

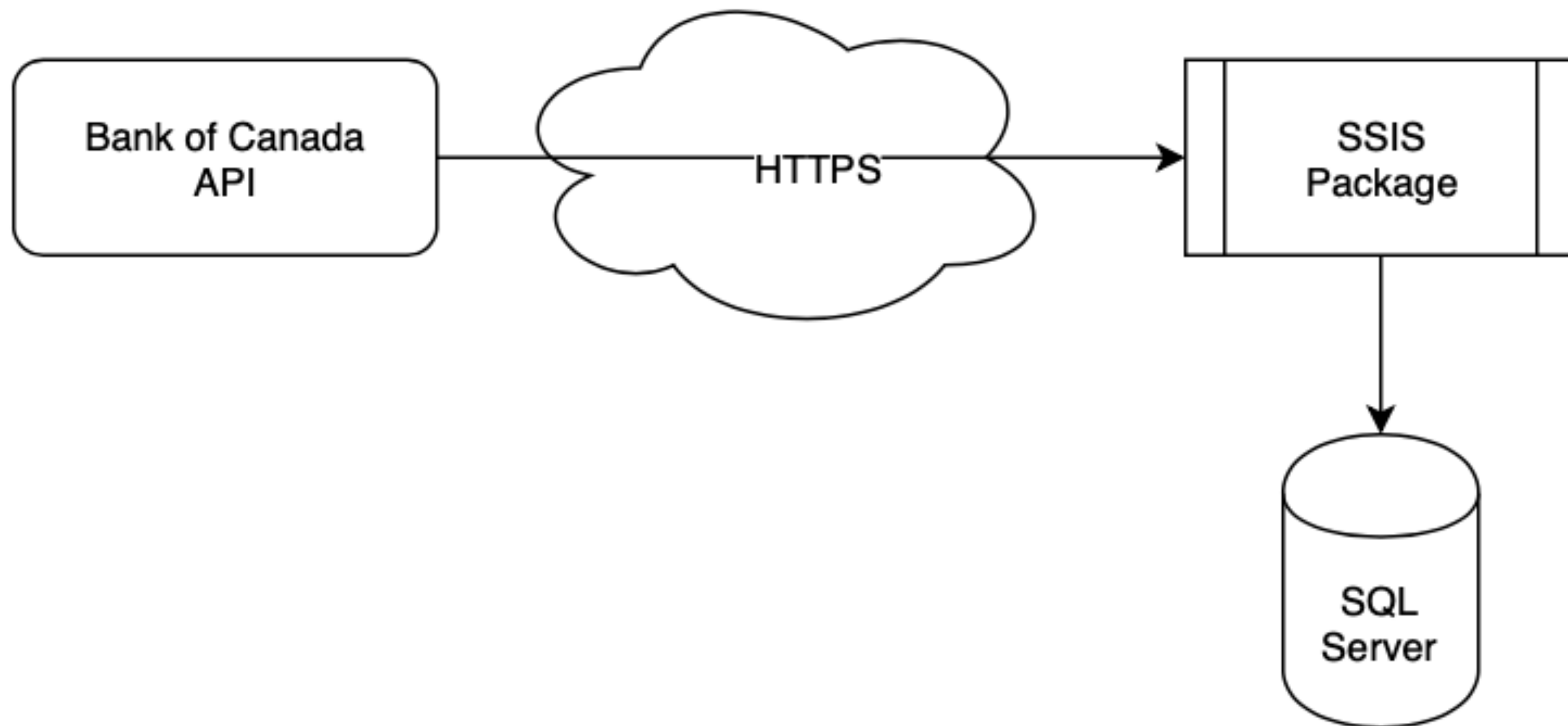
BORDER CITY DATA

---

**REST APIS WITH SSIS**

## “EXTRACT, TRANSFORM AND LOAD”

- ▶ **Extraction** of data from one or more sources
- ▶ **Transforming** by cleansing, aggregating, standardizing, formatting, applying business rules...
- ▶ **Loading** data into target system



---

BORDER CITY DATA

# PROJECT OVERVIEW

## BANK OF CANADA VALET API

- ▶ The Valet API “provides programmatic access to a range of global financial data”
- ▶ Hundreds of data sets
  - ▶ Exchange rates
  - ▶ Currency statistics
  - ▶ Economic data
  - ▶ Survey responses

# BANK OF CANADA API

- ▶ Base URL <https://www.bankofcanada.ca/valet/>
- ▶ Routes:
  - ▶ Formats
  - ▶ Lists
  - ▶ Series
  - ▶ Series Groups
  - ▶ Observations by Series
  - ▶ Observations by Series Group
  - ▶ Foreign Exchange Rates in RSS
  - ▶ Errors
- ▶ Formats: XML, JSON, CSV (Defaults to JSON)

# EXCHANGE RATE DATA

- ▶ [https://www.bankofcanada.ca/valet/observations/FXMUSDCAD/json?start\\_date=](https://www.bankofcanada.ca/valet/observations/FXMUSDCAD/json?start_date=)
- ▶ Monthly USD/CAD exchange rates

```
{
  "terms": {
    "url": "https://www.bankofcanada.ca/terms/"
  },
  "seriesDetail": {
    "FXMUSDCAD": { "label": "USD/CAD", "description": "US dollar to Canadian dollar monthly exchange rate" }
  },
  "observations": [
    { "d": "2017-01-01", "FXMUSDCAD": { "v": 1.3193 } },
    { "d": "2017-02-01", "FXMUSDCAD": { "v": 1.3107 } },
    ...
  ]
}
```

## THE DATABASE

```
CREATE TABLE [dbo].[BOCRates](  
    [Date] [varchar](50) NULL,  
    [ExchangeRate] [numeric](5, 4) NULL  
) ON [PRIMARY]
```

## SQL SERVER INTEGRATION SERVICES (SSIS)

- ▶ Microsoft ETL tool
  - ▶ “a platform for building enterprise-level data integration and data transformations solutions. Use Integration Services to solve complex business problems by copying or downloading files, loading data warehouses, cleansing and mining data, and managing SQL Server objects and data.”



## ACCESSING REST API WITH C# SCRIPT COMPONENT

- ▶ Add system libraries for key tasks:

```
using System.IO;  
using System.Collections.Generic;  
using System.Web.Script.Serialization;
```

- ▶ Create custom deserialization object (or use json2csharp)
- ▶ Create method to access web services using Httpwebrequest class
- ▶ Modify CreateNewOutputRows() to populate component output from web data
- ▶ Code: <https://github.com/dsartori/SSIS-API-Demo/>

BORDER CITY DATA

---

**DEMO: SSIS DESIGNER**