Introduction

The **Integration guide** set of documents will take you through the process of integrating the 3DS2 authentication flow with a sample merchant checkout site from the beginning. This is to implement the **3DS Requestor and 3DS Client** in the merchant checkout process which is called **3DS Requestor Environment** in the EMV 3DSecure 2.0 specification.

This integration guide is based on the provided demo 3DS requestor project which consists of two parts:

- The HTML/javascript frontend, contains a demo online shop and test pages for `BRW`, `3RI`, `App`, and `Enrol` API calls.
- The backend, which hosts the frontend pages and resources as well as performing the page forwarding and calling the **ActiveServer** authentication API with `x509` authentication.

For reference, the frontend web pages and javascript implementation uses the following framework/components:

- Bootstrap 4.1.3
- Font Awesome 5.2.0
- Moment.js
- JQuery 3.3.1

> **Javascript disabled browser**
>
> **ActiveServer** supports a no-script environment as well. If you want to cater for a cardholder's browser that doesn't support javascript, or you want to implement a 3DS Requestor in a no-script environment, refer here for the requestor demo overview.

Prerequisites

The following are prerequisites to using this guide:

- Web front-end development knowledge (HTML, CSS, Javascript)
- A Git client

- An activated and running ActiveServer instance
- Core programming knowledge of Java, PHP, C# or Go

Checkout the sample code

> **Important**
>
> While the following sample code examples can be used as a guide for integration purposes, it cannot be fully tested for all production environments. Therefore clients should review and adapt it as required to ensure it is suitable before using it for production purposes.

The 3DS Requestor demo code is hosted in GitHub and can be cloned from the following repository:

https://github.com/gpayments/gp-3ds-requestor-demo.git

To check out the sample code, execute the following command on your local environment:

```
git clone https://github.com/gpayments/gp-3ds-requestor-demo.git
```

Once the repository is cloned, you will find all the required demo code of this tutorial under the directory:

```
$ cd gp-3ds-requestor-demo
gp-3ds-requestor-demo $  ls
dotnet  go  java  php  README.md
```

GPayments currently provides backend example code for **Java**, **PHP**, **C#**, and **Go**. Throughout the integration guides, wherever the instructions differ between backend languages a tab will be shown with the relevant instructions.

All backend examples utilise the same front end code, which is written using **Javascript** and utilises **Mustache** for templating.

> **Tip**
>
> For simplicity and demo purposes, the demo 3DS Requestor code is implemented with most of the processes and page callback logic in the web frontend code. The backend code remains as a simple server side page forwarding/x509 authentication client to connect with the **ActiveServer** authentication API. In your actual implementation, you may design and implement your own 3DS Requestor code to fit your existing checkout process and work flow with different frontend and backend code structure.

Server Side Dependencies

For server side 3DS Requestor demo code, depending on different languages, the following dependencies and libraries are required to be installed prior to your first demo 3DS Requestor run:

Language	Dependencies and tools	Notes
Java	JDK 1.8 Apache Maven - https://maven.apache.org/install.html	
C#	Visual Studio 2013 or later with ASP.NET and web development workload **Nuget** is installed, refer to https://docs.microsoft.com/en-us/nuget/install-nuget-client-tools#visual-studio	Windows system required
PHP	PHP 7.2 with cURL (Client URL Library) Composer - https://getcomposer.org Guzzle - http://docs.guzzlephp.org OpenSSL	
Go	Go 1.12+ with gin-gonic	Install latest Go from https://golang.org/

Get client certificate

Before the backend can call the **ActiveServer** authentication API and authenticate itself, a **client certificate** is required to be setup. With this client certificate, the backend can setup a mutually authenticated TLS connection with **ActiveServer**.

To obtain the client certificate from your **ActiveServer** instance, refer here. If you do not have access to an instance and are using the **GPayments TestLabs**, email us at techsupport@gpayments.com to obtain a certificate.

Copy the downloaded certificate and configure the backend for the location you chose. The client certificate does not have to be in the demo 3DS Requestor directory, however you may find that storing the client certificate within the project may be easier for you to manage.

To check the directory structure of the project, refer to Directory Tree for details.

Demo 3DS Requestor Configuration

To run the demo 3DS Requestor, the following configuration needs to be set before booting up the system:

1. The 3DS Requestor needs to know the entry point of **ActiveServer** authentication API and the base url of itself so that it can tell **ActiveServer** which entry point of the 3DS Requestor to send the callback URLs.

   Configure the `AsAuthURL` and `BaseUrl` in your backend resource file. These values will be used when the application is brought up and cannot be changed without restarting the application:

   - **AsAuthURL:** set to the API URL of your **ActiveServer** instance. If you are using the **GPayments TestLabs** to test, leave the default value.
   - **BaseURL:** url that the application will be brought up and accessed on.

Java C# PHP Go

```
//application.yml
gpayments:
  asAuthUrl: https://api.as.testlab.3dsecure.cloud:7443
  baseUrl: http://localhost:8082
  ...
```

Tip

If the default port used in the examples is in use you may get an error, in which case configure the `port` and `baseUrl` to a suitable value.

2. Configure the `certFileName` in your backend resource file to your downloaded certificate:
   - If using a Merchant client certificate:
     - Configure the `certFileName` to the full filename and path of the downloaded certificate
     - Set the `certFilePassword` to the client certificate keystore password which was set during certificate download in your backend resource file
     - Set `groupAuth` to `false`
     - Leave the `merchantToken` as blank
   - If using a Master Auth API client certificate:
     - Configure the `certFileName` to the full filename and path of the downloaded certificate
     - Set the `certFilePassword` to the client certificate keystore password which was set during certificate download in your backend resource file
     - Set `groupAuth` to `true`
     - Configure the `merchantToken`. Details of the merchant token can be found here

> **Warning**
>
> If `groupAuth = true`, the back-end needs to add a HTTP Header in the HTTP Request with a field of `AS-Merchant-Token` which is set to the merchantToken. To check the details of this implementation, refer to the Back-end implementation (v1) or Back-end implementation (v2) guides.

Java C# PHP Go

```
//application.yml
gpayments:
  ...
  certFileName: # Client Certificate file (.p12 or .pfx) path
  certFilePassword: # Client Certificate password
  groupAuth: false
  merchantToken: # Your merchantToken when groupAuth = true
```

> **Note**
>
> You can place the client certificate in any location you prefer. For example, for a client certificate file located in the `C:/Downloads` directory (for windows platforms) with the file name `client_certificate.p12`, you should change the `certFileName` to be `C:/Downloads/client_certificate.p12`.
>
> Note: For `PHP`, please follow the instruction here to extract the private key and certificate.

3. Open a **Terminal** (Linux, for Java, PHP or Go), **Command Prompt** (Windows, for Java, PHP or Go) or **Developer Command Prompt** (Windows, for C#) and execute the following command line on the root directory of the project. Note that this could take a few minutes the first time it is run if any dependencies are required to be download:

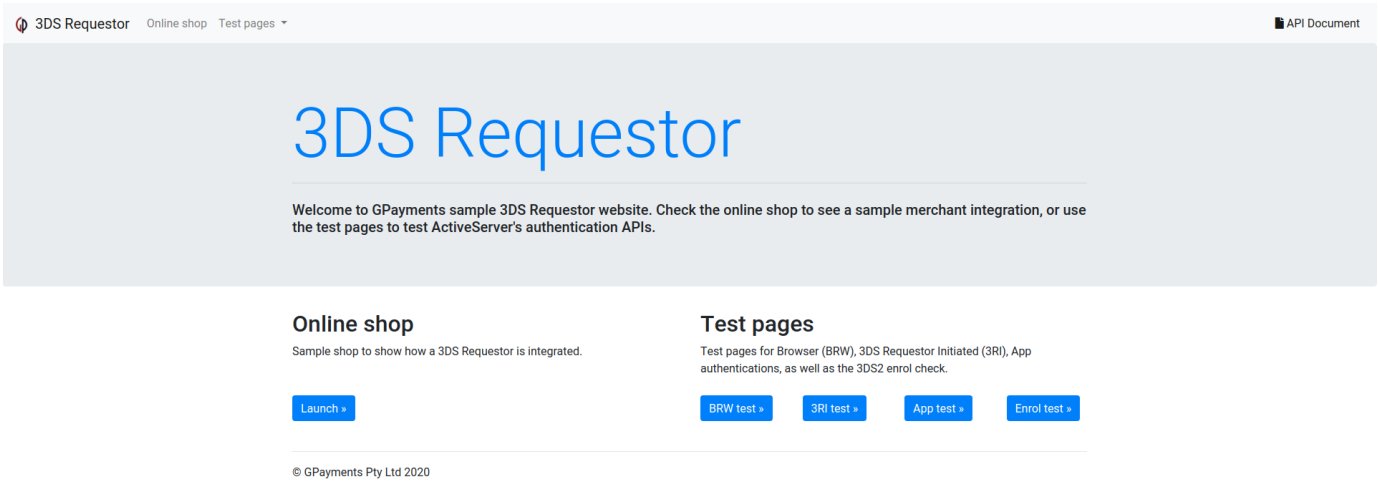
Java C# PHP Go

```
$ cd java
$ mvn spring-boot:run
```

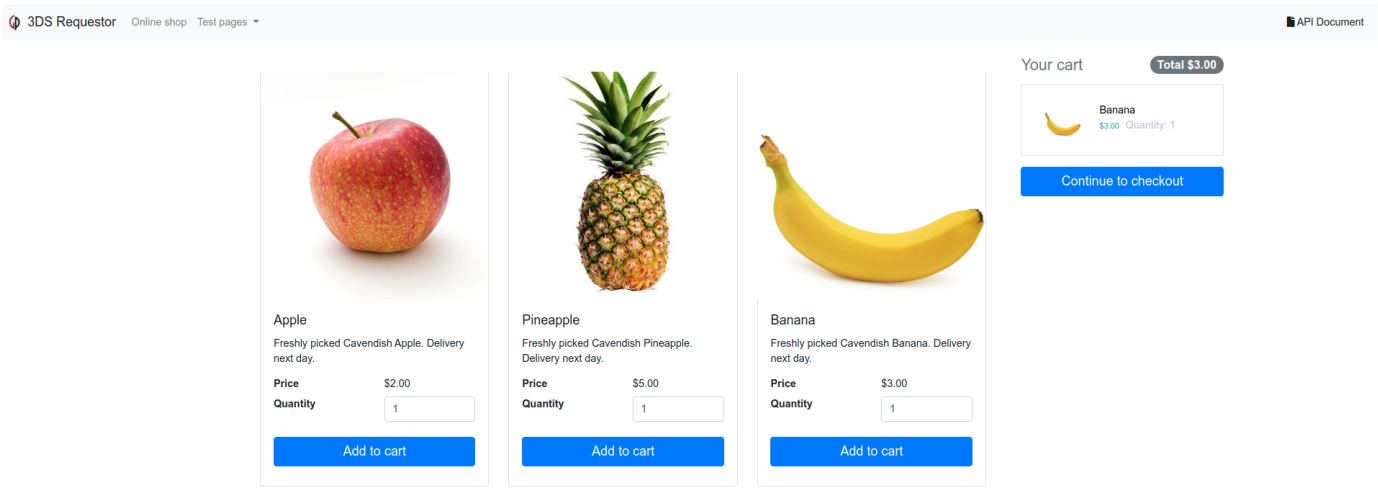
> **Firewall warnings for Java Network access in Windows**
>
> In Windows you may encounter a Windows Firewall security alert regarding the Java network access, allow access to continue.

View 3DS Requestor website

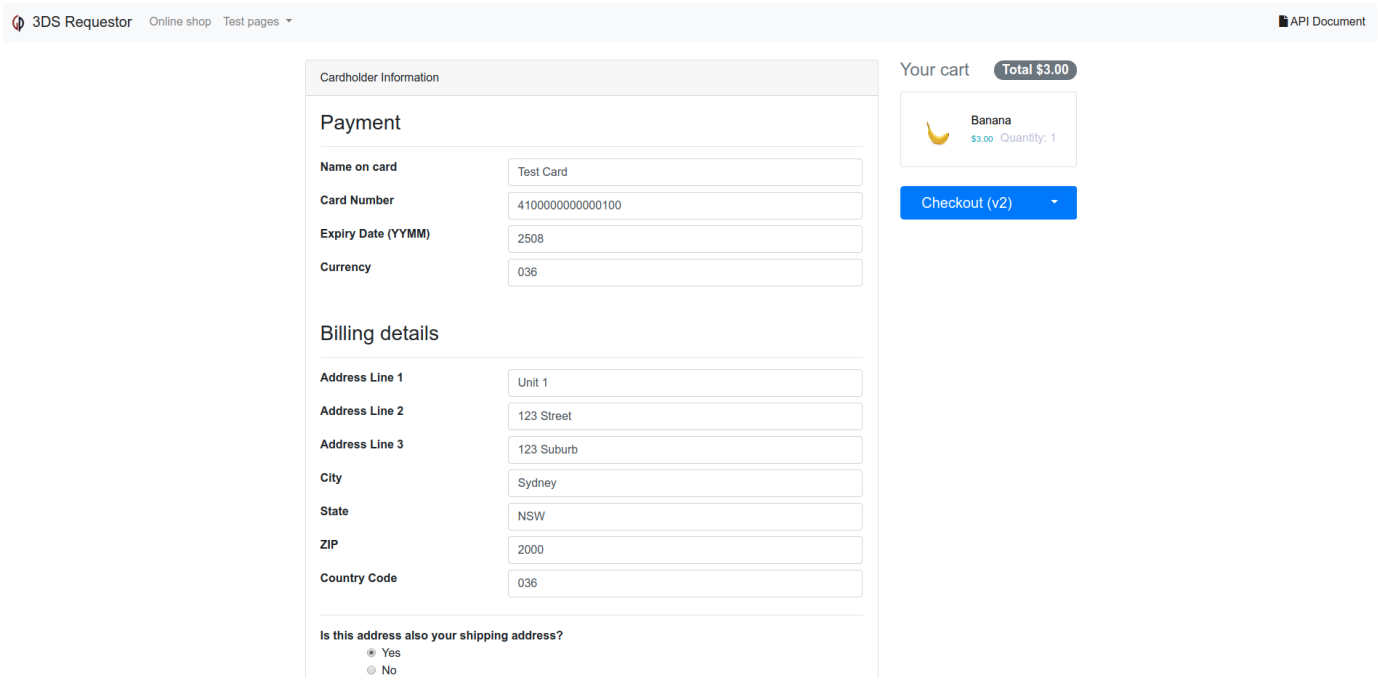
Once the client certificate and the URLs are configured properly, and the startup command has been executed, the demo 3DS Requestor should be started up successfully. You can view the 3DS Requestor page by accessing http://localhost:8082 (or the BaseURL specified above):



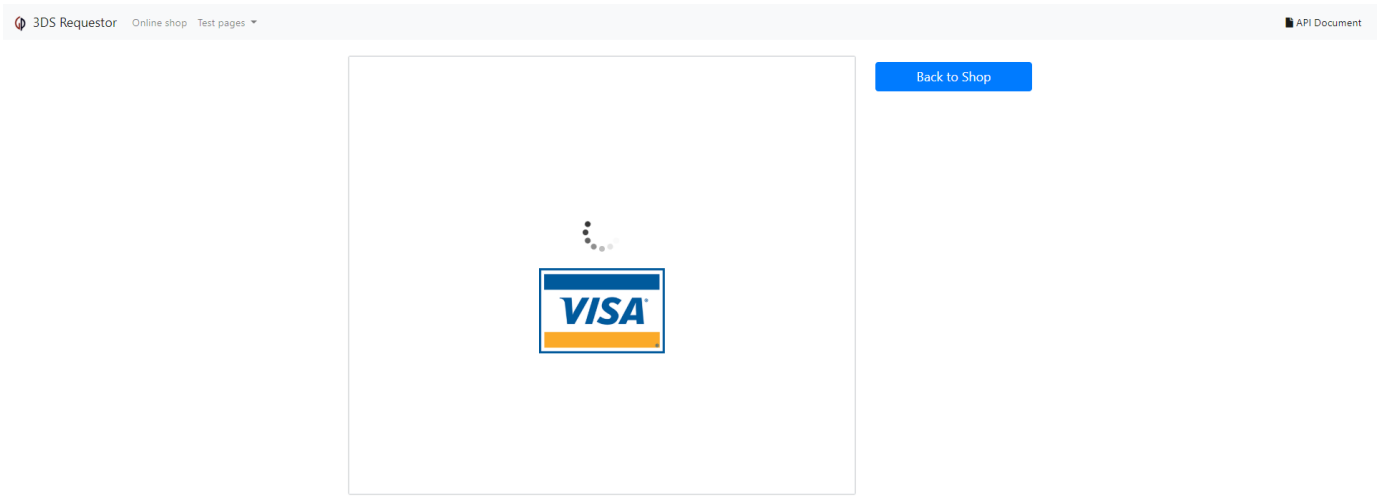
Select the `Launch` button under `Online shop` to open the shop page. Try adding some items to the cart and checkout using the default cardholder information:



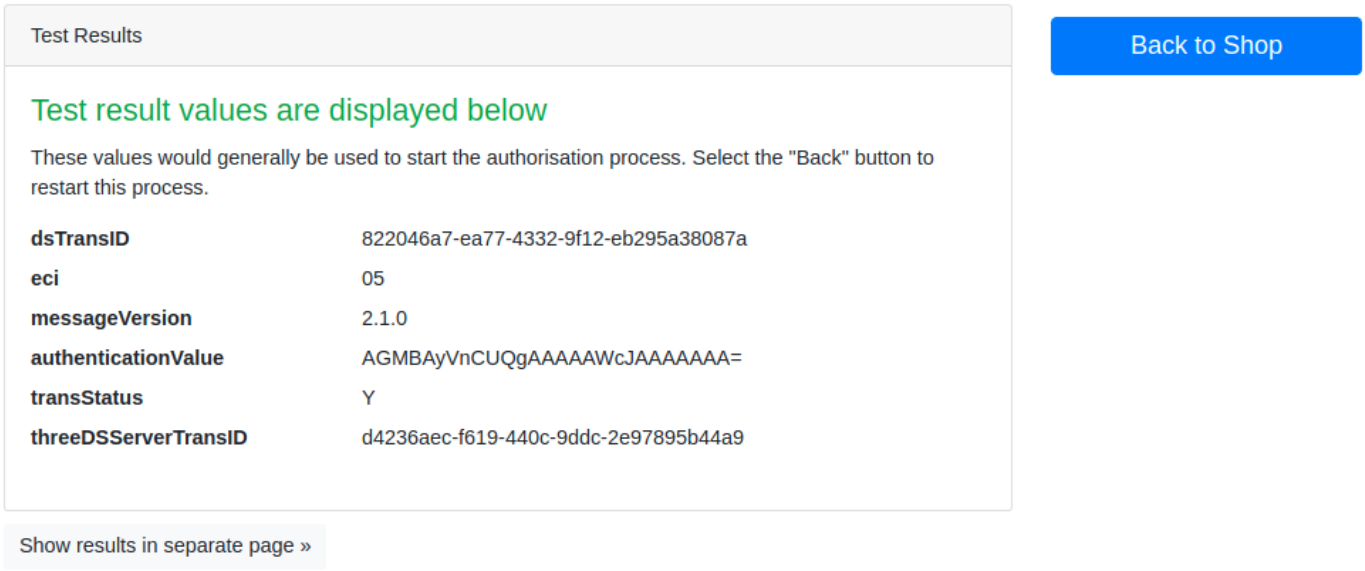
The demo 3DS Requestor then shows the checkout page:



Proceed with the `Checkout` button, the demo 3DS Requestor will show the progress screen:



Then finally show the result page (note depending on the card number used, you may be prompted for a challenge screen, check Sample code feature for details):



Congratulations! You just successfully ran and tested your first demo 3DS Requestor locally.

> **Warning**
>
> You may notice that the demo 3DS Requestor is running on HTTP. This is just for demo purposes and this code is not suitable for production.

Support

If you have any questions after reading this document, we are here to help. Please email us at techsupport@gpayments.com.

> **Whats next?**
>
> Select **Next** to learn about the **v2 Front-end implementation** for a 3DS Requestor.