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-
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Tableau Prep
How to connect to APIs using the Script step and Python

The Information Lab

What is an API?

Client application

API

Server

Data formats when working with APIs

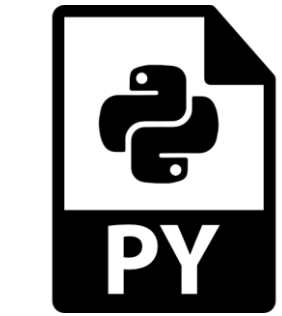
XML – Extensible markup language

JSON – JavaScript Object Notation

The example of the response in JSON format on the right shows that the data is stored in **name and value pairs**.


```
{
    "orders":
    [
        {
            "orderno":"748745375",
            "date":"Jun 30, 2008 1:54:23 AM",
            "trackingno":"TN0039291",
            "customer" :
            {
                "custid": "11045",
                "fname" : "Sue",
                "lname" : "Hatfield",
                "address" : "1409 Silver Street",
                "city" : "Ashland",
                "state" : "NE",
                "zip" : "68003"
            }
        }
    ]
}
```

Connecting to APIs in Tableau Prep



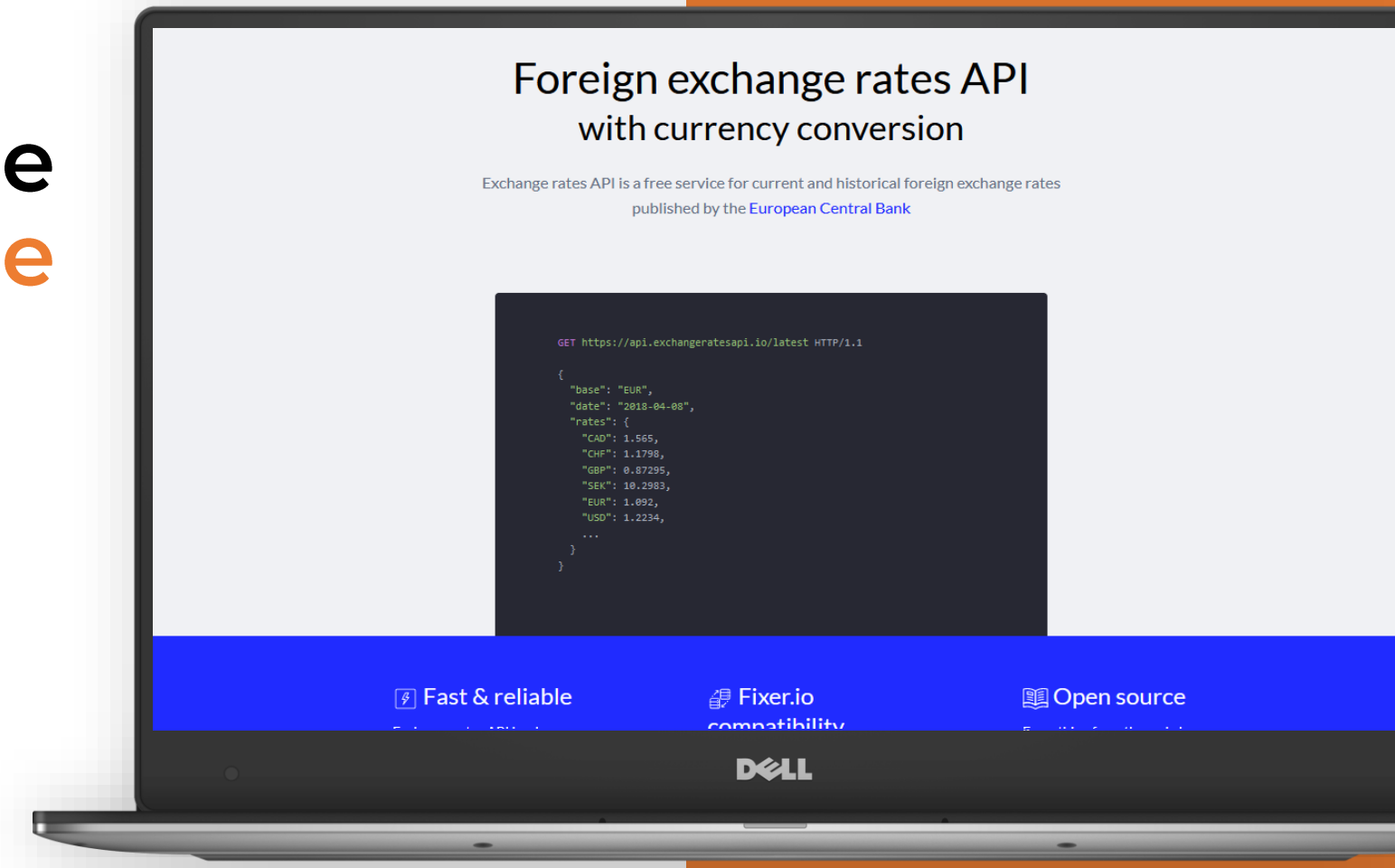
Python script

TabPy server

Script step in your Tableau Prep flow

Connecting to the Foreign Exchange rates API in Tableau Prep

exchangeratesapi.io



Step 1. Read the API's documentation

Step 2. Get the URL

https://api.exchangeratesapi.io/history?start_at=2020-10-01&end_at=2020-10-31&symbols=GBP

Step 3. Write your Python script

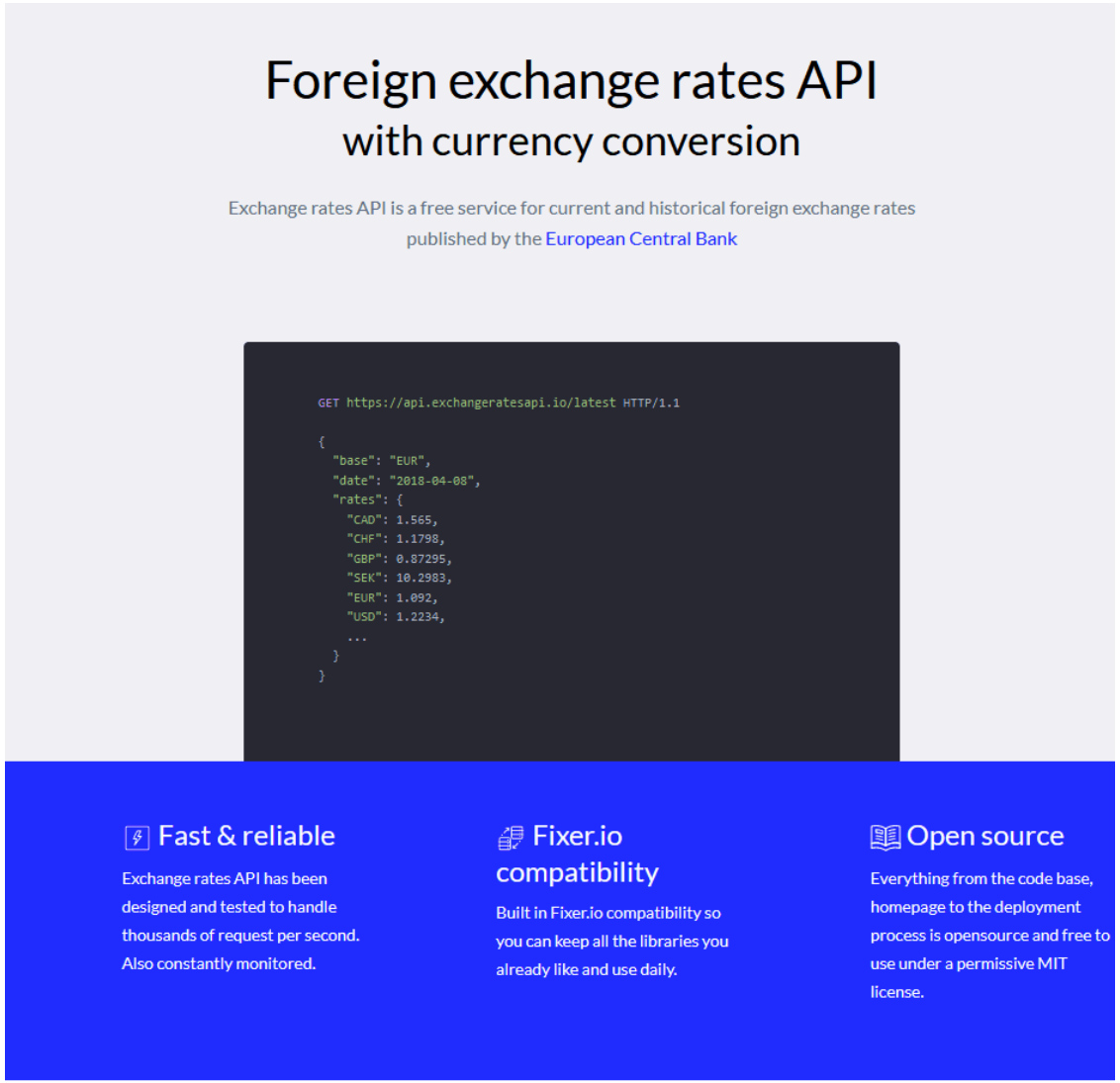
https://github.com/anyalitica/api-connect-tableau-prep

Step 4. Install and launch TabPy server

Step 5. Connect Tableau Prep & TabPy server

Step 6. Add the Script step in your Tableau Prep flow

Step 1. Read the API's documentation



Step 2. Get the URL

https://api.exchangeratesapi.io/history?start_at=2020-10-01&end_at=2020-10-31&symbols=GBP

Request only historical exchange rates for **GBP** for the period between **1 October** and **31 October 2020**.

The default base rate is **Euro**.

Request specific exchange rates by setting the symbols parameter.

```
GET https://api.exchangeratesapi.io/latest?symbols=USD,GBP HTTP/1.1
```

Get historical rates for a time period.

```
GET https://api.exchangeratesapi.io/history?start_at=2018-01-01&end_at=2018-09-01
```

Step 3. Write your Python script

```python
import requests
import pandas as pd

# create function to get data from the API
def get_exchange_rates(input):
    # connect to the API to get exchange rates for GBP during October 2020. The base currency is EUR.
    response = requests.get("https://api.exchangeratesapi.io/history?start_at=2020-10-01&end_at=
    # create new variable 'rates' for the response from the API
    rates = response.json()
    # create a Pandas dataframe from the 'rates' level of the response
    df=pd.DataFrame(rates['rates'])
    # create a new variable 'rates_table' to hold the dataframe and transpose the table
    rates_table = df.T
    # rename the index column to be called 'Date'
    rates_table=rates_table.rename_axis('Date')
    # turn index to a column
    rates_table.reset_index(inplace=True)
    # rename the 'GBP' column to be called 'EURGBP'
    rates_table = rates_table.rename(columns={'GBP':'EURGBP'})
    # change data types
    rates_table['EURGBP'] = rates_table['EURGBP'].astype('float')
    rates_table['Date'] = rates_table['Date'].astype('str')
    return rates_table

# define the columns and their data types that are brought into Tableau Prep
def get_output_schema():
    return pd.DataFrame({
        'Date' : prep_string(),
        'EURGBP' : prep_decimal()
    })
```

Data type in Tableau Prep Builder	Data type in Python
String	Standard UTF-8 string
Decimal	Double

Function in Python	Resulting data type
prep_string ()	String
prep_decimal ()	Decimal
prep_int ()	Integer
prep_bool ()	Boolean
prep_date ()	Date
prep_datetime ()	DateTime

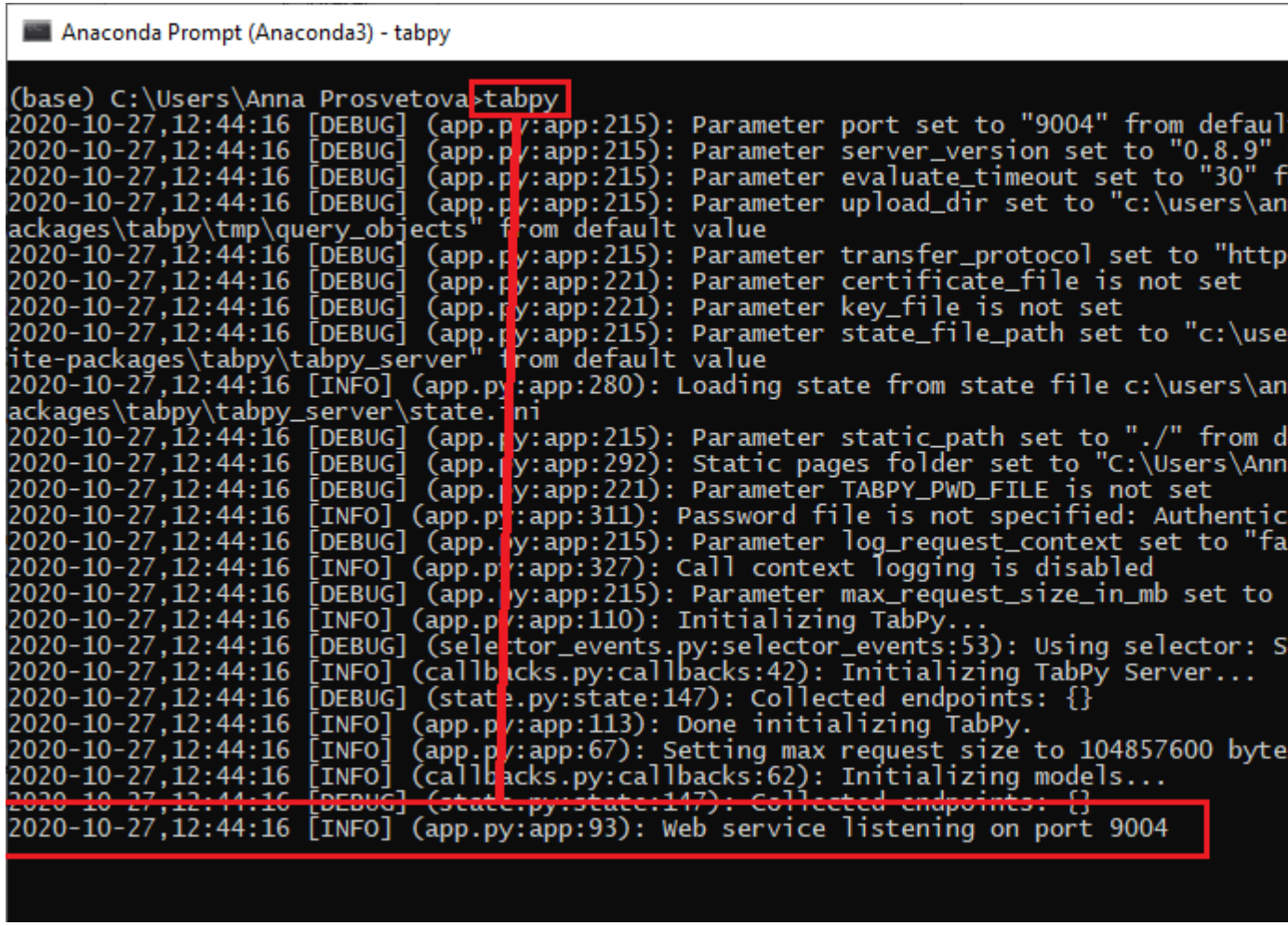
Step 4. Install and launch TabPy server

a) Install TabPy using the Command Line

```
pip install tabpy
```

b) Start TabPy using the Command Line

```
tabpy
```

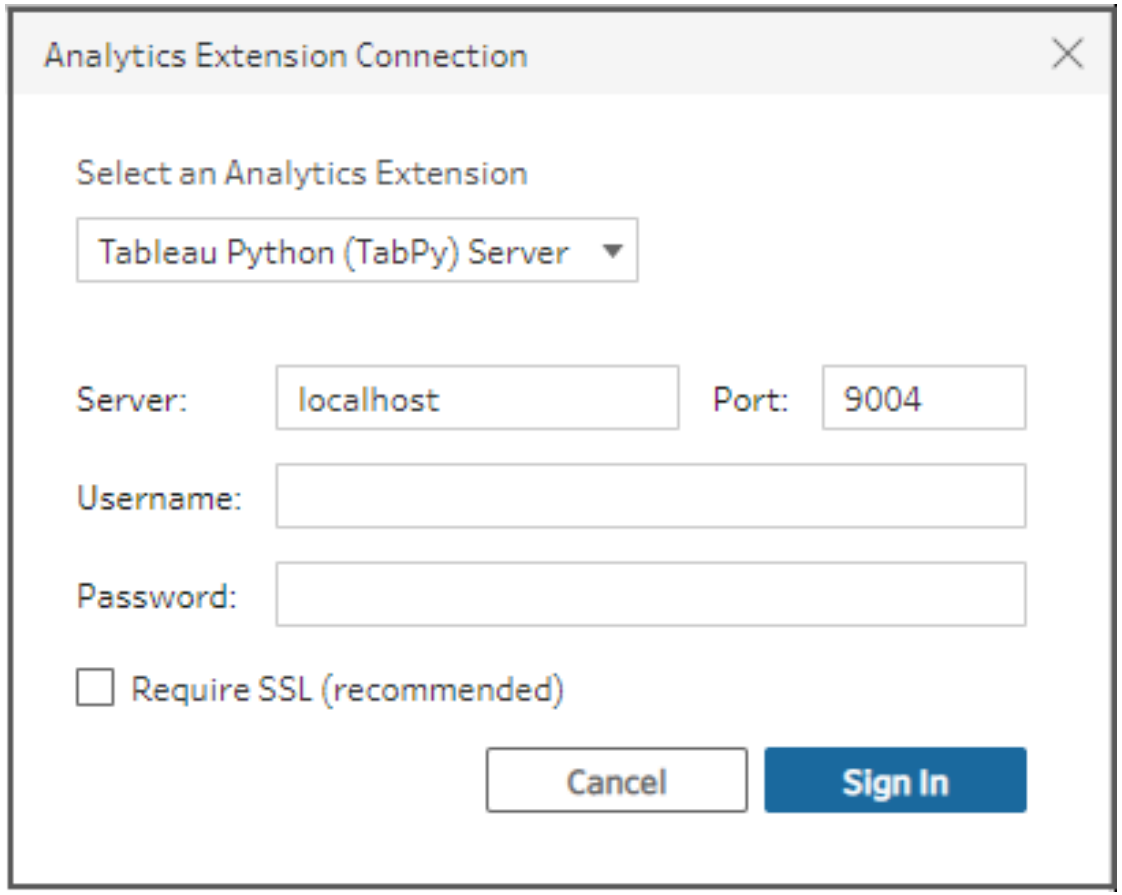


Step 5. Connect Tableau Prep & TabPy server

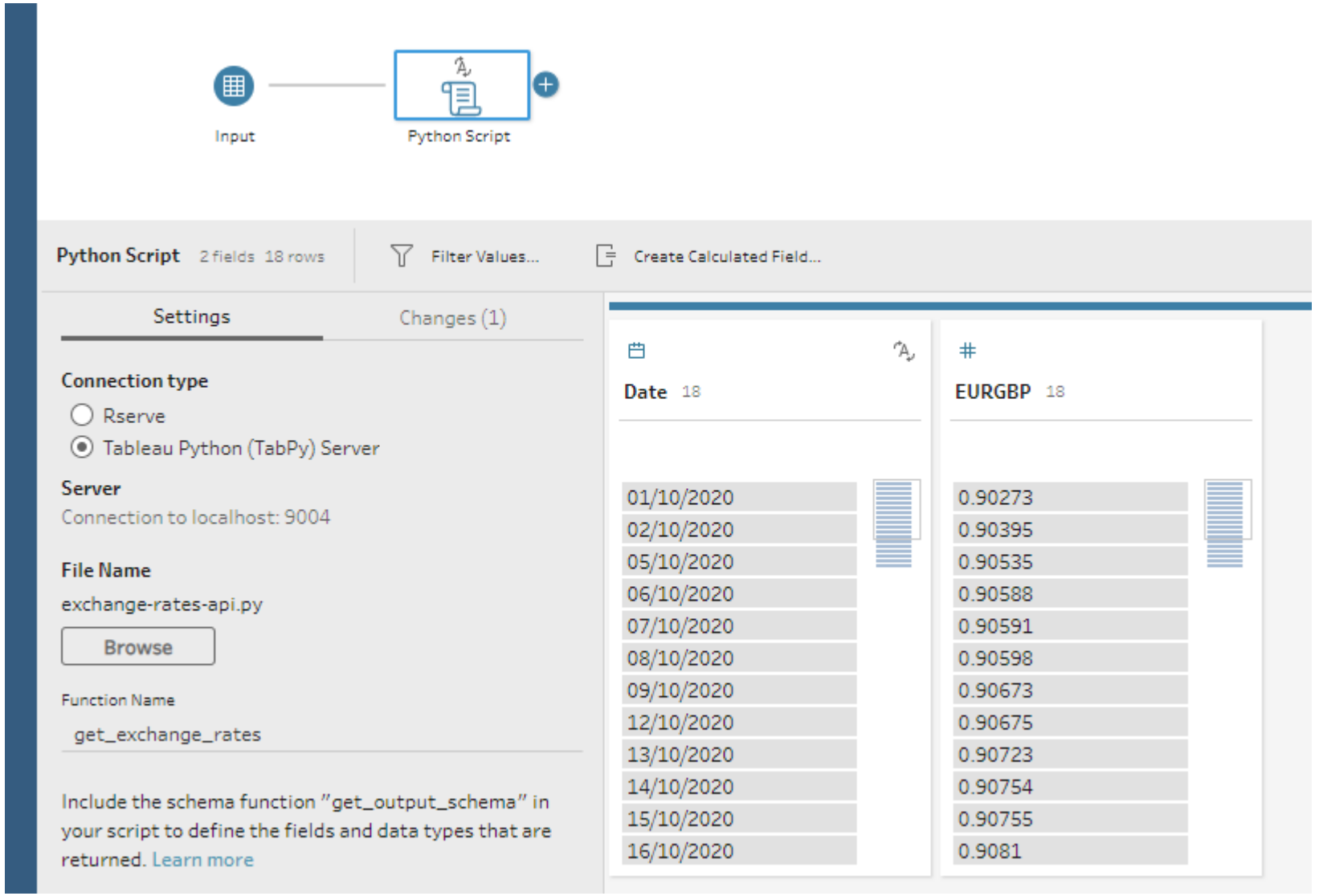
Help > Settings and Performance >

Manage Analytics Extension

Connection



Step 6. Add the Script step in your Tableau Prep flow



Learn more about integrating Tableau Prep & Python

Read about using Python scripts in Tableau Prep flow

https://help.tableau.com/current/prep/en-us/prep_scripts.htm

Read TabPy documentation

github.com/tableau/TabPy

Practice with public APIs

github.com/public-apis/public-apis

Watch Jack Perry's video on TabPy & Tableau Prep Conductor

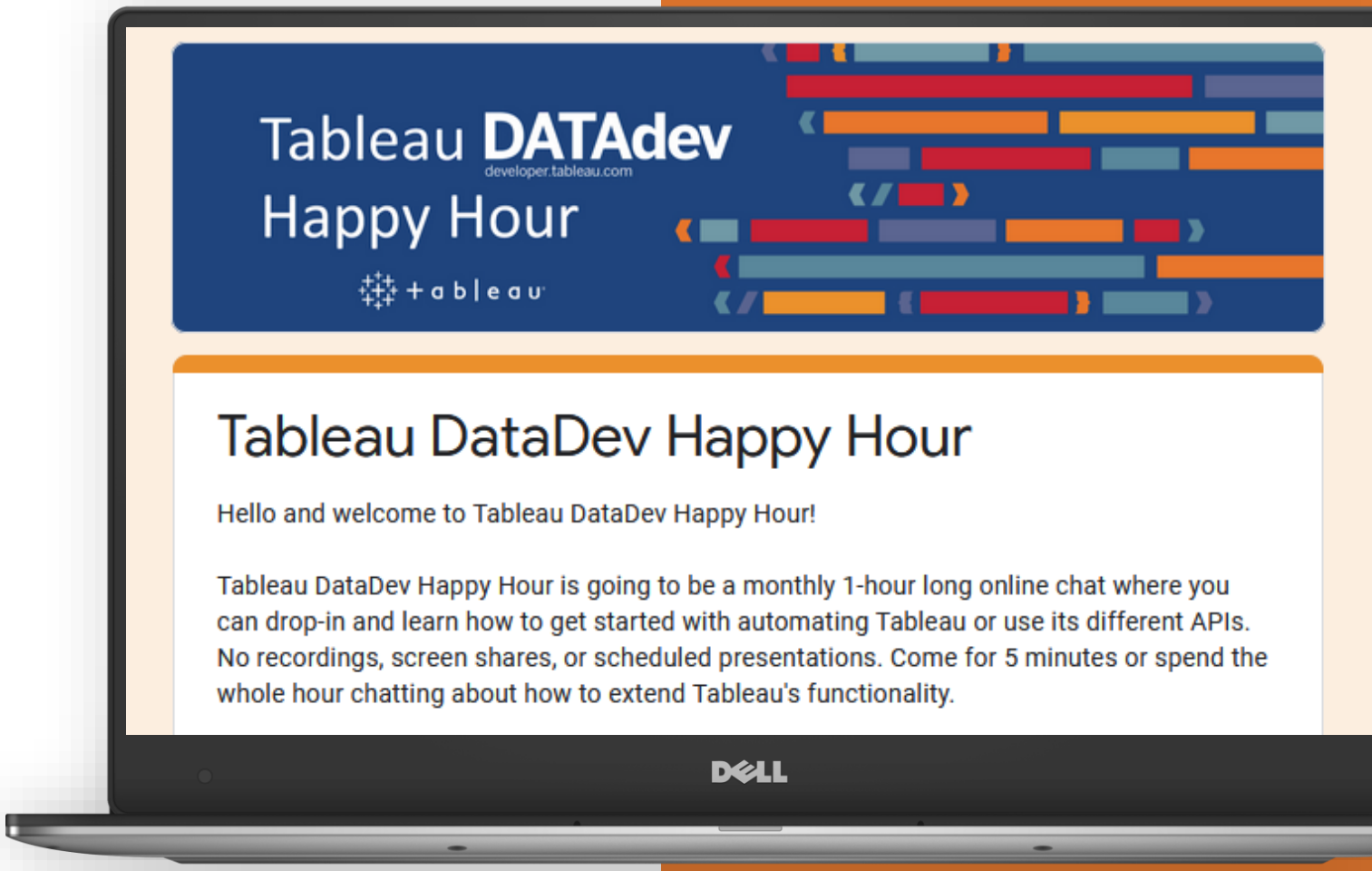
youtube.com/watch?v=QGj-xXgO8Qs

Join Tableau Developer Program

www.tableau.com/developer

Join me at Tableau DataDev Happy Hour!

bit.ly/TableauDataDevHappyHour



Questions?

GET IN TOUCH!

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Thank you!