

Agents API

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Purpose

Partners and bigger agencies (referred to as *clients* going forward) are requesting us to provide ways for them to integrate our solution into their products, providing an immersive experience to their users.

Use cases

Payment initialization

Clients need to guide their students/agents through a payment flow that should fulfill either a tuition or enrollment (or possibly other) actions in their system. They need to be able to initiate the payment process and track the status of it.

Clients can pass in payment initialization information through the API that will redirect them to our payment asset that allows end users to complete the payment flow.

1. The response will be a redirect to the *payment initialization asset*
2. Data that can/must be passed: student data, institution identifier, amount
3. An institution selector API will allow searching institutions and get their details

Payment tracking

Once a payment has been initialized clients need to be able to show its status and other details within their system.

Clients will be able to query the status of each payment through a query API providing details about individual payment and a collection of them.

To be able to track payment status in real time a callback system will be made available that provides real-time updates when payment status transitions happen.

Payment lifecycle

A payment can transition from *PENDING* (each payment's initial state) to either *DELIVERED* or *CANCELLED* (as the final state). Below you will find a description of each status to better understand where the payment is within its lifecycle.

1. *PENDING* - the payment has been created through the API and is awaiting action from the payer
2. *INITIATED* - the payer started the payment process

3. GUARANTEED - funds have been received by Flywire or our partner
4. DELIVERED - funds were delivered to the beneficiary
5. CANCELLED - the payment was cancelled either by the payer or by an automated process.

API

Sandbox details

- The sandbox environment that is available to integrate against is: agents.demo.flywire.com
- Destinations that can be used during testing:
 - University Integrated with id: *FLYWIRE:AIN* (a destination with an integrated payment experience - i.e. payment happens on a school/institution domain)
 - University Non-Integrated with id: *FLYWIRE:ANI* (a destination with a non-integrated payment experience - i.e. payment happens on Flywire domain)

General concepts used within the API are outlined below.

Authorization

The simple way for authenticating your requests is to include the *X-Authentication-Key* header in all your requests. The value of this header should be the API Key (formerly Message Signing Key) which is available in the Agents portal in the *Settings > General > Integration Details* section.

Media type versioning

To ensure extensibility on the server side and flexibility on the client (partner) side the payloads must be versioned by custom mime types.

Clients must accept minor version updates (consisting of field additions).

Major version updates are not mandated to be accepted by clients and the upgrade procedure will be discussed by the teams.

Json schemas

Schemas are provided for all request/response pairs for the API endpoints. Their definitions are available at the */schemas* endpoint with specific details available in the *self* links.

Request

```
curl -H Accept: application/json' -H X-Authentication-Key: your_api_key'  
https://agents.demo.flywire.com/api/schemas -i
```

Response example

```
[
```

```
{
  "name": "com.flywire.agents.payment.initialization.1-0.schema.json",
  "links": {
    "self":
    "https://agents.demo.flywire.com/api/schemas/com.flywire.agents.payment.initialization.1-0.schema.json"
  }
},
{
  "name": "com.flywire.agents.payment.details.1-0.schema.json",
  "links": {
    "self":
    "https://agents.demo.flywire.com/api/schemas/com.flywire.agents.payment.details.1-0.schema.json"
  }
}
]
```

Working with collections

Interacting with collections allows filtering, sorting and pagination of the results that are returned.

Querying

Available through HTTP query parameters and are documented for each endpoint.

Sorting

Specifying the *sort* query parameter with a list of fields prefixed with +(ascending - optional as it is default) and - (descending - required).

Pagination

The API implements cursor based pagination (see [Facebook's recommendations](#)) where cursor links to the previous/next pages are provided in the response. The *limit* query parameter specifies the number of items within the page (default 10 / max 100).

Common objects

Amounts

All amounts in the API are expressed in the currency subunit. A currency is always associated (explicitly or implicitly) to the payment object.

Dates

All dates respect the ISO 8601 standard and their form is specified explicitly in their container object's json schema.

Payment Endpoints

Initialize a payment

Request

```
curl -H 'Content-Type: application/flywire.agents.payment.initialization+json;version=1.0' -H 'Accept: application/flywire.agents.payment.details+json;version=1.0' -H 'X-Authentication-Key: your_api_key' https://agents.demo.flywire.com/api/payments -d '{
  "subject": {
    "type": "student",
    "firstName": "Mickey",
    "lastName": "Mouse",
    "email": "mickey@disney.com",
    "country": "US",
    "studentId": "123123"
  },
  "payment": {
    "destinationId": "FLYWIRE:ANI",
    "items": [
      {
        "id": "tuition",
        "value": 400000
      },
      {
        "id": "accommodation",
        "value": 80000
      }
    ]
  }
}
' -i
```

Response (conforming to flywire.agents.payment.details.1-0.schema.json)

```
{
  "id": "96131be9-085d-4e76-80ef-a1aa5dcf1de4",
  "processor": "FLYWIRE",
  "destinationId": "FLYWIRE:ANI",
  "status": {
    "value": "PENDING",
    "transitions": {
      "createdOn": "2020-07-27T13:22:28Z"
    }
  },
  "amounts": {
    "expected": {
      "total": 480000,
      "items": [
        {
          "id": "tuition",
```

```

        "value": 400000
      },
      {
        "id": "accommodation",
        "value": 80000
      }
    ]
  },
  "currency": "EUR",
  "links": {
    "pay":
    "https://agents.demo.flywire.com/api/payments/96131be9-085d-4e76-80ef-a1aa5dcf1de4/pay",
    "self":
    "https://agents.demo.flywire.com/api/payments/96131be9-085d-4e76-80ef-a1aa5dcf1de4"
  }
}

```

Notes:

1. If a student already exists it will be reused (email address as identifier)
2. Clients can initialize the payment either with the **'amount'** property or the **'items'** property. For the first case (specifying amount) the Agents backend will allocate the amount to the first item from the institution's capability list.
3. You can also pass the **dateOfBirth** for a student, and that will be prefilled in the payment experience. The format of the **dateOfBirth** is the format setup on the Agent company.

Prefilling additional datapoints

Additional datapoints will be pre-filled (where possible) based on the data provided for the subject. This is applied usually for the following sender and recipient fields: first/last name, student id, email, phone, date of birth, address.

These can as well be passed in the initialization request as shown in the example below. If they are passed, they will not be automatically prefilled as specified above.

Request

```

curl -H 'Content-Type:
application/flywire.agents.payment.initialization+json;version=1.0' -H
'Accept: application/flywire.agents.payment.details+json;version=1.0' -H
'X-Authentication-Key: your_api_key'
https://agents.demo.flywire.com/api/payments -d '
{
  "subject": {
    "type": "student",
    "firstName": "Mickey",
    "lastName": "Mouse",
    "email": "mickey@disney.com",
    "country": "US",

```

```

    "studentId": "123123"
  },
  "payment": {
    "destinationId": "FLYWIRE:ANI",
    "items": [
      {
        "id": "tuition",
        "value": 400000
      },
      {
        "id": "accommodation",
        "value": 80000
      }
    ],
    "datapoints": {
      "sender": {
        "sender_email": "pluto@disney.com"
      },
      "recipient": {
        "recipient_program_of_study": "exchange"
      }
    }
  }
}
' -i

```

Validation error example

Response

```

{
  "type": "failed-validation",
  "data": {
    "faults": [
      {
        "path": "/payment/items",
        "reason": "Amount must be greater than £50.00"
      }
    ]
  }
}

```

Notes:

- If you want the datapoints that you pass to the payment experience to not be editable by the student, you can pass the in the **read_only** section of the initialization. Please see an example below.

Request

```

curl -H 'Content-Type:
application/flywire.agents.payment.initialization+json;version=1.0' -H
'Accept: application/flywire.agents.payment.details+json;version=1.0' -H

```

```
'X-Authentication-Key: your_api_key'
https://agents.demo.flywire.com/api/payments -d '
{
  "subject": {
    "type": "student",
    "firstName": "Mickey",
    "lastName": "Mouse",
    "email": "mickey@disney.com",
    "country": "US",
    "studentId": "123123"
  },
  "payment": {
    "destinationId": "FLYWIRE:ANI",
    "items": [
      {
        "id": "tuition",
        "value": 400000
      },
      {
        "id": "accommodation",
        "value": 80000
      }
    ],
    "datapoints": {
      "sender": {
        "sender_email": "pluto@disney.com"
      },
      "recipient": {
        "recipient_program_of_study": "exchange"
      }
    },
    "read_only": ["sender_email"]
  }
}
' -i
```

Possible error codes

- 400 - invalid request body. Possible reasons:
 - *invalid destination* - the value of `destinationId` is not valid. The `destinationId` should be a valid id returned by the `/destinations` endpoint.
 - *missing mandatory field* - a mandatory field is absent in the request (for example `subject/email`)
 - *invalid field* - either the value of some field is not valid or does not match expected format (for example invalid email address).
 - *unknown subject* - the `subject` is not specified or has a wrong format.
 - *cannot initialize payment with amount and items* - both `payment/items` and `payment/amount` are specified in the request (which is not expected).
 - *invalid item identifier: <item_id>* - `payment/items/id` is not valid. The id of the item should be a valid id returned by `/destinations/:id` endpoint

- *amount must be greater than 0* - the value of `payment/items/value` is less than or equal to '0'.
- 406 - the value of header 'Accept' is not valid in the request.
- 415 - the value of the header 'Content-Type' is not valid in the request.

Manually adding a payment

In order to manually add a payment, there are two steps:

1. Validate the payment by calling the `/intermediated-payment-validation` endpoint. If the payment is valid, the result will be 200 OK, with some details about the payment and subject
2. Acknowledge the payment by calling the acknowledge link present in the `/intermediated-payment-validation` response. If the result is 200 OK, the payment has been successfully added.

Notes:

1. The payment subject will be automatically created with the information present on the payment. If it already exists, the data will be updated.

Validate payment

Request

```
curl -H 'Content-Type:
application/flywire.agents.payment.intermediation+json;version=1.0' -H
'Accept:
application/flywire.agents.payment.intermediation.details+json;version=1.0' -H
'X-Authentication-Key: your_api_key'
https://agents.demo.flywire.com/api/intermediated-payment-validation -d '
{
  "payment": "TBU963306426X"
}
' -i
```

Response

```
{
  "payment": "TBU963306426",
  "destinationId": "FLYWIRE:TBU",
  "items": [
    {
      "id": "amount",
      "value": 30100
    }
  ],
  "subject": {
    "type": "student",
    "firstName": "Mickey",
    "lastName": "Mouse",
  }
}
```

```
"email": "mickey.mouse@disney.com",
"country": "US",
"studentId": "123123"
},
"links": {
  "acknowledge":
  "https://agents.demo.flywire.com/api/intermediated-payment-acknowledgement/7eb
a201a-8881-41b7-85f4-287e6c0b59cd"
}
}
```

Validation error examples

Response

```
{
  "status": 400,
  "faults": [
    "already_intermediated"
  ]
}
```

```
{
  "status": 400,
  "faults": [
    "payment_not_found"
  ]
}
```

Possible error codes

- 400 - there are some errors in the request. Possible reasons:
 - *already_intermediated* - this payment is already used.
 - *payment_not_found* - the payment reference is invalid
- 415 - the value of the header 'Content-Type' is not valid in the request.

Acknowledge a payment

Request (links.acknowledge from /intermediated-payment-validation request)

```
curl -g -X POST
'https://agents.demo.flywire.com/api/intermediated-payment-acknowledgement/7eb
a201a-8881-41b7-85f4-287e6c0b59cd' -H 'X-Authentication-Key:
dHVFjlnowmiqXdJkvj2bCPsTIDP64JlW'
```

Response

```
{
```

```
"id": "7e7c4bfd-75aa-4144-87d2-4a096a765eaa",
"reference": "TBU503484097",
"links": {
  "self":
  "https://agents.demo.flywire.com/api/payments/7e7c4bfd-75aa-4144-87d2-4a096a765eaa"
}
```

Possible error codes

- 404 - there is no unacknowledged payment intermediation with specified ID in the database or payment is already acknowledged.

Fulfill payment

As a result of initializing a payment, the API will return a link that can be used to fulfill that payment.

Request

```
curl -H 'X-Authentication-Key: your_api_key'
https://agents.demo.flywire.com/api/payments/96131be9-085d-4e76-80ef-a1aa5dcf1dee/pay -i
```

The response of the pay request will be a redirect to the Flywire payment experience, where the end user can make the payment.

Payment tracking

Query a single payment

This URL to access a single payment can be found in the links.self property of the payment initialization request as well.

Request

```
curl -H 'Accept: application/flywire.agents.payment.details+json;version=1.0'
-H 'X-Authentication-Key: your_api_key'
https://agents.demo.flywire.com/api/payments/96131be9-085d-4e76-80ef-a1aa5dcf1de4 -i
```

Response

```
{
```

```
"id": "96131be9-085d-4e76-80ef-a1aa5dcf1de4",
"reference": "ANI426541743",
"processor": "FLYWIRE",
"destinationId": "FLYWIRE:ANI",
"method": "BANK_TRANSFER",
"updatedAt": "2022-05-16T13:29:22.553Z",
"status": {
  "value": "GUARANTEED",
  "transitions": {
    "createdOn": "2022-05-16T13:19:07.001394Z",
    "initiatedOn": "2022-05-16T13:29:08Z",
    "guaranteedOn": "2022-05-16T13:29:21Z"
  }
},
"amounts": {
  "expected": {
    "total": 480000,
    "items": [
      {
        "id": "tuition",
        "value": 400000
      },
      {
        "id": "accommodation",
        "value": 80000
      }
    ]
  },
  "actual": {
    "total": 480000,
    "items": [
      {
        "id": "tuition",
        "value": 400000
      },
      {
        "id": "accommodation",
        "value": 80000
      },
      {
        "id": "insurance_and_other",
        "value": 0
      }
    ]
  }
},
"initiatedAmount": 480000,
"currency": "EUR",
"links": {
  "self":
"https://agents.demo.flywire.com/api/payments/96131be9-085d-4e76-80ef-a1aa5dcf1de4",
  "receipt":
"https://api.demo.flywire.com/v3/files/receipt/cYC9w2kYMCT3WaJfuTX8s\_UpugN8qvc4bzK2nBfDDqQ=rDLC8o6NONMS4EHEpBF13Q=="
}
```

```
}
```

Possible error codes

- 406 - the value of header 'Accept' is not valid in the request.
- 404 - there is no payment initialization with the specified ID in the database.

Query a collection of payments

This endpoint supports sorting by the payment *updatedAt* (the timestamp of the latest status transition) and filtering by *updatedAtAfter* (payments that have the timestamp of the latest status transition after the provided value).

The request below queries the API filtering by *updatedAtAfter* and ordering it by *updatedAt*

Request

```
curl -H Accept: application/flywire.agents.payment.details+json;version=1.0'  
-H X-Authentication-Key: your_api_key'  
http://agents.demo.flywire.com/api/payments?updatedAtAfter=2021-01-11T13:22:28Z&  
sort=-updatedAt&limit=50 -i
```

Response

```
{  
  "items": [  
    ... payments list...  
  ],  
  "self":  
  "https://agents.demo.flywire.com/api/payments?cursor=<self-position>",  
  "first":  
  "https://agents.demo.flywire.com/api/payments?cursor=<first-position>",  
  "prev":  
  "https://agents.demo.flywire.com/api/payments?cursor=<previous-position>",  
  "next":  
  "https://agents.demo.flywire.com/api/payments?cursor=<next-position>",  
  "last": "https://agents.demo.flywire.com/api/payments?cursor=<last-position>"  
}
```

Possible error codes

- 406 - the value of header 'Accept' is not valid in the request.
- 400 - there are some errors in the request. Possible reasons:
 - Invalid value of the parameter *sort*.
 - *invalid timestamp format* - the values of parameters 'updatedAtAfter' and/or 'updatedAtBefore' are not valid. The expected format for the dates is using the ISO-8061 standard.

Currencies endpoints

Currencies list

This endpoint can be used to get a list of currencies available in Flywire. The currency object contains the following items:

- **code** - three letter code for the currency
- **subunitToUnit** - subunit of the currency
- **symbol** - symbol used for the currency

Request

```
curl -H 'Accept: application/flywire.agents.currency+json;version=1.0' -H 'X-Authentication-Key: your_api_key' http://agents.demo.flywire.com/api/currencies -i
```

Response

```
[
  {
    "code": "AUD",
    "subunitToUnit": 100,
    "name": "$"
  },
  {
    "code": "EUR",
    "subunitToUnit": 100,
    "name": "€"
  }
  ..
]
```

Institution endpoints

Institution lookup

This endpoint can be used to help with the matching between a Partner's and Flywire's institutions. The matching considers a strict match for the country and an approximate match on the name.

Request

```
curl -H 'Content-Type: application/flywire.agents.destinations.match+json;version=1.0' -H 'Accept: application/flywire.agents.destinations.match.details+json;version=1.0' -H 'X-Authentication-Key: your_api_key' http://agents.demo.flywire.com/api/destinations/match -d '[
```

```

{
  "externalId": "AB123",
  "name": "Mickey's Institute",
  "country": "FR"
},
{
  "externalId": "CD456",
  "name": "Minnie's university",
  "country": "US",
  "city": "Boston"
},
{
  "externalId": "EF789",
  "name": "Miami",
  "country": "US"
}
]
' -i

```

Response

```

[
  {
    "externalId": "AB123",
    "name": "Mickey's Institute",
    "country": "FR",
    "possibleMatches": [
      {
        "id": "FLYWIRE:MIT",
        "name": "Mickey's Institute of Technology",
        "currency": "EUR",
        "address": {
          "city": "Paris",
          "country": "FR"
        }
      }
    ]
  },
  {
    "externalId": "CD456",
    "name": "Minnie's university",
    "country": "US",
    "city": "Boston",
    "possibleMatches": []
  },
  {
    "externalId": "EF789",
    "name": "Miami",
    "country": "US",
    "possibleMatches": [
      {
        "id": "FLYWIRE:MTA",
        "name": "MTA - Miami Technology & Arts University",
        "currency": "USD",
        "address": {

```

```

        "city": "Miami",
        "state": "FL",
        "country": "US"
    }
},
{
    "id": "FLYWIRE:MUO",
    "name": "Miami University - Ohio",
    "currency": "USD",
    "address": {
        "city": "Oxford",
        "state": "Ohio",
        "country": "US"
    }
}
]
}
]

```

Possible error codes

- 406 - the value of header 'Accept' is not valid in the request.
- 400 - there are some errors in the request. Possible reasons:
 - *empty content* - the body content is not provided in the request.
 - *missing mandatory properties from request* - there are some required fields (*externalId*, *name*, *country*) missing from the request.
- 415 - the value of the header 'Content-Type' is not valid in the request.

Institution list

This endpoint can be used to list all Flywire institutions.

Request

```

curl -H Accept: application/flywire.agents.destinations+json;version=1.0' -H
'X-Authentication-Key: your_api_key'
http://agents.demo.flywire.com/api/destinations -i

```

Response

```

[
  {
    "id": "FLYWIRE:MIT",
    "name": "Mickey's Institute of Technology"
  },
  {
    "id": "FLYWIRE:MTA",
    "name": "MTA - Miami Technology & Arts University"
  },
  {
    "id": "FLYWIRE:MUO",

```

```
    "name": "Miami University - Ohio"
  }
]
```

Institution details

This endpoint can be used to look up institution details to understand:

1. what items can be paid for the institution
2. what datapoints can be filled with the payment initialization call so they are pre-filled in the payment experience as the payer goes through it

Request

```
curl -H 'Accept: application/flywire.agents.destination+json;version=1.0' -H
'X-Authentication-Key: your_api_key'
http://agents.demo.flywire.com/api/destinations/FLYWIRE:ANI -i
```

Response

```
{
  "id": "FLYWIRE:ANI",
  "name": "Agents Non-Integrated",
  "currency": "EUR",
  "address": {
    "country": "IN"
  },
  "integratedPaymentExperience": false,
  "items": [
    {
      "id": "tuition",
      "title": "Tuition fee"
    },
    {
      "id": "accommodation",
      "title": "Accommodation fee"
    },
    {
      "id": "insurance_and_other",
      "title": "Other items"
    }
  ],
  "datapoints": {
    "sender": [
      {
        "id": "sender_email",
        "title": "Email",
        "type": "string",
        "format": "email",
        "pattern": "^[A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\\.[A-Za-z]{2,}$"
```

```
},
{
  "id": "sender_first_name",
  "title": "First name",
  "type": "string",
  "pattern":
  "^[^\\p{Arabic}|\\p{Han}|\\p{Katakana}|\\p{Hiragana}|\\p{Hangul}]+$"
},
{
  "id": "sender_middle_name",
  "title": "Middle name",
  "type": "string"
},
{
  "id": "sender_last_name",
  "title": "Family name",
  "type": "string"
},
{
  "id": "sender_address1",
  "title": "Address 1",
  "type": "string"
},
{
  "id": "sender_address2",
  "title": "Address 2",
  "type": "string"
},
{
  "id": "sender_city",
  "title": "City",
  "type": "string"
},
{
  "id": "sender_state",
  "title": "State / Province / Region",
  "type": "string"
},
{
  "id": "sender_zip",
  "title": "Zip code / Postal Code",
  "type": "string"
},
{
  "id": "sender_country",
  "title": "Country",
  "type": "string",
  "format": "country",
  "values": [
    {
      "value": "AF",
      "title": "Afghanistan"
    },
    {
      "value": "AX",
      "title": "Åland Islands"
    }
  ]
}
```

```

    }
  ]
},
{
  "id": "sender_phone",
  "title": "Phone number",
  "type": "string",
  "format": "phone"
}
],
"recipient": [
  {
    "id": "recipient_student_id",
    "title": "Student ID",
    "type": "string",
    "pattern": "[0-9]+"
  },
  {
    "id": "recipient_student_first_name",
    "title": "First Name",
    "type": "string"
  },
  {
    "id": "recipient_student_middle_name",
    "title": "Middle Name",
    "type": "string"
  },
  {
    "id": "recipient_student_last_name",
    "title": "Last Name",
    "type": "string"
  },
  {
    "id": "recipient_student_date_of_birth",
    "title": "Date of Birth",
    "type": "string",
    "format": "date",
    "pattern": "(0[1-9]|1[012])[- /.](0[1-9]|12)[0-9]|3[01])[- /.](19|20)[0-9]{2}"
  },
  {
    "id": "recipient_program_of_study",
    "title": "Program of Study",
    "type": "string",
    "values": [
      {
        "value": "undergrad",
        "title": "Undergraduate program"
      },
      {
        "value": "grad",
        "title": "Graduate program"
      },
      {
        "value": "exchange",
        "title": "Exchange program"
      }
    ]
  }
]
}

```

```
    },
    {
      "value": "other",
      "title": "Other"
    }
  ]
}
]
```

Possible error codes

- 406 - the value of header 'Accept' is not valid in the request.
- 400 - there are some errors in the request. Possible reasons:
 - *unknown destination [<id>]* - the specified destination ID has a wrong format (invalid prefix) or no destination with such ID exists in our system.

Subject endpoints

Create a subject

Request (All fields)

```
curl -X POST 'https://agents.demo.flywire.com/api/subjects'  
-H 'Content-Type: application/flywire.agents.subject+json;version=1.0'  
-H 'Accept: application/flywire.agents.subject+json;version=1.0'  
-H 'X-Authentication-Key: your_api_key'  
-d '{  
  "type": "student",  
  "firstName": "Mickey",  
  "middleName": "Jr.",  
  "lastName": "Mouse",  
  "email": "mickey@disney.com",  
  "studentId": "123123",  
  "dateOfBirth": "1999-11-11",  
  "referenceNo": "000001",  
  "phone": "123456789",  
  "address": {  
    "country": "US",  
    "city": "Disneyland",  
    "address1": "some address 1",  
    "address2": "some address 2",  
    "postalCode": "12345",  
    "state": "DL"  
  }  
}'
```

Request (Mandatory fields only)

```
curl -X POST 'https://agents.demo.flywire.com/api/subjects'  
-H 'Content-Type: application/flywire.agents.subject+json;version=1.0'  
-H 'Accept: application/flywire.agents.subject+json;version=1.0'  
-H 'X-Authentication-Key: your_api_key'  
-d '{  
  "type": "student",  
  "firstName": "Mickey",  
  "lastName": "Mouse",  
  "email": "mickey@disney.com",  
  "address": {  
    "country": "US"  
  }  
}'
```

Response

```
{"id": "123"}
```

Possible error codes

- 409 - subject already exists (email/reference number already exists on another subject)
- 406 - the value of header 'Accept' is not valid in the request.
- 400 - invalid request body. Possible reasons:
 - *invalid country* - the value of `country` is not valid (2-letter code).
 - *missing mandatory field* - a mandatory field is absent in the request (for example `firstName/email/country`)
 - *invalid field* - either the value of some field is not valid or does not match expected format (for example invalid email address).
 - the value of the header 'Content-Type' is not valid in the request.

Update a subject

Request (All fields)

```
curl -X PUT 'https://agents.demo.flywire.com/api/subjects/123'  
-H 'Content-Type: application/flywire.agents.subject+json;version=1.0'  
-H 'Accept: application/flywire.agents.subject+json;version=1.0'  
-H 'X-Authentication-Key: your_api_key'  
-d '{  
  "type": "student",  
  "firstName": "Mickey",  
  "middleName": "Jr.",  
  "lastName": "Mouse",  
  "email": "mickey@disney.com",  
  "studentId": "123123",  
  "dateOfBirth": "1999-11-11",  
  "referenceNo": "000001",  
  "phone": "123456789",  
  "address": {  
    "country": "US",  
    "city": "Disneyland",  
    "address1": "some address 1",  
    "address2": "some address 2",  
    "postalCode": "12345",  
    "state": "DL"  
  }  
}'
```

Request (Mandatory fields only)

```
curl -X PUT 'https://agents.demo.flywire.com/api/subjects/123'  
-H 'Content-Type: application/flywire.agents.subject+json;version=1.0'  
-H 'Accept: application/flywire.agents.subject+json;version=1.0'  
-H 'X-Authentication-Key: your_api_key'  
-d '{  
  "type": "student",  
  "firstName": "Mickey",  
  "lastName": "Mouse",  
  "email": "mickey@disney.com",  
  "address": {  
    "country": "US"  
  }  
}'
```

Response

```
NO_CONTENT("status": "204")
```

Possible error codes

- 400 - invalid request body. Possible reasons:
 - *invalid country* - the value of `country` is not valid (2-letter code).

- *missing mandatory field* - a mandatory field is absent in the request (for example `firstName/email/country`)
- *invalid field* - either the value of some field is not valid or does not match expected format (for example invalid email address).
- the value of the header 'Content-Type' is not valid in the request.
- 406 - the value of header 'Accept' is not valid in the request.
- 403 - subject with provided ID belongs to another company
- 404 - subject not found

Delete a subject

Request

```
curl -X DELETE 'https://agents.demo.flywire.com/api/subjects/123'  
-H 'X-Authentication-Key: your_api_key'
```

Response

```
NO_CONTENT("status": "204")
```

Possible error codes

- 403 - subject with provided ID belongs to another company
- 404 - subject not found

Get a subject by ID

Request

```
curl -X GET 'https://agents.demo.flywire.com/api/subjects/123'  
-H 'X-Authentication-Key: your_api_key'
```

Response

```
{  
  "type": "student",  
  "firstName": "Mickey",  
  "middleName": "Jr.",  
  "lastName": "Mouse",  
  "email": "mickey@disney.com",  
  "studentId": "123123",  
  "dateOfBirth": "1999-11-11",  
  "referenceNo": "000001",  
  "phone": "123456789",  
  "address": {  
    "country": "US",
```

```
"city": "Disneyland",
"address1": "some address 1",
"address2": "some address 2",
"postalCode": "12345",
"state": "DL"
}
}
```

Possible error codes

- 403 - subject with provided ID belongs to another company
- 404 - subject not found

Get a list of subjects

Request

```
curl -X GET
'https://agents.demo.flywire.com/api/subjects?limit=2&sort=-last_name'
-H 'X-Authentication-Key: your_api_key'
```

Response

```
[{
  "subjects": [
    {
      "type": "student",
      "firstName": "Mickey",
      "middleName": "Jr.",
      "lastName": "Mouse",
      "email": "mickey1@disney.com",
      "address": {
        "country": "US"
      }
      "referenceNo": "000001",
      "id": "123"
    },
    {
      "type": "student",
      "firstName": "Mickey",
      "lastName": "Disney",
      "email": "mickey2@disney.com",
      "address": {
        "country": "US"
      }
      "referenceNo": "000002",
      "id": "124"
    }
  ],
  "self":
  "https://agents.demo.flywire.com/api/subjects?cursor=<self-position>",
```

```
"first":  
"https://agents.demo.flywire.com/api/subjects?cursor=<first-position>",  
"prev":  
"https://agents.demo.flywire.com/api/subjects?cursor=<previous-position>",  
"next":  
"https://agents.demo.flywire.com/api/subjects?cursor=<next-position>",  
"last": "https://agents.demo.flywire.com/api/subjects?cursor=<last-position>"  
}]
```

Notes:

1. Filtering fields:
 - a. referenceNoAfter
 - b. referenceNoBefore
2. "limit" parameter (min=1, max=100, default=10)
3. Sorting:
 - a. last_name/-last_name

Callbacks

Callbacks will be generated for the initialized payments when the payment status changes. Only companies that are interested in callbacks will receive these. Please discuss with your RM about enabling this for your company, if needed.

The following information will be sent to the client when the payment status changes. The payment status can be one of the following: initiated, guaranteed, delivered, cancelled.

Callback model

```
{  
  "id": "e6b43850-e706-11ec-8fea-0242ac120002",  
  "occurredOn": "2022-06-08T13:29:22.553Z",  
  "data": {  
    "payment": "ANI426541743",  
    "reference": "96131be9-085d-4e76-80ef-a1aa5dcf1de4",  
    "status": "GUARANTEED"  
  }  
}
```

How to validate the callback payload

In order to validate that the received callback comes from Flywire and that the payload did not suffer modifications by any external entity before arriving at your system, we include in the headers of the POST request the *Message-Signature* header parameter.

The process to validate the callback is:

- Encrypt the received body using HMAC SHA-256 algorithm with the provided API Key
- Encrypt the previous result in Base64
- Compare the Base64 string value with the one provided in the *Message-Signature* header parameter
- If the values match, you have received our payload, and you can trust it
- If the value does not match, you should not trust in that received callback