REST API 3D Secure

3D Secure (3DS) is an authentication method that provides additional layer of security against fraud for online card payments. If you are accepting payments within European Economic Area then it is mandatory to authenticate the transactions with 3D secure to comply with PSD2 SCA (Strong customer authentication) requirements.

3D Secure integration options

Computop Paygate enables 3DS authentication for all integration types:

Hosted payment page or Hosted forms

If you are using Computop Paygate's Hosted Payment Page or Hosted Forms, you don't need to take any additional steps to implement 3DS. Computop Paygate will automatically handle the entire authentication process for you, ensuring compliance with PSD2 SCA requirements.

Direct integration

For merchants using Direct Integration, the implementation of 3DS depends on how you choose to handle the authentication process:

Merchant-managed 3DS authentication

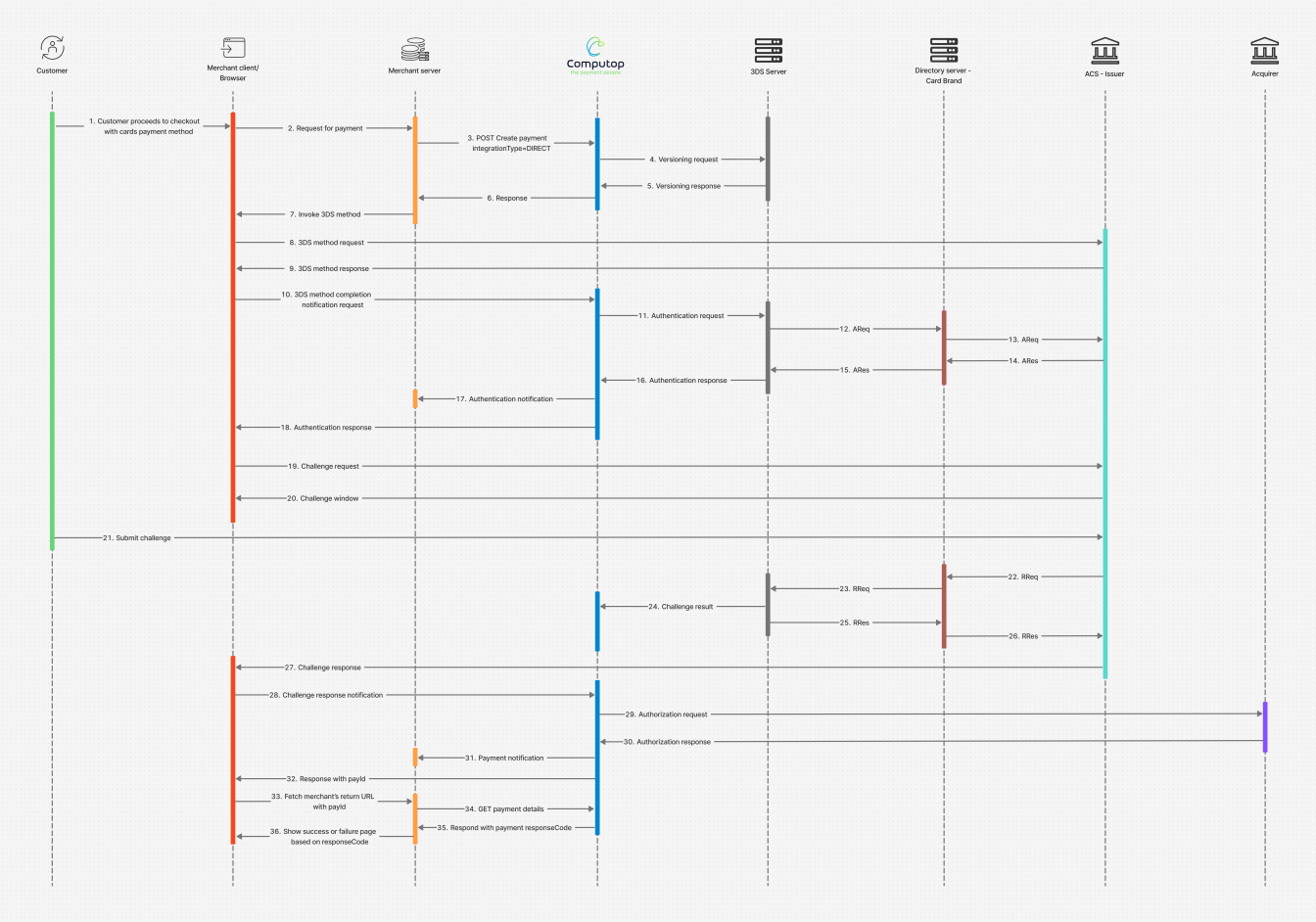
If you manage the 3DS authentication process independently before sending the payment request to Computop, ensure that all relevant authentication data is included in the `paymentMethods.card.threedsdata` object within the payment request.

```
{
    "acsProtocolVersion": "2.2.0",
    "authenticationValue": "AAABBIcWERFgUFgUQklFQRE=",
    "eci": "02",
    "threeDSServerTransID": "55570cf-bt5b-43fe-bd0d-2trr3427401c",
    "acsXID": "34565040-e95d-4f55-9aa1-d48d1234acd4",
    "dsTransID": "4347f607-d631-4ad5-34564533cadce558",
    "intermediateStatus": "Y",
    "finalStatus": "Y",
    "challengeRequestInd": "01"
}
```

Computop Paygate managed 3DS authentication

This section describes the process flow for merchants who want Computop to handle the 3DS authentication process.

Process flow



1. Customer proceeds to checkout with cards as a preferred payment method on your web shop and submits all the card data.

2. Your frontend makes a payment request to your backend.

3. Your backend makes a Create payment call to Computop Paygate.

Versioning:

4. Computop Paygate makes a versioning request to 3DS server to fetch Access Control Server (ACS) and Directory Server (DS) protocol versions that corresponds to the card account range and optionally a 3D secure method URL.

5. Computop Paygate receives the versioning response with the ACS and DS protocol versions.

6. Computop Paygate responds with a HTTP 201 response code to your backend with versioning data in `paymentMethods.card.versioningData`

```
{
    "threeDSServerTransID": "f049e8fb-5d93-1234-b995-3eaf05cef06a",
    "acsStartProtocolVersion": "2.2.0",
    "acsEndProtocolVersion": "2.2.0",
    "dsStartProtocolVersion": "2.2.0",
    "dsEndProtocolVersion": "2.2.0",
    "threeDSMethodURL": "https://testacsserver.com/3ds-method",
    "threeDSMethodDataForm":
"eyJ0aHJlZURTTWV0aG9kTm90aWZpY2F0aW9uVVJMIjoiaHR0cHM6Ly93d3cuY29tcHV0b3AtcGF5Z2F0ZS5jb20vY2JUaHJlZURTLmFzcHg_
YWN0aW9uPW10aGROdGZuIiwidGhyZWVEU1NlcnZlclRyYW5zSUQiOiJmMDQ5ZThmYi01ZDkzLTQ2MTAtYjk5NS0zZWFmMDVjZWYwNmEifQ",
    "threeDSMethodData": {
        "threeDSMethodNotificationURL": "https://www.computop-paygate.com/cbThreeDS.aspx?action=mthdNtfn",
        "threeDSServerTransID": "f049e8fb-5d93-4610-b995-3eaf05cef06a"
    }
}
```

Refer `paymentMethods.card.versioningData.errorDetails` object for the reasons if any parameter in versioningData is not populated.

3DS Method: 3DS Method is an optional step in the 3DS authentication flow that allows the card issuer's ACS to collect additional browser/device information before the actual authentication request (AReq) is sent. This data helps the ACS perform a more accurate risk assessment for the transaction.

7. Based on the versioning response received, 3DS method process should be invoked. To do this, your backend should provide `threeDSMethodData` and `threeDSMethodURL` to your frontend as received from versioning response. Your frontend should create a hidden iframe containing a form with a hidden input field for `threeDSMethodData` and submit it to `threeDSMethodURL`. The `threeDSMethodData` should be sent in Base64 encoded format which you can fetch directly from `threeDSMethodDataForm` in the versioning response. Below is an example snippet of the implementation:

```
<form name="threeDSMethodForm" method="POST" action="https://testacsserver.com/3ds-method">
  <input type="hidden" name="threeDSMethodData" value="
eyJ0aHJlZURTU2VydmVyVHJhbnNJRCI6IjNhYzdjYWE3LWFhNDItMjY2My03OTFiLTJhYzA1YTU0MmM0YSIsInRocmVlRFNNZXRob2ROb3RpZ
mljYXRpb25VUkwiOiJ0aHJlZURTTWV0aG9kTm90aWZpY2F0aW9uVVJMIn0">
</form>
```

If the issuer doesn't support 3DS Method process, `threeDSMethodURL` will be populated by Computop Paygate so that the 3DS Method process of posting the hidden form can happen regardless. This is necessary to facilitate direct communication between the browser and Computop Paygate during the 3DS process flow.

> You may use the operations `init3DSMethod` or `createIframeAndInit3DSMethod` at your discretion from the netcetra3DSWebSDK in order to iniatiate the 3-D Secure Method.

8. Your frontend submits the hidden form to ACS 3DS Method URL that enables ACS to collect all the required information.

9. ACS responds to the 3DS Method request with an HTML document.

10. The HTML document contains javascript that automatically creates and submits a hidden form with the `threeDSMethodData` to `threeDSMethodNotificationURL` which is hosted by Computop Paygate.

Authentication:

11. Upon receiving 3DS completion notification request, Computop Paygate proceeds with authentication request to 3DS server.

12. 3DS server submits authentication request to directory server.

13. Directory server submits authentication request to ACS

14. ACS sends back an authentication response to directory server

15. Directory server forwards the response to 3DS server

16. 3DS server forwards the response to Computop Paygate. If the authentication response doesn't enforce a challenge then the process skips to step 29, else the subsequent challenge process begins.

17. Computop Paygate sends a notification with `payId` in the body to `urls.webhook` that you submitted in the initial request (Step 3). You can call Retrieve payment details with `payId` to get all authentication response data.

18. Computop Paygate additionally sends the authentication response (base64 encoded) to the browser as a response to the 3DS method completion notification request (Step 10). The iframe uses window.postMessage() to send the Base64-encoded JSON payload to the parent page. Below is a snippet of decoded authentication response sent to the browser.

ChallengeWindowSize is calculated by provided viewport dimensions of browserInfo. If merchant provides smaller dimensions, those are passed to the ACS. While most ACS use responsive design for their SCA/OTP views there is no guarantee that any size will work/look good.


```
{
  "threeDSServerTransID": "f049e8fb-5d93-1234-b995-3eaf05cef06a",
  "acsChallengeMandated": true,
  "acsDecConInd": false,
  "acsOperatorID": "10024942",
  "acsReferenceNumber": "3DS_LOA_ACS_HIIN_020200_00553",
  "acsTransID": "70283ff7-df85-44be-b157-3bc6f8a31b89",
  "acsURL": "https://testacsserver.com/3ds-method",
  "dsReferenceNumber": "VISA.V 17 0003",
  "dsTransID": "2f15b09e-b915-4d5e-9f04-239ed985f3bb",
  "messageType": "ARes",
  "messageVersion": "2.2.0",
  "transStatus": "C",
  "challengeRequest": {
      "threeDSServerTransID": "f049e8fb-5d93-1234-b995-3eaf05cef06a",
      "acsTransID": "70283ff7-df85-44be-b157-3bc6f8a31b89",
      "challengeWindowSize": "04",
      "messageVersion": "2.2.0",
      "messageType": "CReq"
  },
  "base64EncodedChallengeRequest":
"eyJtZXNzYWdlVHlwZSI6IkNSZXEiLCJ0aHJlZURTU2VydmVyVHJhbnNJRCI6ImYwNDllOGZiLTVkOTMtNDYxMC1iOTk1LTNlYWYwNWNlZjA2
YSIsImFjc1RyYW5zSUQiOiI3MDI4M2ZmNy1kZjg1LTQ0YmUtYjE1Ny0zYmM2ZjhhMzFiODkiLCJjaGFsbGVuZ2VXaW5kb3dTaXplIjoiMDQiL
CJtZXNzYWdlVmVyc2lvbiI6IjIuMi4wIn0"
}
```


Challenge:

19. Based on the authentication response received, your frontend should create a challenge request. To do this, Base64 decode the authentication response and collect the value present in `base64EncodedChallengeRequest` and `acsURL`. Submit `base64EncodedChallengeRequest` to `acs URL` via iframe with size x (either challengeWindowSize or go 05; 100%*100%). Below is an example snippet of the implementation:


```
<form name="challengeRequestForm" method="POST" action="https://testacsserver.com/3ds-method">
  <input type="hidden" name="creq" value="
eyJtZXNzYWdlVHlwZSI6IkNSZXEiLCJ0aHJlZURTU2VydmVyVHJhbnNJRCI6ImYwNDllOGZiLTVkOTMtNDYxMC1iOTk1LTNlYWYwNWNlZjA2Y
SIsImFjc1RyYW5zSUQiOiI3MDI4M2ZmNy1kZjg1LTQ0YmUtYjE1Ny0zYmM2ZjhhMzFiODkiLCJjaGFsbGVuZ2VXaW5kb3dTaXplIjoiMDQiLC
JtZXNzYWdlVmVyc2lvbiI6IjIuMi4wIn0">
</form>
```


You may use the operations `init3DSChallengeRequest` or `createIFrameAndInit3DSChallengeRequest` at your discreation from the netcetra3DSWebSDK in order to submit challenge request.

20. ACS renders the challenge window on the browser.

21. Customer completes the challenge.

22. ACS notifies the outcome of the challenge to directory server via result request (RReq) message.

23. Directory server forwards RReq to 3DS server.

24. 3DS server forwards challenge result to Computop Paygate.

25. 3DS server acknowledges to RReq with a result response (RRes) to directory server.

26. Directory server forwards RRes to ACS.

27. ACS additionally provides the challenge response to the browser as a response to "Submit challenge" (Step 21). Your frontend should listen to the challenge response returned to the iframe.

28. Once challenge response is received your frontend submits challenge response notification request to Computop Paygate. Below is the sample decoded JSON:

```
{
  "messageType": "CRes",
  "messageVersion": "2.2.0",
  "threeDSServerTransID": "f049e8fb-5d93-1234-b995-3eaf05cef06a",
  "acsTransID": "70283ff7-df85-44be-b157-3bc6f8a31b89",
  "challengeCompletionInd": "Y",
  "transStatus": "Y"
}
```


Authorization:

29. Computop Paygate proceeds to authorization with the acquirer.

30. Acquirer provides the authorization response to Computop Paygate.

31. Computop Paygate sends a notification with `payId` in the message body to `urls.webhook` that you submitted initially (step 3). You can call Retrieve payment details with `payId` to get all authorization response data.

32. Computop Paygate additionally responds to the browser with `payId` in the message body as a response to step 28. The iframe uses window.postMessage() to send it.

33. Your frontend fetches your shop's return URL with `payId` from your backend.

34. Your backend makes Retrieve payment details with `payId` to Computop Paygate to fetch the final responseCode of the transaction.

35. Computop Paygate responds with the responseCode of the transaction.

36. Your backend renders success or failure page depending on the responseCode of the transaction.