N26 - PSD2 Dedicated Interface - CBPII Access documentation

General information

Berlin Group Conformity : Implementation Guidelines version 1.3.6

Authorisation protocol: oAuth 2.0

Security layer: A valid QWAC Certificate for PSD2 is required to access the Berlin Group API. The official list of QTSP is available on the European Comission eIDAS Trusted List. For the N26 PSD2 Dedicated Interface API, the QWAC Certificate must be issued from a production certificate authority.

Certificates can be renewed by making an API call **using the new certificate**, which will then be onboarded automatically.

Access & Identification of TPP

Base URL

```
https://xs2a.tech26.de
```

Sandbox URL

```
https://xs2a.tech26.de/sandbox
```

On-boarding of new TPPs

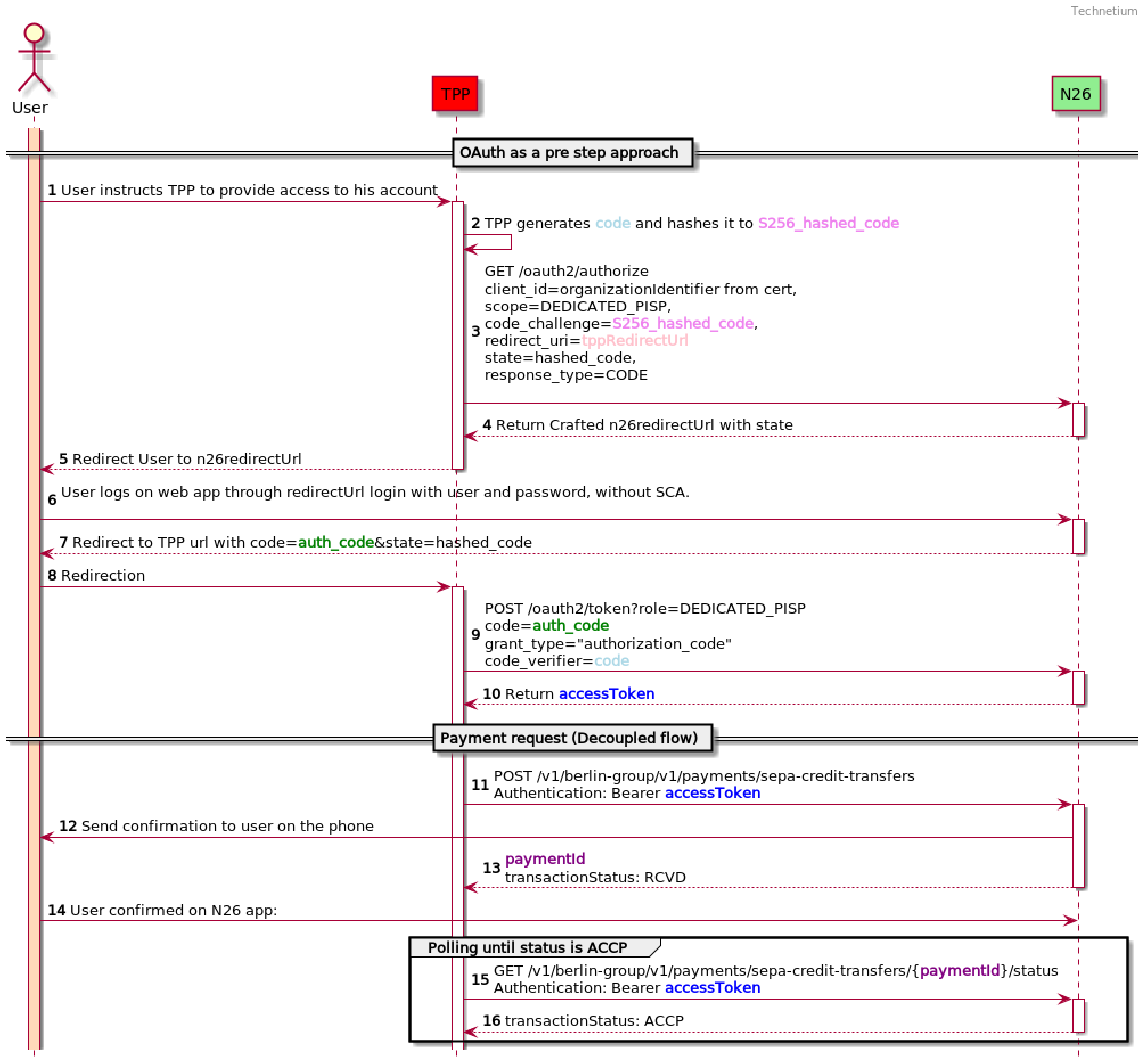
1. A TPP shall connect to the N26 PSD2 dedicated API by using an eIDAS valid certificate (QWAC) issued
2. N26 shall check the QWAC certificate in an automated way and allow the TPP to identify themselves with the subsequent API calls
3. As the result of the steps above, the TPP should be able to continue using the API without manual involvement from the N26 side

Support for this implementation on the Berlin Group API

Service	Support
Supported SCA Approaches	Decoupled (Oauth2 as a pre-step)
SCA Validity	20 minutes
Confirmations of funds	Supported

OAuth as a Pre-step

OAuth2 is supported by this API through the authentication of a PSU in a pre-step, as per the diagram below:


Technetium
User
TPP
N26
OAuth as a pre step approach
1 User instructs TPP to provide access to his account
2 TPP generates code and hashes it to S256_hashed_code
3 GET /oauth2/authorize
client_id=organizationIdentifier from cert,
scope=DEDICATED_PISP,
code_challenge=S256_hashed_code,
redirect_uri=tppRedirectUrl
state=hashed_code,
response_type=CODE
4 Return Crafted n26redirectUrl with state
5 Redirect User to n26redirectUrl
6 User logs on web app through redirectUrl login with user and password, without SCA.
7 Redirect to TPP url with code=auth_code&state=hashed_code
8 Redirection
9 POST /oauth2/token?role=DEDICATED_PISP
code=auth_code
grant_type="authorization_code"
code_verifier=code
10 Return accessToken
Payment request (Decoupled flow)
11 POST /v1/berlin-group/v1/payments/sepa-credit-transfers
Authentication: Bearer accessToken
12 Send confirmation to user on the phone
13 paymentId
transactionStatus: RCVD
14 User confirmed on N26 app:
Polling until status is ACCP
15 GET /v1/berlin-group/v1/payments/sepa-credit-transfers/{paymentId}/status
Authentication: Bearer accessToken
16 transactionStatus: ACCP

Validity of access token

	Access Token
Purpose	Access for API calls in **one session**
How to get	1. Make a request to GET /oauth2/authorize providing a redirectUrl and a hashed code verifier 2. Redirect users to n26 web page, where they will log in. If successful, page will be redirected to the URL provided on step 1, along with an auth Code 3. Use the authCode along with the unhashed code verifier on POST /oauth2/token
Validity	20 min
Storage	NEVER

CBPII flow does not provide refresh tokens for security purposes

The TPP should not use those access tokens on base URLs other than `xs2a.tech26.de`.

Access tokens issued for CBPII cannot be used for AISP flows nor PISP flows.

Authentication endpoints

These endpoints are used to retrieve an access or refresh token for use with the /consents and /accounts endpoints.

Note: any values shown between curly braces should be taken as variables, while the ones not surrounded are to be read as literals.

Initiate authorization

This begins the authorization process. Users should be redirected to the URL supplied in the response.

Sample request

```
GET /oauth2/authorize?client_id=PSDDE-BAFIN-000001&
                      scope=DEDICATED_CBPII&
                      code_challenge=w6uP8Tcg6K2QR905Rms8iXTlksL6OD1KOWBxTK7wxPI&
                      redirect_uri=https://tpp.com/redirect&
                      response_type=CODE&
                      state=1fL1nn7m9a
HTTP/1.1
```

Supported query parameters:

Name of parameter	Description
client_id	This should match the QWAC certificate's organization identifier. This field may be obtained by running the following command on the QWAC certificate: *$ openssl x509 -in certificate.pem -noout -text | grep "Subject:" | grep -o "organizationIdentifier = [A-Za-z0-9-]*"* (This shell script may not work exhaustively for every certificate; if it doesn't, we propose to just run the part before the "greps" and find the organization identifier by eye.) Mandatory field.
scope	Accepted value: "DEDICATED_CBPII". Mandatory field.
code_challenge	SHA256 hash of the code_verifier to be provided on POST /oauth2/token. Minimum size 43 characters, maximum 128. Should be Base-64 URL encoded, as per https://tools.ietf.org/html/rfc7636#section-4.2. BASE64URL-ENCODE(SHA256(ASCII(code_verifier))) Please refer to https://tonyxu-io.github.io/pkce-generator/ for sample values. So as an example, code_verifier should be set as "foobar" while code challenge would be "w6uP8Tcg6K2QR905Rms8iXTlksL6OD1KOWBxTK7wxPI". Mandatory field.

redirect_uri	URI to which users will be redirected back when the authorization process is completed. Mandatory field.
state	Random state string which should be returned on the query string when N26 redirects back, so the TPP can link the redirection to the original authorization request. Mandatory field.
response_type	Accepted value: “CODE”. Mandatory field.

Sample Response

```
HTTP/1.1 302 Found
location: https://app.n26.com/open-banking?requestId=0daa152a-651a-4592-8542-47ff60799deb&state=1fL1nn7m9a&authType=XS2A
```

Retrieve Token

When users are redirected back from the URL supplied in the previous request (step 7 of the sequence diagram), the following two query string parameters should be extracted and verified

- **state** - should match the state supplied in the initiate authorization request
- **code** - this is the authorization code which will be used to retrieve the token

As an example, if the TPP provided “https://www.tpp.com/redirect“ as redirect_uri, after the users have successfully logged in, the TPP can expect a redirection to the following URL:

`https://www.tpp.com/redirect?code=dbtF5AqOApjjSnNF5TK3w3gaEPdwtV2&state=1fL1nn7m9a`

Upon receiving this redirect, the TPP can make the following request can be made to retrieve the access and refresh tokens:

Sample Request

```
POST    /oauth2/token?role=DEDICATED_CBPII HTTP/1.1
Content-Type: application/x-www-form-urlencoded

grant_type=authorization_code&
code=dbtF5AqOApjjSnNF5TK3w3gaEPdwtV2&
code_verifier=foobar&
redirect_uri=https://tpp.com/redirect
```

Supported query parameters:

Name of query parameter	Description
role	Accepted value: “`DEDICATED_CBPII`” to generate a CBPII-only token. Mandatory field.

Supported form parameters:

Name of parameter	Description
grant_type	Accepted value: “authorization_code”. Mandatory parameter.
code	The authorization code as returned by N26 as a parameter (“code”) on the redirect URL (step 7 of the sequence diagram). Mandatory parameter.
code_verifier	Value of the code verifier; should match hashed code challenge from `GET /oauth2/authorize` request. Mandatory parameter.
redirect_uri	The same redirect URI that was provided to the `GET /oauth2/authorize` request. Optional parameter.

Response

Successful

Note that no refresh tokens are provided for security purposes.

```
HTTP/1.1 200 OK
{
    "access_token": "{{access_token}}",
    "token_type": "bearer",
    "expires_in": {{expires_in_seconds}}
}
```

TPP has provided the wrong authorization code or code verifier

```
HTTP/1.1 400 Bad Request
{
    "userMessage": {
        "title": "Error",
        "detail": "Please try again later."
    },
    "error_description": "Bad Request",
    "detail": "Bad Request",
    "type": "invalid_request",
    "error": "invalid_request",
    "title": "invalid_request",
    "status": 400
}
```

CBPII Consent endpoints

Please use your QWAC certificate when calling for any Consent request on `xs2a.tech26.de`, along with a valid access token retrieved as per the oauth session.

⚠ We use a different endpoint than the one that we use for AIS consent. For AIS we are using `/v1/berlin-group/v1/consents` and for CBPII we use `/v1/berlin-group/v1/consents/confirmation-of-funds`.

Create consent

Request

This is the only consent type that provides access to N26 spaces, since those do not have IBANs. For allPsd2, “allAccounts“ and “allAccountsWithOwnerName” options are supported. Recurring indicator is a mandatory parameter.

```
POST    /v1/berlin-group/v1/consents/confirmation-of-funds HTTP/1.1
Authorization: bearer {{access_token}}
Content-Type: application/json

{
  "account": {
      "iban" : "DE73100110012629586632"
      }
}
```

Response

```
aspsp-sca-approach: DECOUPLED

{
    "consentStatus": "received",
    "consentId": "55ecfaab-786a-4363-94af-2401f0a4bc65",
    "_links": {
        "status": {
            "href": "/v1/berlin-group/v1/consents/confirmation-of-funds/55ecfaab-786a-4363-94af-2401f0a4bc65/status"
        },
        "scaStatus": {
            "href": "/v1/berlin-group/v1/consents/confirmation-of-funds/55ecfaab-786a-4363-94af-2401f0a4bc65/authorisations/985f9d29-10ee-4ab0-90d6-6c2aeda65852"
        }
    }
}
```

Get consent status

This endpoint is intended to be polled by the TPP to determine whether the users have confirmed the consent (as we are using the decoupled SCA approach). Please note that users have up to 5 minutes to confirm consent, and thus the time taken for the status to change is dependent on the user.

Request

```
GET    /v1/berlin-group/v1/consents/confirmation-of-funds/{{consentId}}/status HTTP/1.1
Authorization: bearer {{access_token}}
X-Request-ID: {{Unique UUID}}
Content-Type: application/json
```

Response

```
{
    "consentStatus": "received"
}
```

Get consent

Request

```
GET    /v1/berlin-group/v1/consents/confirmation-of-funds/{{consentId}} HTTP/1.1
Authorization: bearer {{access_token}}
X-Request-ID: {{Unique UUID}}
Content-Type: application/json
```

Response

```
{
    "account": {
        "iban": "DE73100110012629586632"
    },
    "consentStatus": "received"
}
```

Delete consent

Request

```
DELETE    /v1/berlin-group/v1/consents/confirmation-of-funds/{{consentId}} HTTP/1.1
Authorization: bearer {{access_token}}
X-Request-ID: {{Unique UUID}}
Content-Type: application/json
```

Response

```
HTTP/1.1 204 No Content
```

Get authorisations

Request

```
GET    /v1/berlin-group/v1/consents/confirmation-of-funds/{{consentId}}/authorisations HTTP/1.1
Authorization: bearer {{access_token}}
X-Request-ID: {{Unique UUID}}
Content-Type: application/json
```

Response

```
{
    "authorisationIds": [
        "e93bf74e-9444-4a5e-8524-648d80848126"
    ]
}
```

Get authorisation

Request

```
GET    /v1/berlin-group/v1/consents/confirmation-of-funds/{{consentId}}/authorisations/{{authorisationId}} HTTP/1.1
Authorization: bearer {{access_token}}
X-Request-ID: {{Unique UUID}}
Content-Type: application/json
```

Response

```
{
    "scaStatus": "finalised"
}
```

CBPII endpoints

Please use your QWAC certificate when calling for any Funds request on `xs2a.tech26.de`, along with a valid access token retrieved as per the Oauth session.

Funds confirmation

Request

```
POST    /v1/berlin-group/v1/funds-confirmations HTTP/1.1
Authorization: bearer {{access_token}}
Consent-ID: {{consent_id}}
X-Request-ID: {{Unique UUID}}
PSU-IP-Address: {{Users'IP if they are present}}
Content-Type: application/json

{
    "account": {
        "iban": "DE73100110012629586632"
    },
    "instructedAmount": {
        "amount": "10.00",
        "currency": "EUR"
    }
}
```

Response

```
{
    "fundsAvailable": true
}
```