N26 - PSD2 Dedicated Interface - AISP 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.

Access & Identification of TPP

Base URL

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

Sandbox URL

Currently the N26 PSD2 Dedicated Interface provides no sandbox environment.

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 and allow the TPP to identify themselves automatically 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
4. For any issues on the above process, TPP should contact N26 on open.banking@n26.com

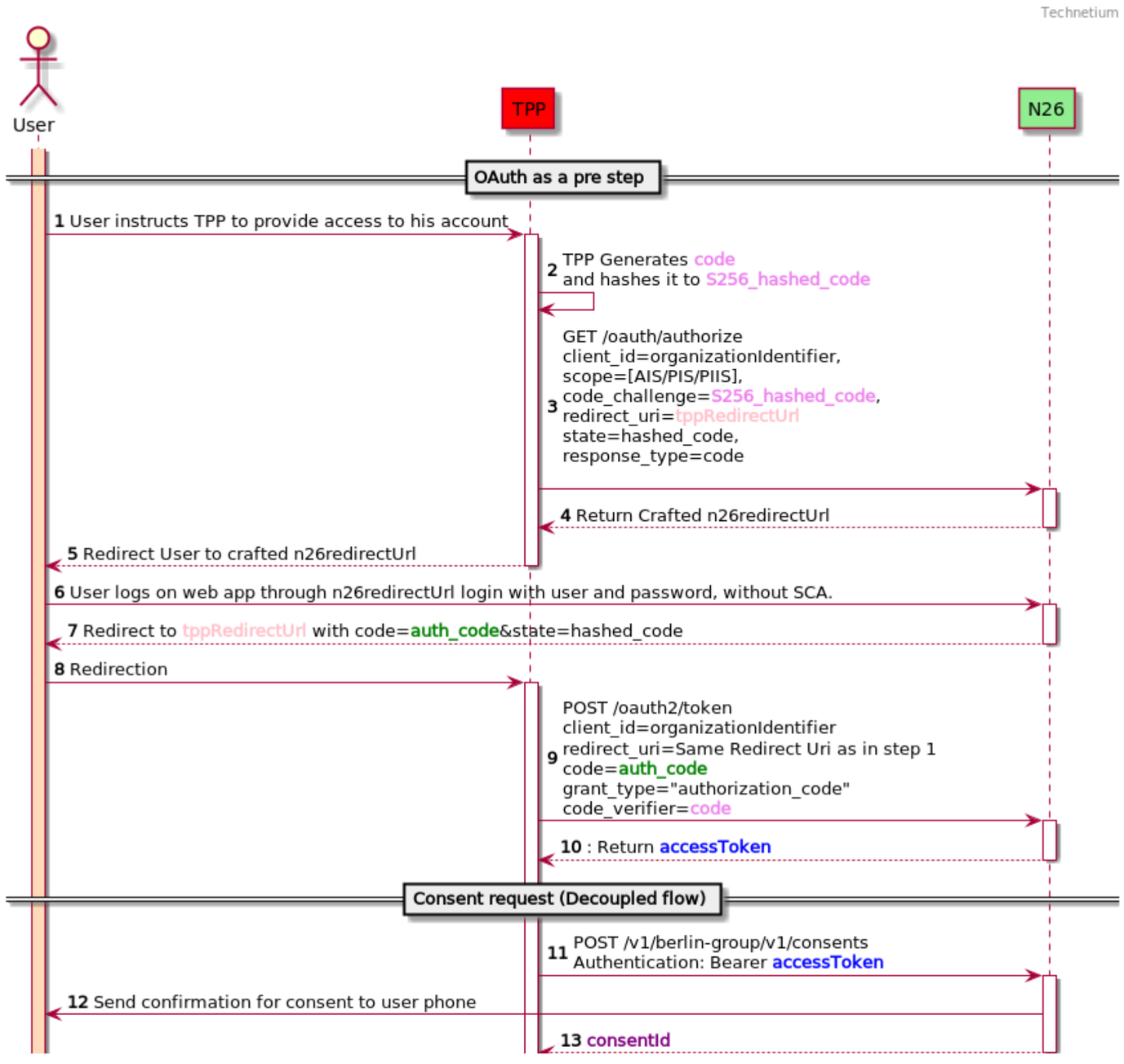
Support for this implementation on the Berlin Group API

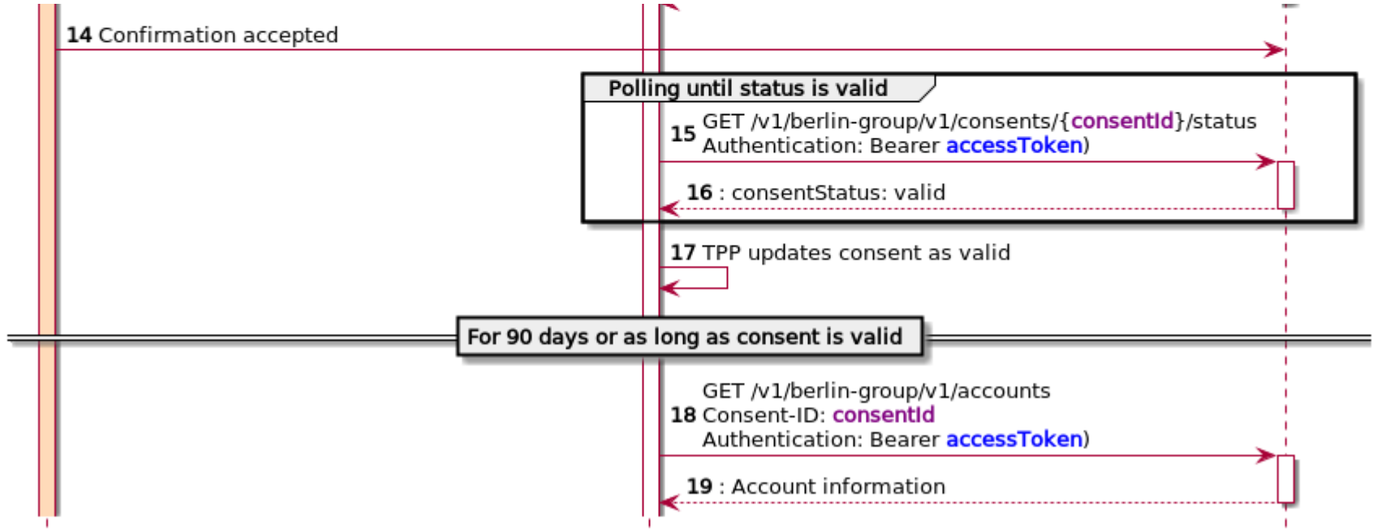
Service	Support
Supported SCA Approaches	Decoupled (Oauth2 as a pre-step)
Maximum “frequency per day” supported by consents	4
Consent confirmation timeout	5 minutes
Consent scope: Global consent (allPsd2= allAccounts, allAccountsWithOwnerName)	Supported
Consent scope: availableAccounts= allAccounts	Not Supported
Consent scope: availableAccountsWithBalances= allAccounts	Not Supported
Consent scope: Bank-offered consent	Supported
Consent scope: Detailed consent	Supported
Consents with Recurring indicator	Supported
SCA Validity	90 days
Support of Signing Baskets	Not Supported
Support of Card accounts	Not Supported
Support of Multicurrency accounts	Not Supported
Support of Account Owner extension	Supported
Parameter withBalance=true	Not supported
Balance types supported	Expected

Transaction list retrieval through entryReferenceFrom	Not supported
Transaction list retrieval through deltaList	Not supported
Transaction list format	application/json
Standing orders through bookingStatus=INFORMATION	Supported
App to app redirection	Not 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:





Validity of access & refresh tokens

	Access Token	Refresh Token
Purpose	Access for API calls in **one session**	Generate new access tokens
How to get	1. Make a request to GET /oauth/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 /oauth/token or 1. Existing Refresh token	1. Make a request to GET /oauth/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 /oauth/token or 1. Existing Refresh token
Validity	15 min	**One time usable**, but chain of refresh tokens is **valid for 90 days**
Storage	NEVER	Yes, for 89 days (expiry needs to be stored on TPP)

Refreshing refresh tokens

The first refresh token has validity of 90 days, but is **one-time usable**.

With this refresh token, an access and a new refresh token can be requested.

This new refresh token maintain the initial 90 days validity.

So in summary the chain of refresh tokens has a validity of 90 days.

Refresh getting close to expiry

On day 89 the TPP should discard the refresh token and ask users for re-authentication.

As highlighted above the TPP should never store users' passwords.

Access tokens are supposed to be used only for **1 session (sequence of calls)**.

If users request a manual refresh a new access token has to be requested **EVEN** if the original access token is still valid.

For this reason the TPP should **NEVER** store the access token.

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

Authentication endpoints

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

Initiate authorization

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

Request

```
GET    /oauth/authorize HTTP/1.1
```

Supported query parameters:

Name of parameter	Description
client_id	This should match the QWAC certificate's organization identifier. Mandatory field.
scope	Accepted value: "DEDICATED_AISP". 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 encoded. 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 we redirect back. Mandatory field.
response_type	Accepted value: "CODE". Mandatory field.

Response

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

Retrieve Token

When users are redirected back to the URL supplied in the previous request, 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

Following this a request can be made to retrieve the access and refresh tokens.

Request

```
POST    /oauth/token&role=DEDICATED_AISP HTTP/1.1
Content-Type: application/x-www-form-urlencoded

grant_type=authorization_code&
code={{authorization code}}&
code_verifier={{code verifier}}&
request_id={{request_id}}&
redirect_uri={{redirect_uri}}
```

Supported query parameters:

Name of query parameter	Description
role	`DEDICATED_AISP` to generate a AISP-only token. Mandatory.

Supported form parameters:

Name of parameter	Description
grant_type	Accepted value: “authorization_code”. Mandatory.
code	The authorization code. Mandatory.
code_verifier	Value of the code verifier; should match hashed code challenge from `/authorize` request. Mandatory.
request_id	Request ID as per response of GET /oauth/authorize. Mandatory.
redirect_uri	The same redirect URI that was provided to the `/authorize` request. Optional field

Response

Successful

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

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
}
```

Refresh Token

When an access_token has expired, a TPP can request a new one by making use of the refresh token request, which will invalidate the token used for this request and generate a new pair of access_token and refresh_token.

Request

```
POST    /oauth/token&role=DEDICATED_AISP HTTP/1.1
Content-Type: application/x-www-form-urlencoded

grant_type=refresh_token&
refresh_token={{refresh_token}}
```

Supported query parameters:

Name of query parameter	Description
role	`DEDICATED_AISP` to generate a AISP-only token. Mandatory.

Supported form parameters:

Name of parameter	Description
grant_type	Accepted value: “refresh_token”. Mandatory field.
refresh_token	The refresh token from the last POST /oauth/token call. Mandatory field.

Response

Successful

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

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.

Create consent

Request (Global consent)

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.

```
POST    /v1/berlin-group/v1/consents HTTP/1.1
Authorization: bearer {{access_token}}

{
  "access": {
      "allPsd2": "allAccounts"
  },
  "recurringIndicator": false,
  "validUntil": "2020-10-01",
  "frequencyPerDay": "4"
}
```

Request (consent by IBAN)

```
POST    /v1/berlin-group/v1/consents HTTP/1.1
Authorization: bearer {{access_token}}

{
  "access": {
    "accounts": [{
      "iban" : "DE73100110012629586632"
    }],
    "balances": [{
      "iban" :  "DE73100110012629586632"
    }],
    "transactions": [{
      "iban" :  "DE73100110012629586632"
    }]
  },
  "recurringIndicator": false,
  "validUntil": "2020-10-01",
  "frequencyPerDay": "4"
}
```

Request (bank offered consent)

```
POST    /v1/berlin-group/v1/consents HTTP/1.1
Authorization: bearer {{access_token}}

{
  "access": {
      "access": {
        "accounts": [],
        "balances": [],
        "transactions": []
    },
  },
  "recurringIndicator": false,
  "validUntil": "2020-10-01",
  "frequencyPerDay": "4"
}
```

Response

```
aspsp-sca-approach: DECOUPLED

{
    "consentStatus": "received",
    "consentId": "fb44eb9c-d12f-4aef-90bd-726c47f2e864",
    "_links": {
        "status": {
            "href": "/v1/berlin-group/v1/consents/fb44eb9c-d12f-4aef-90bd-726c47f2e864/status"
        }
    }
}
```

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).

Request

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

Response

```
{
    "access": {
        "allPsd2": "allAccounts"
    },
    "recurringIndicator": false,
    "validUntil": "2020-11-01",
    "frequencyPerDay": 4,
    "lastActionDate": "2020-08-03",
    "consentStatus": "valid",
    "_links": {
        "account": {
            "href": "/v1/berlin-group/v1/accounts"
        }
    }
}
```

Delete consent

Request

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

Response

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

AIS endpoints

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

Read Account List

Request

```
GET    /v1/berlin-group/v1/accounts 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
```

- withBalance parameter is currently not supported.

Response

Field Owner name is only supported if the consent is “allAccountsWithOwnerName”. If allPsd2 Consent is requested, accounts without IBANs may be returned, corresponding to the N26 Spaces.

```
X-Request-ID: {{Unique UUID}}
{
```

```
    "accounts": [
        {
            "resourceId": "54683c9e-1160-4bf8-9a18-5c0bda473fb1",
            "currency": "EUR",
            "product": "Space",
            "name": "Trip to Australia",
            "cashAccountType": "CACC",
            "status": "enabled",
            "usage": "PRIV",
            "ownerName": "Name of owner",
            "_links": {
                "balances": {
                    "href": "/v1/berlin-group/v1/accounts/54683c9e-1160-4bf8-9a18-5c0bda473fb1/balances"
                },
                "transactions": {
                    "href": "/v1/berlin-group/v1/accounts/54683c9e-1160-4bf8-9a18-5c0bda473fb1/transactions"
                }
            }
        },
        {
            "resourceId": "9ce689d3-d7ce-4159-9405-d6756d645564",
            "iban": "DE73100110012629586632",
            "currency": "EUR",
            "product": "Main Account",
            "name": "Main Account",
            "bic": "NTSBDEB1XXX",
            "cashAccountType": "CACC",
            "status": "enabled",
            "usage": "PRIV",
            "ownerName": "Name of owner",
            "_links": {
                "balances": {
                    "href": "/v1/berlin-group/v1/accounts/9ce689d3-d7ce-4159-9405-d6756d645564/balances"
                },
                "transactions": {
                    "href": "/v1/berlin-group/v1/accounts/9ce689d3-d7ce-4159-9405-d6756d645564/transactions"
                }
            }
        },
        {
            "resourceId": "5fc825d0-102c-4d1b-8bd1-871e26a58001",
            "currency": "EUR",
            "product": "Shared Space",
            "name": "shared space",
            "cashAccountType": "CACC",
            "status": "enabled",
            "usage": "PRIV",
            "ownerName": "Name of owner",
            "_links": {
                "balances": {
                    "href": "/v1/berlin-group/v1/accounts/5fc825d0-102c-4d1b-8bd1-871e26a58001/balances"
                },
                "transactions": {
                    "href": "/v1/berlin-group/v1/accounts/5fc825d0-102c-4d1b-8bd1-871e26a58001/transactions"
```

```
                }
            }
        }
    ]
}
```

Read Account Details

Request

```
GET    /v1/berlin-group/v1/accounts/{{resourceId}} 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
```

- withBalance parameter is currently not supported.

Response

Field Owner name is only supported if consent is “allAccountsWithuserName”. If allPsd2 Consent is requested, accounts without IBANs may be returned, corresponding to the N26 Spaces.

```
X-Request-ID: {{Unique UUID}}
{
    "account": {
        "resourceId": "9ce689d3-d7ce-4159-9405-d6756d645564",
        "iban": "DE73100110012629586632",
        "currency": "EUR",
        "product": "Main Account",
        "name": "Main Account",
        "bic": "NTSBDEB1XXX",
        "cashAccountType": "CACC",
        "status": "enabled",
        "usage": "PRIV",
        "ownerName": "Name of owner",
        "_links": {
            "balances": {
                "href": "/v1/berlin-group/v1/accounts/9ce689d3-d7ce-4159-9405-d6756d645564/balances"
            },
            "transactions": {
                "href": "/v1/berlin-group/v1/accounts/9ce689d3-d7ce-4159-9405-d6756d645564/transactions"
            }
        }
    }
}
```

Read Balance

Request

```
GET    /v1/berlin-group/v1/accounts/{{resourceId}}/balances 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
```

Response

```
X-Request-ID: UUID

{
    "balances": [
        {
            "balanceType": "expected",
            "balanceAmount": {
                "amount": "55.55",
                "currency": "EUR"
            },
            "lastChangeDateTime": "2020-07-30T15:59:20.162Z"
        }
    ],
    "account": {
        "iban": "DE73100110012629586632"
    }
}
```

Read Transaction List

Request

```
GET    /v1/berlin-group/v1/accounts/{{resourceId}}/transactions 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
```

- Query parameter “bookingStatus” are supported with values "booked", "pending", "both" and “information”
- Query parameters “dateFrom” and “dateTo” are supported when “bookingStatus” is not “information“
- Query parameter “withBalance” is currently not supported.
- Query parameter “deltaList” is currently not supported.
- Pagination through “_links” is currently not supported.

Response

```
X-Request-ID: UUID

{
    "account": {
        "iban": "DE73100110012629586632"
    },
    "transactions": {
        "pending": [
            {
                "transactionId": "4b856f12-a75c-449f-8e71-69bd72947445",
                "creditorName": "Creditor name",
                "transactionAmount": {
                    "amount": "1.0",
                    "currency": "EUR"
                },
                "bookingDate": "2020-07-13",
                "valueDate": "2020-07-13",
                "bankTransactionCode": "PMNT-MCRD-UPCT"
            }
        ],
        "booked": [
            {
                "transactionId": "7f9da399-8c53-4c68-b43c-c7e22a0c70d2",
                "creditorName": "User SEPA",
                "creditorAccount": {
                    "iban": "DE43100110012620287103"
                },
                "transactionAmount": {
                    "amount": "1.0",
                    "currency": "EUR"
                },
                "bookingDate": "2020-07-22",
                "valueDate": "2020-07-22",
                "bankTransactionCode": "PMNT-ICDT-ESCT"
            }
        ],
        "_links": {
            "account": {
                "href": "/v1/berlin-group/v1/accounts/9ce689d3-d7ce-4159-9405-d6756d645564"
            }
        }
    }
}
```

Read Transaction Details

Request

```
GET    /v1/berlin-group/v1/accounts/{{resourceId}}/transactions/{{transactionId}} 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
```

- Query parameter “withBalance” is currently not supported.
- Only transactions are supported, not standing orders.

Response

```
X-Request-ID: UUID

{
    "transactionDetails": {
        "transactionId": "4b856f12-a75c-449f-8e71-69bd72947445",
        "creditorName": "NOAPV21EQZYWG0NC0KNMMW",
        "transactionAmount": {
            "amount": "1.0",
            "currency": "EUR"
        },
        "bookingDate": "2020-07-13",
        "valueDate": "2020-07-13",
        "bankTransactionCode": "PMNT-MCRD-UPCT"
    }
}
```

Read Standing order List

Request

```
GET    /v1/berlin-group/v1/accounts/{{resourceId}}/transactions?bookingStatus=information 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
```

- Query parameters “dateFrom” and “dateTo” are not supported for standing orders
- Pagination through “_links” is currently not supported.

Response

```
X-Request-ID: UUID

{
    "account": {
        "iban": "DE73100110012629586632"
    },
    "transactions": {
        "information": [
            {
                "creditorName": "Recipient",
                "creditorAccount": {
                    "iban": "DE12500105170648489890"
                },
                "transactionAmount": {
                    "amount": "1.00",
                    "currency": "EUR"
                },
                "remittanceInformationUnstructured": "Standing order",
                "additionalInformationStructured": {
                    "standingOrderDetails": {
                        "startDate": "2021-08-13",
                        "frequency": "MNTH"
                    }
                }
            }
        ],
        "_links": {
            "account": {
                "href": "/v1/berlin-group/v1/accounts/9ce689d3-d7ce-4159-9405-d6756d645564"
            }
        }
    }
}
```