Integrum ESG API Portfolio Management V2.5 Jan 2024

1. Introduction

When managing a portfolio as an account administrator, it will sometimes be preferable to automate the population of the portfolios under your control. This document will discuss the API authentication and portfolio management processes in place to allow portfolios to be managed automatically by a recurring server process.

Authentication will include the provisioning, use and refresh of platform API Keys. Portfolio management will include the address and use of the portfolio CSV upload endpoint.

This document is intended for audiences familiar with the use of HTTP endpoints to transmit data between web services. Definitions of frequently used terminology can be found on page 3 of this document.

2. API Key Authentication

The Integrum ESG platform is capable of two authentication strategies:

1. **Bearer authentication:** Intended for the transmission of authenticated data between a web browser and the server, and requires a user to provide a valid username and password every 12-hours to continue making requests.

2. **API Key authentication:** Intended for the transmission of authenticated data between external services, and the Integrum server.

Managing data autonomously on the Integrum server should be performed using API Key authentication. This is because API Keys do not have time-based expiry, and can be persisted for as long as the owner allows. To ensure the security of the data, if the access rights of a key need to be revoked, the user can "refresh" their API Key, making the old API Key unusable. This section will discuss the generation, use and refresh of API Keys on the platform. API Keys are limited to "Super-User" roles.

API Key Generation

To generate an API Key, follow the steps below:

1. Log in to the Integrum ESG Dashboard: https://dashboard.integrumesg.com/
2. Click your initials in the top right-hand corner
3. Click "Account"
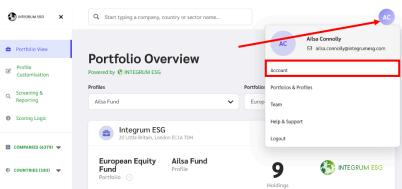
4. Click "Generate API Key" on the dashboard account settings page
5. Click the copy button
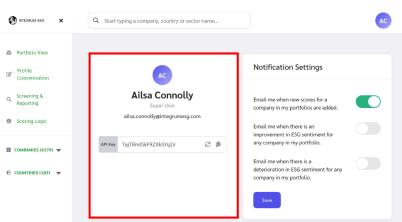
This key can now be used to make requests to the API.

API Key Refresh

If you need to revoke the access of an API Key, the owning users can log in to the dashboard, and navigate to the "Account" page. Clicking the refresh button will generate a new key, making the previous one now unusable.
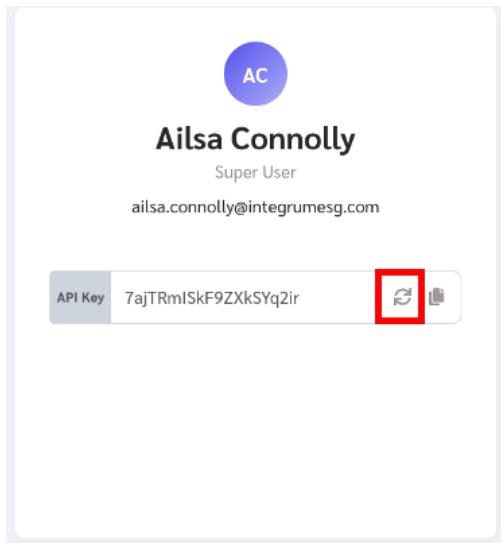
API Key Usage

To use an API Key to authenticate an HTTP request to the Integrum server, it should be included in the "Authorization" header. This should be formatted as shown in the following examples. These are requesting the profile information of the currently logged-in user.

Example values API Key: `HxxxdWZB2rCgywtVehyN`

Integrum platform host address: https://dashboard.integrumesg.com

cURL:

```
curl -H "Authorization: Api-Key HxxxdWZB2rCgywtVehyN" https://dashboard.integrumesg.com/api/user
```

Node.js

```
const axios = require('axios');

main();
async function main() {
    const { data } = await axios.get('https://dashboard.integrumesg.com/api/user', {
      headers: {
          Authorization: 'Api-Key HxxxdWZB2rCgywtVehyN'
      }
  });
  console.log(data);
}
```

Note the use of the "Api-Key" prefix in the Authorization header.

3. Portfolio Management

While it is possible to create and manage portfolios through the web user interface, the management API is available to developers to create automated processes, authenticated via API Keys.

Portfolio CSV Upload

To add companies to a portfolio in large numbers, an efficient method is to upload a CSV of companies.

When the CSV is processed, any company already on the platform will be linked to the portfolio, otherwise a new company will be created, and linked. Note that companies are uniquely identified by their ISIN.

Generating a CSV is possible through most spreadsheet software, via "Export to -> CSV".

CSV Format

The uploaded CSV is in the same format as for uploading in the dashboard:
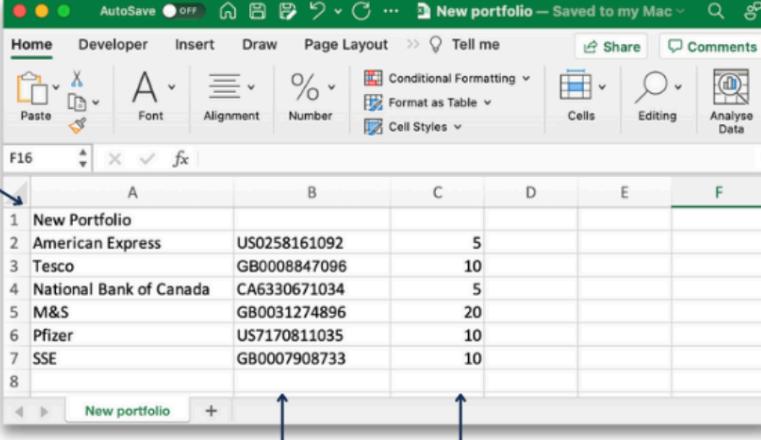
Put the portfolio name in cell A1, the company names in column A and an ISIN related to the company in column B. Put the weightings in column C (or just leave this entire column blank for equal weightings).

Upload Endpoint

CSV files can be uploaded to the platform by POSTing a multipart/form-data to the Portfolio CSV Update endpoint. The endpoint has the following format:

POST /api/portfolios/csv

For example:

POST https://dashboard.integrumesg.com/api/portfolios/csv

Example values

API Key: HxxxdWZB2rCgywtVehyN

Integrum platform host address: https://dashboard.integrumesg.com

Portfolio ID: 24

cURL:

```
curl -X POST -H "Authorization: Api-Key HxxxdWZB2rCgywtVehyN" --form file=@./companies.csv https://
dashboard.integrumesg.com/api/portfolios/csv
```

Node.js:

```
const axios = require('axios');
const FormData = require('form-data');
const fs = require('fs').promises;

main();
async function main() {
  const filepath = './companies.csv';
  const formData = new FormData();
  const file = await fs.readFile(filepath);
  formData.append('file', file, { filepath })
  const { data } = await axios.post('https://dashboard.integrumesg.com/api/portfolios/csv', formData,
{
      headers: {
```

```
        ...formData.getHeaders(),
        Authorization: 'Api-Key HxxxdWZB2rCgywtVehyN'
    }
  });
  console.log(data);
}
```

Python:

```python
import requests
import json

url = 'https://dashboard.integrumesg.com/api/portfolios/csv'
csv='portfolio.csv'
with open(csv, 'r') as f:
r = requests.post(url, headers={'Authorization': 'Api-Key XXX'}, files={'file': f})

print(r.status_code)
json_data = json.loads(r.text)
print(json_data)
```

Upload Results

The post request returns a status – 200 for OK and also returns a json payload for the results of mapping the ISINs in the 'issues' key of the returned payload.

The issues can be rows not found, which can either be a company that is not covered or an issuer relationship that we have not been able to map. In some rarer cases, we might find the ISIN ambiguous as there may be relationships between the issuing organisations and more than one ultimate parent. (This is more likely to happen for some bond ISINs). If this happens it might be worth checking with us and we can usually correct the mapping.

Example:

{'success': True, 'issues': [{'type': 'not_found', 'row': ['ASSURED GUARANTY MUNICIPAL CORP.', 'XS0112914907', '0.03%']}

]}

Terminology

Endpoint - An address exposed on a server, capable of handling requests from external services. An example of this would be POST /api/login which handles login requests.

API - A collection of endpoints on a server.

HTTP - Hypertext Transfer Protocol - A communication protocol designed for transferring data between web services and browsers.

Bearer Token - An expiring token used to communicate with authenticated server endpoints.

API Key - A non-expiring key used to communicate with authenticated server endpoints.

CSV - Comma-separated-values - A simplified, unformatted spreadsheet, ingestible by the server.

Any questions, please email contact@integrumesg.com