

Credit Kudos Connector User Guide

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Overview

Connectors are simple, data point connections to external SaaS providers, that are used to enrich internal customer data to help in onboarding and risk decision scenarios. API Connectors gather data from a collection of REST APIs with the purpose of merging them into a cloud-based data storage system. This process gives the possibility of filtering and transforming data into a proper format or structure for the purposes of querying and analysis.

Credit Kudos is a credit reference agency that collects and stores relevant financial data used to calculate customers' credit or risk scores through open banking and other European PSD2 API standards.

FintechOS Credit Kudos Connector allows financial institutions to instantly and securely retrieve financial data from Credit Kudos such as account details, incoming and outgoing transactions, card number, account balance, and so on.

For information on how to use the connector in digital journeys and the API methods, see the following pages:

- [Using the Credit Kudos Connector in Digital Journeys](#)
- [API Methods](#)

Business Pain Points

The Credit Kudos Connector is aimed at resolving some of the pain points when searching for relevant financial information that is spread across multiple systems:

- Searching for financial data is time consuming.
- Requires verified and updated information.
- Limited time to analyze the financial data found.

- Financial institutions use different accounting systems.
- The required information can be scattered throughout databases

Key features

Once integrated in a digital journey, the Credit Kudos Connector solves these pain points by offering a simple way to collect data from multiple databases.

- Easy to use. It can be added to a digital journey to simplify the search process.
- Time-efficient. It collects all the needed financial information from multiple systems.
- Single point of entry for a detailed search that offers real-time customer financial data.
- Up-to-date financial data (access to the primary source).
- Extract data automatically (no manual work).
- Possibility to monitor customer's financial health.
- The retrieved information is verified.

Install Credit Kudos Connector

Follow the below steps to install FintechOS Credit Kudos Connector.

IMPORTANT!

Ecosystem Credit Kudos Connector cannot run independently and must be included in a [Service Pipes](#) project.

Prerequisites

In order to install the Credit Kudos Connector and run it locally, you need:

- A code editor such as [Visual Studio Code](#) or [IntelliJ IDEA](#).
- Latest versions of [Java Development Kit](#), [Git](#), and [Apache Maven](#) installed.
- Access to [service-pipes - Azure Artifacts](#) and the [GitHub Service Pipes template repository](#).

Pre-installation Steps

- i. Submit a request to [FintechOS ITSupport](#) to obtain access to *FintechOS-ManagedServices Azure Devops Artifactory* ([service-pipes - Azure Artifacts](#)) and the [GitHub Service Pipes template repository](#).

- ii. Create a [personal access token \(PAT\)](#) as an alternative password for Azure DevOps authentication after you obtained ITSupport access.
- iii. [Download the *settings.xml* file](#) and update it with your PAT. Then, place it in your Apache Maven installation.

Install Credit Kudos Connector

1. Log into your GitHub account and access the [Service Pipes Template](#) repository.
2. Use the instructions from the **README.md** file to create and configure your project.

After the installation is complete, [add the Credit Kudos Connector to your Digital Journey](#).

Credit Kudos Connector

API Methods

In order to sign in properly, Credit Kudos Connector uses an endpoint to generate the JSON Web Token (JWT). The generated API key needs to be included in all API requests to the server, Base64 encoded within an Authorization header.

For the authentication, you must:

1. Make a request with the JWT token using the HTTP GET method to Credit Kudos to return an `access_token`
2. Use the `access_token` to make a bearer authentication:

```
Authorization: Bearer access_token
```

3. Generate an UUID or a **customReference token** that is used to identify customers.
4. The UUID is sent from the Digital Journey to Apache Camel.
5. Map the UUID with the stored `accessToken` by using the `getToken` method.

```
GET /connect/token?code={accessToken}  
headers: customReference = {uuid}
```

Request Example

```
POST /customer_token
```

Headers:

```
encoded_credentials = Base64("$CLIENT_ID:$CLIENT_SECRET")  
"Authorization: Basic $encoded_credentials"
```

Body:

```
{
```

```
"email": "string",  
"firstName": "string",  
"lastName": "string",  
"customReference": "string",  
"dateOfBirth": "string",  
"postcode": "string"  
}
```

Response Example

```
{  
  "data": {  
    "customerToken": "v2.local.e1m...UsY",  
    "createdAt": 1635840000,  
    "expiresIn": 2592000,  
  }  
}
```

Navigate to the below pages to see the API returns for each request made using the Credit Kudos Connector.

Retrieve Single Report

Returns the summary information for a given report, specified by its id. The response includes the four summary figures given for each report: predicted monthly amounts for income, fixed expenditure, flexible expenditure and net disposable income. This call is made using the GET /reports/{reportId} Credit Kudos endpoint.

NOTE

Make sure you include the [authorization header](#) in your API request.

Response Example

```
{
  "data": {
    "report": {
      "id": 1,
      "status": "complete",
      "source": "connect",
      "createdAt": "2020-09-02T10:45:00Z",
      "sandbox": false,
      "openBankingDataFetchedAt": "2020-09-02T10:46:00Z",
      "openBankingLastFetchAttemptAt": "2020-09-02T10:46:00Z",
      "mintedAsOf": "2020-09-02T10:47:00Z",
      "missingAccounts": {
        "income": "present",
        "expenditure": "present"
      },
      "summary": {
        "income": {
          "predictedMonthlyAmount": {
            "value": "1217.13",
            "currency": "GBP"
          },
          "recurringSources": {
            "income": {
              "count": "2"
            },
            "benefits": {
              "count": "0"
            },
            "pension": {
              "count": "0"
            }
          }
        },
        "incomeWithBankTransfers": {
          "predictedMonthlyAmount": {
            "value": "1398.35",
            "currency": "GBP"
          }
        },
        "netDisposableIncome": {
          "predictedMonthlyAmount": {
            "value": "-5.77",

```

```

        "currency": "GBP"
      },
    },
    "fixedExpenditure": {
      "predictedMonthlyAmount": {
        "value": "1404.12",
        "currency": "GBP"
      }
    },
    "flexibleExpenditure": {
      "predictedMonthlyAmount": {
        "value": "258.15",
        "currency": "GBP"
      }
    },
    "essentialExpenditure": {
      "predictedMonthlyAmount": {
        "value": "1527.44",
        "currency": "GBP"
      }
    },
    "nonEssentialExpenditure": {
      "predictedMonthlyAmount": {
        "value": "134.83",
        "currency": "GBP"
      }
    },
    "affordabilityThreshold": {
      "predictedMonthlyAmount": {
        "value": "-129.09",
        "currency": "GBP"
      }
    },
    "application": {
      "name": "Credit Kudos Live"
    },
    "meta": {}
  }
}

```

Retrieve Reports

This method returns an index of reports for a given customer. Each report has an id, which you can use to retrieve the report's resources and subresources. The call is made through the GET /reports Credit Kudos endpoint.

NOTE

Make sure you include the [authorization header](#) in your API request.

Response Example

```
# Response
{
  "data": {
    "reports": [
      {
        "id": 2,
        "status": "incomplete",
        "source": "refresh",
        "createdAt": "2020-09-04T09:30:00Z",
        "sandbox": false,
        "openBankingDataFetchedAt": null,
        "openBankingLastFetchAttemptAt": null,
        "mintedAsOf": null,
        "missingAccounts": null,
        "application": {
          "name": "Credit Kudos Live"
        }
      },
      {
        "id": 1,
        "status": "complete",
        "source": "connect",
        "createdAt": "2020-09-02T10:45:00Z",
        "sandbox": false,
        "openBankingDataFetchedAt": "2020-09-02T10:46:00Z",
        "openBankingLastFetchAttemptAt": "2020-09-02T10:46:00Z",
      }
    ]
  }
}
```

```

        "mintedAsOf": "2020-09-02T10:47:00Z",
        "missingAccounts": {
          "income": "present",
          "expenditure": "missing"
        },
        "application": {
          "name": "Credit Kudos Live"
        }
      }
    ],
  },
  "meta": {
    "previousPage": null,
    "nextPage": null,
    "totalResources": 2
  }
}

```

Transactions

Returns all of the transactions attached to the specified account. Transactions are classified with a type and category. The call is made through the GET `/reports/{reportId}/accounts/{accountsId}/transactions` Credit Kudos endpoint.

NOTE

Make sure you include the [authorization header](#) in your API request.

Response Example

```

{
  "data": {
    "transactions": [{
      "id": 456,
      "description": "USWITCH UTILITIES METER",

```

```

    "bookedAt": "2019-05-16T00:00:00Z",
    "recurring": true,
    "essential": true,
    "index": 200,
    "classification": {
      "type": {
        "code": "fixed_expenditure",
        "name": "Fixed Expenditure"
      },
      "category": {
        "code": "utilities",
        "name": "Utilities"
      },
      "subcategory": null
    },
    "amount": {
      "value": "-10.00",
      "currency": "GBP"
    },
    "closingBalance": {
      "value": "-248.47",
      "currency": "GBP"
    }
  },
  {
    "id": 436,
    "description": "GREENE KING PAYE",
    "bookedAt": "2019-05-13T00:00:00Z",
    "recurring": true,
    "essential": true,
    "index": 201,
    "classification": {
      "type": {
        "code": "income",
        "name": "Income"
      },
      "category": {
        "code": "earnings",
        "name": "Earnings"
      },
      "subcategory": null
    },
    "amount": {
      "value": "71.25",
      "currency": "GBP"
    }
  }

```

```

    },
    "closingBalance": {
      "value": "-183.14",
      "currency": "GBP"
    }
  }
}],
  },
  "meta": {
    "previousPage": null,
    "nextPage":
    "https://api.creditkudos.com/v3/reports/1/accounts/1/transac
    tions?page=2",
    "totalResources": 200
  }
}

```

Retrieve Indicators

Returns a set of indicators generated for a specified report:

- A predicted monthly amount and its ratio to predicted monthly income for the following outflows: gambling, loan repayments, cash withdrawals and bank transfers. A ratioToIncome of 0.1 for gamblingExpenditure, for example, means that it is predicted that 10% of monthly income will be spent on gambling.
- A predicted monthly count and amount for returned direct debits, plus counts of the total returned direct debits in the last 1, 3, 6 and 12 months.
- Negative balance indicators: the portion of time spent in negative balance in the last 12 months and the time spent in unarranged overdraft in the last 6 or 12 months.
- Indicators for high-cost short-term lenders, debt collection agencies and debt management plans: the number of different relationships with each in the last 3, 6 and 12 months respectively.

- The number of months out of the last 6 or 12 for which the applicant's net disposable income was negative.
- Whether the applicant has experienced a recent income shock and, if so, its magnitude.
- Recent borrowing indicators: the total count and amount of loans taken out by the applicant in the last 1 and 3 months respectively.

The call is made through the GET `/reports/{reportId}/indicators` Credit Kudos endpoint.

NOTE

Make sure you include the [authorization header](#) in your API request.

Response Example

```
{
  "data": {
    "indicators": {
      "gamblingExpenditure": {
        "predictedMonthlyAmount": {
          "value": "98.13",
          "currency": "GBP"
        },
        "ratioToIncome": "0.0808"
      },
      "loanRepayments": {
        "predictedMonthlyAmount": {
          "value": "419.19",
          "currency": "GBP"
        },
        "ratioToIncome": "0.345"
      },
      "cashWithdrawals": {
        "predictedMonthlyAmount": {
          "value": "86.27",
          "currency": "GBP"
        },
        "ratioToIncome": "0.071"
      },
      "bankTransferExpenditure": {
```

```

    "predictedMonthlyAmount": {
      "value": "0.00",
      "currency": "GBP"
    },
    "ratioToIncome": "0.0"
  },
  "returnedDirectDebits": {
    "predictedMonthlyAmount": {
      "value": "0.00",
      "currency": "GBP"
    },
    "predictedMonthlyCount": "0",
    "lastMonth": {
      "count": "0"
    },
    "last3Months": {
      "count": "0"
    },
    "last6Months": {
      "count": "0"
    },
    "last12Months": {
      "count": "0"
    }
  },
  "negativeBalance": {
    "ratio": "0.2397",
    "last6Months": {
      "averageMonthlyDaysInUnarrangedOverdraft": "2",
      "daysInUnarrangedOverdraft": "12"
    },
    "last12Months": {
      "averageMonthlyDaysInUnarrangedOverdraft": "1",
      "daysInUnarrangedOverdraft": "12",
      "daysSinceLastInUnarrangedOverdraft": "19"
    }
  },
  "highCostShortTermLenders": {
    "last3Months": {
      "merchantCount": "3",
      "creditMerchantCount": "1"
    },
    "last6Months": {
      "merchantCount": "3",
      "creditMerchantCount": "2"
    }
  }
}

```



```

    },
    "last12Months": {
      "merchantCount": "3",
      "creditMerchantCount": "2"
    }
  },
  "debtManagementPlans": {
    "last6Months": {
      "merchantCount": "0"
    },
    "last12Months": {
      "merchantCount": "0"
    }
  },
  "debtCollectionAgencies": {
    "last6Months": {
      "merchantCount": "0"
    },
    "last12Months": {
      "merchantCount": "0"
    }
  },
  "negativeNetDisposableIncome": {
    "last6Months": {
      "monthCount": "2"
    },
    "last12Months": {
      "monthCount": "2"
    }
  },
  "recentShock": {
    "income": {
      "impact": "none",
      "ratioToPrevious": "1.0"
    }
  },
  "loanPrincipals": {
    "lastMonth": {
      "count": "0",
      "totalAmount": {
        "value": "0.00",
        "currency": "GBP"
      }
    }
  },
  "last3Months": {

```

```

        "count": "1",
        "totalAmount": {
          "value": "500.00",
          "currency": "GBP"
        }
      }
    },
    "meta": {}
  }
}

```

Retrieve Providers

Returns an index of all providers supported by Credit Kudos. This endpoint can be used to display a list of banks to a customer with which to create a connection.

The call is made through the GET /providers Credit Kudos endpoint.

NOTE

Make sure you include the [authorization header](#) in your API request.

Response Example

```

{
  "data": {
    "providers": [
      {
        "uuid": "040772b8-8e3c-4f3d-b06e-3a2dd655e951",
        "baseCode": "barclays",
        "code": "barclays_v3",
        "name": "Barclays",
        "version": "3",
        "countryCodes": [
          "GB"
        ]
      }
    ]
  }
}

```

```

    ],
    "event": null,
    "logoURIs": {
      "svg": "https://assets.creditkudos.com/open_
banking/providers/barclays.svg",
      "png": "https://assets.creditkudos.com/open_
banking/providers/barclays.png"
    }
  },
  {
    "uuid": "8e7037f7-eb2b-4e86-80dc-1167f52c6abc",
    "baseCode": "lloyds",
    "code": "lloyds_v3",
    "name": "Lloyds",
    "version": "3",
    "countryCodes": [
      "GB"
    ],
    "event": {
      "type": "error",
      "message": "Lloyds is currently experiencing
downtime"
    },
    "logoURIs": {
      "svg": "https://assets.creditkudos.com/open_
banking/providers/lloyds.svg",
      "png": null
    }
  },
  {
    "uuid": "19c89ac2-ed13-4670-9fc9-3de26813e152",
    "baseCode": "ulster_bank",
    "code": "ulster_bank_v3",
    "name": "Ulster Bank (UK)",
    "version": "3",
    "countryCodes": [
      "GB",
      "GB-NIR"
    ],
    "event": null,
    "logoURIs": null
  }
]
},
"meta": {

```

```
    "previousPage": null,  
    "nextPage":  
    "https://api.creditkudos.com/v3/providers?page=2",  
    "resourceCount": 10  
  }  
}
```

Retrieve Accounts

Returns an index of all bank accounts shared by the customer for a given report. The call is made through the GET `/reports/{reportId}/accounts` Credit Kudos endpoint.

NOTE

Make sure you include the [authorization header](#) in your API request.

Response Example

```
{  
  "data": {  
    "accounts": [{  
      "id": 1,  
      "name": "Classic Account",  
      "holderNames": [  
        "Samantha Pull"  
      ],  
      "holderNameMatch": {  
        "matchStatus": "partial",  
        "matchElements": [  
          { "field": "firstName", "matchStatus": "partial"  
        },  
          { "field": "lastName", "matchStatus": "full" }  
        ]  
      },  
    ],  
  },  
}
```

```

    "type": "current",
    "parentType": "personal",
    "iban": null,
    "sortCode": "000201",
    "accountNumber": "12345678",
    "provider": {
      "code": "lloyds",
      "name": "Lloyds"
    },
    "bookedBalance": {
      "value": "-300.00",
      "currency": "GBP"
    },
    "limit": {
      "value": "750.00",
      "currency": "GBP"
    },
    "openBankingDataFetchedAt": "2020-01-17T11:01:00Z",
    "openBankingLastFetchAttemptAt": "2020-01-
17T11:00:00Z"
  },
  {
    "id": 2,
    "name": "Direct Current Account",
    "holderNames": [
      "Samantha Pull"
    ],
    "holderNameMatch": {
      "matchStatus": "partial",
      "matchElements": [
        { "field": "firstName", "matchStatus": "partial"
},
        { "field": "lastName", "matchStatus": "full" }
      ]
    },
    "type": "current",
    "parentType": null,
    "iban": "GB12CKCK00020212345678",
    "sortCode": null,
    "accountNumber": null,
    "provider": {
      "code": "first_direct",
      "name": "First Direct"
    },
    "bookedBalance": {

```

```
        "value": "1.29",  
        "currency": "GBP"  
    },  
    "limit": null,  
    "openBankingDataFetchedAt": "2020-01-17T11:01:00Z",  
    "openBankingLastFetchAttemptAt": "2020-01-  
17T11:00:00Z"  
  }]  
},  
"meta": {  
  "previousPage": null,  
  "nextPage": null,  
  "totalResources": 2  
}  
}
```

Add Credit Kudos Connector in Digital Journeys

FintechOS Credit Kudos Connector can be used in different banking or insurance scenarios. For example, financial institutions can have access to customer data when determining their credit score.

NOTE

The Credit Kudos Connector doesn't have a FintechOS component added to it. Therefore, calling the endpoints displayed in Service Pipes, parsing and saving the data received depends on the implementation team.

The below steps reflect the main Credit Kudos Connector workflow:

1. Initiate the banking process from your Digital Journey.
2. Create the customer's profile on the Credit Kudos platform. The Credit Kudos Connector exposes an endpoint to create a new customer ID and returns the redirect link.
3. The redirect link is sent to the customer to initiate the data access consent process.
4. Retrieve the customer's financial data.
5. The information is extracted and displayed in your Digital Journey.