen background color.

@property (nonatomic, copy) DTShadowTextStyle* navigationBarTitleStyle
Font and color of navigation bar text.

@property (nonatomic, retain) UIColor* navigationBarButtonItemDoneTintColor
Color of navigation bar done/pay button.

@property (nonatomic, copy) DTShadowTextStyle* titleStyle
Font and color of text titles.

@property (nonatomic, copy) DTShadowTextStyle* textStyle
Font and color of regular text.

@property (nonatomic, copy) DTShadowTextStyle* emphasizedTextStyle
Font and color of emphasized text.

@property (nonatomic, copy) DTShadowTextStyle* tableViewCellTextStyle
Font and color of table view cells.

@property (nonatomic, retain) UIColor* inputFieldBackgroundColor
Background color of input fields.

@property (nonatomic, copy) DTSimpleTextStyle* inputFieldStyle
Font and color of input fields.

@property (nonatomic, copy) DTShadowTextStyle* inputLabelStyle
Font and color of input field labels.

@property (nonatomic, assign) BOOL isDark
YES if the color scheme is dark, NO otherwise. An info button of type UIButtonTypeInfoLight is drawn if color scheme is dark, UIButtonTypeInfoDark otherwise. (< iOS 7 only).

5.13 DTSimpleTextStyle

The DTSimpleTextStyle class defines a text's font and color.

5.13.1 Class Methods

There are no class methods.

5.13.2 Instance Methods

See properties.

5.13.3 Properties

@property (nonatomic, retain) UIColor* foregroundColor
Text color.

@property (nonatomic, retain) UIFont* font
Text font.

5.14 DTShadowTextStyle

The DTShadowTextStyle class inherits from DTSimpleTextStyle and adds drop shadow definitions.

5.14.1 Class Methods

There are no class methods.

5.14.2 Instance Methods

See properties.

5.14.3 Properties

@property (nonatomic, retain) UIColor* shadowColor
Shadow color. Optional property.

@property (nonatomic, assign) CGSize shadowOffset
Shadow offset. Optional property.

5.15 DTAliasRequest

The DTAliasRequest class is used to specify how aliases are obtained.

5.15.1 Class Methods

There are no class methods.

5.15.2 Instance Methods

```
-(id) initWithMerchantId:(NSString *)merchantId
      currencyCode:(NSString *)currencyCode
      paymentMethods:(NSArray *)paymentMethods
```

Creates a new alias request for credit card selection by library.

Parameters

merchantId
Datatrans merchant ID

currencyCode
Currency that is used in the alias request

paymentMethods
Selectable credit card payment methods for alias generation.

```
-(id) initWithMerchantId:(NSString *)merchantId
           currencyCode:(NSString *)currencyCode
           cardPaymentMethod:(DTCardPaymentMethod *)method
```

Creates a new alias request with given credit card data.

Parameters

merchantId
    Datatrans merchant ID

currencyCode
    Currency that is used in the alias request

cardPaymentMethod
    Credit card data

5.16 DTSwissBillingPaymentInfo

Data container for SwissBilling transactions. A DTSwissBillingPaymentInfo object can be set as payment option if SwissBilling is used or may be chosen by user.

5.16.1 Instance Methods

See properties.

5.16.2 Properties

@property (nonatomic, assign) NSInteger taxAmount
    Total tax amount of order

@property (nonatomic, copy) DTAddress* shippingAddress
    Shipping address

@property (nonatomic, copy) NSArray* basketItems
    List of basket positions of type DTBasketItem

5.17 DTAddress

Object representing a user's address or a shipping address.

5.17.1 Instance Methods

```
-(id) initWithFirstName:(NSString *)firstName
               lastName:(NSString *)lastName
                 street:(NSString *)street
                zipCode:(NSString *)zipCode
```

Creates a new address object.

Parameters

firstName
    First name

lastName
    Last name

street
    First street line (see properties)

zipCode
    ZIP code

5.17.2 Properties

@property (nonatomic, copy) NSString* city
    City

@property (nonatomic, copy) NSString* countryCode
    ISO country code

@property (nonatomic, copy) NSString* street2
    Second street line

5.18 DTDate

Object representing a date in Datatrans format.

5.18.1 Instance Methods

```
-(id) initWithYear:(int)year month:(int)month day:(int)day
```

Creates a new date object from date components.

Parameters

year
    Year (e.g. 2015)

month
    Month, 1-based (e.g. 1 for January)

day
    Day, 1-based (e.g. 1 for first day of month)

```
-(id) initWithString:(NSString *)dateString
```

Creates a new date object from formatted string.

Parameters

dateString
    Formatted Datatrans date string, either dd.MM.yyyy, or yyyy-MM-dd

5.19 DTBasketItem

Data container for SwissBilling transactions (see DTPaymentOptions).

5.19.1 Instance Methods

```
-(id) initWithId:(NSString *)articleId
            name:(NSString *)name
      grossPrice:(NSInteger)grossPrice
        quantity:(NSInteger)quantity
```

Creates a new basket position object.

Parameters

articleId
    Article ID

name
    Article name

grossPrice
    Article price

quantity
    Quantity ordered

5.19.2 Properties

@property (nonatomic, copy) NSString* itemDescription
    Description of this item

@property (nonatomic, assign) float_t tax
    Tax rate of this item

@property (nonatomic, assign) NSInteger taxAmount
    Tax amount

@property (nonatomic, copy) NSString* type
    Item type, “goods” is default

5.20 DTApplePayConfig

Configuration object for Apple Pay transactions (see DTPaymentOptions).

5.20.1 Class Methods

```
+ (BOOL)hasApplePayWithSupportedNetworks:
                               (NSArray<PKPaymentNetwork> *)supportedNetworks
```

Whether Apple Pay is available on the device for the specified networks (see Section 4.5.3). It is not usually necessary to check this as the library automatically hides the Apple Pay payment method if unavailable.

5.20.2 Instance Methods

```
- (instancetype)initWithMerchantIdentifier:(NSString *)merchantIdentifier
                       supportedNetworks:(NSArray<PKPaymentNetwork> *)supportedNetworks
                               countryCode:(NSString *)countryCode
```

Creates a new Apple Pay configuration object with Apple Pay country code.

Parameters

merchantIdentifier
    Merchant identifier registered for Apple Pay

supportedNetworks
    The supported payment networks (see Section 4.5.3)

countryCode
    Apple Pay country code

```
- (instancetype)initWithMerchantIdentifier:(NSString *)merchantIdentifier
                       supportedNetworks:(NSArray<PKPaymentNetwork> *)supportedNetworks
```

Creates a new Apple Pay configuration object with CH (Switzerland) country code for payments in Switzerland.

Parameters

merchantIdentifier
    Merchant identifier registered for Apple Pay

supportedNetworks
    The supported payment networks (see Section 4.5.3)

5.20.3 Properties

@property (nonatomic, readonly) PKPaymentRequest* request
    The request object for additional configuration of Apple Pay. See official Apple Pay documentation for more information.

@property (nonatomic, copy) NSString* finalSummaryItemLabel
    Label used for the final summary item without having to configure the request object. The default label is "Total", but you might instead want to use the name of your shop. The string will then read: PAY YOURSHOP: XX.XX

@property (nonatomic, weak) id<DTApplePayDelegate> delegate
    Delegate object for callbacks during Apple Pay authorization.

5.21 DTApplePayDelegate

Delegate object for callbacks during the Apple Pay authorization process. Methods are taken from PKPaymentAuthorizationViewControllerDelegate (minus non-optional methods implemented by the library itself). For more information, see the documentation of PKPaymentAuthorizationViewControllerDelegate.

5.22 DTCustomer

Object representing information about the user.

5.22.1 Instance Methods

See properties.

5.22.2 Properties

@property (nonatomic, copy) DTAddress* address
Address

@property (nonatomic, copy) DTDate* birthDate
Birth date

@property (nonatomic, copy) NSString* cellPhone
Cell phone number

@property (nonatomic, copy) NSString* customerId
Id of the customer

@property (nonatomic, copy) NSString* gender
Gender

@property (nonatomic, copy) NSString* ipAddress
IP address

@property (nonatomic, copy) NSString* language
Language

@property (nonatomic, copy) NSString* mailAddress
Email address

@property (nonatomic, copy) NSString* phone
Phone number

@property (nonatomic, copy) NSString* type
Type of the customer (either "P" for person or "C" for company)

5.23 DTByjunoPaymentInfo

Data container for Byjuno transactions. A DTByjunoPaymentInfo object can be set as payment option if Byjuno is used or may be chosen by user.

The field customData can be used during regular payments, alias registration and alias payments. All other fields are only supported during regular payments and alias registration.

5.23.1 Instance Methods

See properties.

5.23.2 Properties

@property (nullable, nonatomic, copy) NSString* subtype
The Byjuno specific payment method used for the transaction.
Values: INVOICE, INSTALLMENT, BYJUNO_INVOICE, MONTHLY_INVOICE

@property (nullable, nonatomic, copy) NSNumber* customerEmailConfirmed
BOOL. Indicates that the customer has confirmed the email address to the merchant
Default: false

@property (nullable, nonatomic, copy) NSString* customerInfo1
Customer information for credit check.

@property (nullable, nonatomic, copy) NSString* customerInfo2
Customer information for credit check.

@property (nullable, nonatomic, copy) NSString* deliveryMethod
Can be one of POST (Delivery by Swiss Post), SHOP (Point of Sale) or HLD (Home Delivery Service)

@property (nullable, nonatomic, copy) NSString* deviceFingerprintId
Identification of the customer in the shop

@property (nullable, nonatomic, copy) NSNumber* paperInvoice
BOOL. Whether or not to send a paper invoice.

@property (nullable, nonatomic, copy) NSNumber* repaymentType
NSInteger. Number from 1 to 20 to indicate the repayment schedule. This is used in combination with payment methods and defined per client configuration.

@property (nullable, nonatomic, copy) NSString* riskOwner
Defines which party should take the risk.
Values: IJ, CLIENT

@property (nullable, nonatomic, copy) NSString* siteId
Can be used in case when client operates different legally separated stores / points of sale.

@property (nullable, nonatomic, copy) NSString* verifiedDocument1Type
Indication if merchant is having verified documents from client request.
Values: swiss-travel-pass, other

@property (nullable, nonatomic, copy) NSString* verifiedDocument1Number
Verified document number.

@property (nullable, nonatomic, copy) NSString* verifiedDocument1Issuer
Verified document issuer.

@property (nullable, nonatomic, copy) NSArray<NSString *>* customData
A list of custom data fields. It can accept up to 10 entries.

@property (nullable, nonatomic, copy) NSNumber* firstRateAmount
NSInteger. Amount of the first rate paid by the customer.

5.24 DTAuthorizationRequest

The DTAuthorizationRequest class describes a payment authorization.

5.24.1 Class Methods

There are no class methods.

5.24.2 Instance Methods

See properties.

5.24.3 Properties

@property (nonatomic, copy) NSString* transactionId
The transaction ID, supplied by Datatrans AG.

@property (nonatomic, copy) NSString* merchantId
The merchant ID, supplied by Datatrans AG.

@property (nonatomic, copy) NSString* refno
The refno, supplied by the merchant’s server.

@property (nonatomic, assign) NSUInteger amountInSmallestCurrencyUnit
The payment amount in the smallest unit of the given currency.

@property (nonatomic, copy) NSString* currencyCode
The currency code (ISO 4217).

@property (nonatomic, assign) BOOL autoSettlement
Whether the transaction should be settled automatically. Default value: NO.

@property (nonatomic, copy) NSDictionary* merchantProperties
A set of merchant-defined key-value pairs of type NSString*.

5.25 DTBusinessError

Error that includes the underlying acquirer error code.

5.25.1 Class Methods

There are no class methods.

5.25.2 Instance Methods

See properties.

5.25.3 Properties

@property (nullable, nonatomic, copy) NSString* acquirerAuthorizationCode
The underlying acquirer authorization code.

@property (nullable, nonatomic, copy) NSNumber* acquirerErrorCode
The underlying acquirer error code.

@property (nullable, nonatomic, copy) NSString* threeDSecureCardHolderInfo
The text provided by the ACS/Issuer to Cardholder during a transaction that was not authenticated by the ACS.

@property (nullable, nonatomic, copy) NSString* threeDSecureTransStatusReason
The transaction status reason.

5.26 DTSwissPassPaymentInfo

Data container for SwissPass transactions. A DTSwissPassPaymentInfo object can be set as payment option if SwissPass is used or may be chosen by user.

5.26.1 Instance Methods

```
-(instancetype) initWithSwissPassCardNumber:(NSString *)cardNumber
                           swissPassZipCode:(NSString *)zipCode
```

Creates a new DTSwissPassPaymentInfo object.

Parameters

cardNumber
The SwissPass card number

zipCode
The SwissPass zip code

6 Library Integration

6.1 Package Contents

The library is distributed as a single .zip file with a directory structure as shown in Table 6-1.

Directory	Description
/doc	Contains this documentation.
/include	Contains header files of public library classes.
/lib	Contains the static library code.
/resources	Contains resources used by the library.

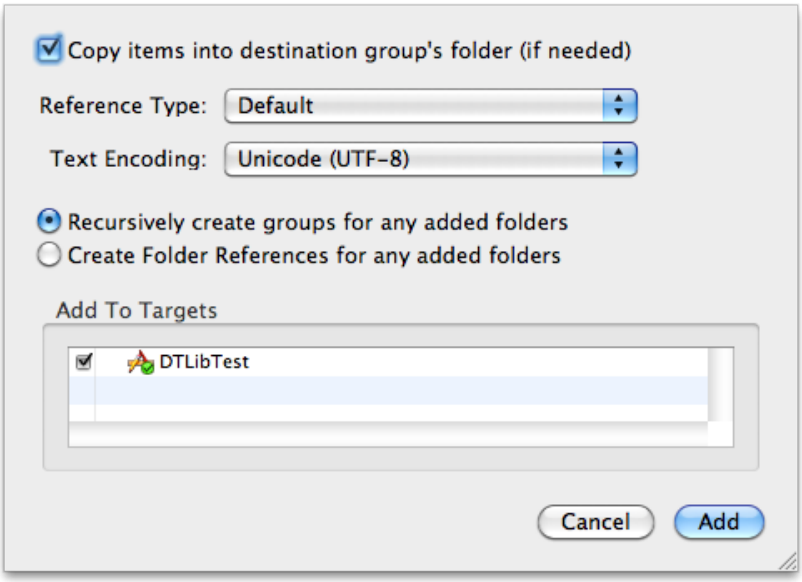
Table 6-1: Directory structure

In order to use the library in a new project, these files have to be copied into the project's Xcode environment.

6.2 Xcode Integration

Open your project file. Right-click on the project in Xcode and choose Add->New Group. Use DTiPL as the group's name.

Drag and drop the include and the lib folder of the library distribution into the newly created DTiPL group. Make sure "Copy items into destination group's folder" is checked and that items are added to your targets (Figure 6-1).



☑ Copy items into destination group's folder (if needed)

Reference Type: Default

Text Encoding: Unicode (UTF-8)

● Recursively create groups for any added folders

○ Create Folder References for any added folders

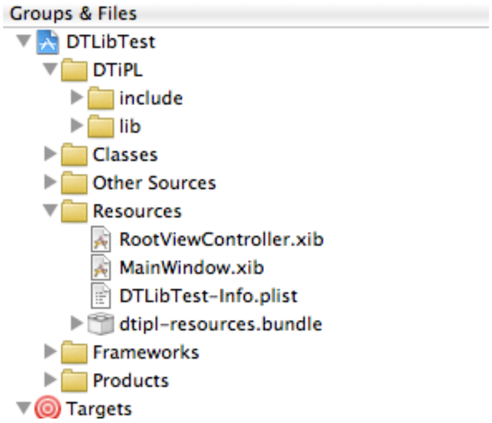
Add To Targets

☑ DTLibTest

Figure 6-1: Copying files into Xcode

Two libraries have been added to your targets. Remove libdtipl-iphonesimulator.a from your targets, but keep libdtipl.a.

Copy library file resources/dtipl-resources.bundle to the Resources folder of your project. The project should now look as depicted in Figure 6-2.



Groups & Files

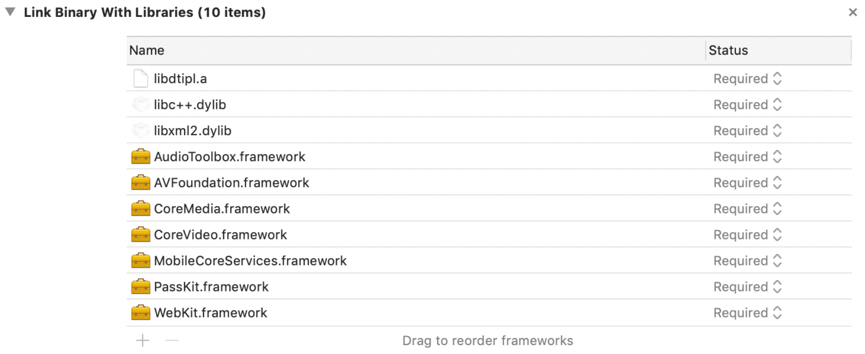
- DTLibTest
  - DTiPL
    - include
    - lib
  - Classes
  - Other Sources
  - Resources
    - RootViewController.xib
    - MainWindow.xib
    - DTLibTest-Info.plist
    - dtipl-resources.bundle
  - Frameworks
  - Products
- Targets

Figure 6-2: Project structure

Click the project file and **add -all_load -ObjC** to Other Linker Flags under the build tab for all configurations.

Click the app target. Under the general tab add the following libraries to the list of *Link Binary With Libraries*.

- libdtipl.a
- libc++.dylib
- libxml2.dylib
- AudioToolbox.framework
- AVFoundation.framework
- CoreMedia.framework
- CoreVideo.framework
- MobileCoreServices.framework
- PassKit.framework
- WebKit.framework



Link Binary With Libraries (10 items)

Name	Status
libdtipl.a	Required
libc++.dylib	Required
libxml2.dylib	Required
AudioToolbox.framework	Required
AVFoundation.framework	Required
CoreMedia.framework	Required
CoreVideo.framework	Required
MobileCoreServices.framework	Required
PassKit.framework	Required
WebKit.framework	Required

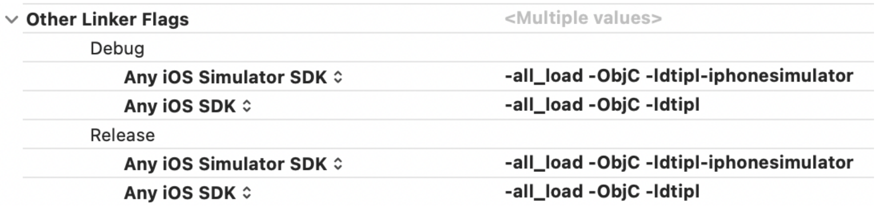
Figure 6-3: Frameworks and libraries to be linked

The library's header files can now be included into class files and the project builds and links with the Datatrans iOS payment library.

6.3 Simulator support on Apple Silicon Macs

The library libdtipl.a contains slices for actual devices and for Simulator on Macs with an Intel processor. If you want to run your app in Simulator on an Apple Silicon Mac, you need to integrate libdtipl-iphonesimulator.a as follows.

- In addition to libdtipl-iphonesimulator.a, also remove libdtipl.a from your targets.
- In Other Linker Flags under the build tab, add **-ldtipl** for actual device builds and add **-ldtipl-iphonesimulator** for Simulator builds. It should look as depicted in Figure 6-4.



Other Linker Flags	<Multiple values>
Debug	
Any iOS Simulator SDK	**-all_load -ObjC -ldtipl-iphonesimulator**
Any iOS SDK	**-all_load -ObjC -ldtipl**
Release	
Any iOS Simulator SDK	**-all_load -ObjC -ldtipl-iphonesimulator**
Any iOS SDK	**-all_load -ObjC -ldtipl**

Figure 6-4: Linking the libraries for Apple Silicon Simulator

7 Known Issues

7.1 Bitcode

Starting from Xcode 7, apps are built with *Bitcode* by default. Bitcode is intermediate program code that can be compiled to a final binary differently for specific devices. Currently, Bitcode is rarely required and usually not useful. On the other hand, it makes intermediate products such as the Datatrans Payment Library significantly bigger. The library's size with Bitcode is about 170 MB.

If you are determined to use Bitcode in your app, please contact Datatrans Support for a version that has Bitcode enabled.

For everyone else, we suggest to turn off Bitcode in your project's settings:

Build Settings -> Build Options -> Enable Bitcode: NO

If you do not disable Bitcode, your project continues to compile and run fine. However, you will get an error once you are trying to archive the app for iTunes Connect:

```
ld: bitcode bundle could not be generated because 'lib/libdtipl.a(libdtipl.a-arm64-
                master.o)' was built without full bitcode. All object files and
                libraries for bitcode must be generated from Xcode Archive or
                Install build for architecture arm64

clang: error: linker command failed with exit code 1 (use -v to see invocation)
```

8 Appendix

8.1 List of Illustrations

8.2 List of Code Listings

8.3 List of Tables